

Seven Sins of Fund Management

A behavioural critique



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How can behavioural finance inform the investment process? We have taken a hypothetical 'typical' large fund management house and analysed their process. This collection of notes tries to explore some of the areas in which understanding psychology could radically alter the way they structure their businesses. The results may challenge some of your most deeply held beliefs.

- ▶ This collection of notes aims to explore some of the more obvious behavioural weaknesses inherent in the 'average' investment process.
- ▶ Seven sins (common mistakes) were identified. The first was placing forecasting at the very heart of the investment process. An enormous amount of evidence suggests that investors are generally hopeless at forecasting. So using forecasts as an integral part of the investment process is like tying one hand behind your back before you start.
- ▶ Secondly, investors seem to be obsessed with information. Instead of focusing on a few important factors (such as valuations and earnings quality), many investors spend countless hours trying to become experts about almost everything. The evidence suggests that in general more information just makes us increasingly over-confident rather than better at making decisions.
- ▶ Thirdly, the insistence of spending hours meeting company managements strikes us as bizarre from a psychological standpoint. We aren't good at looking for information that will prove us to be wrong. So most of the time, these meetings are likely to be mutual love ins. Our ability to spot deception is also very poor, so we won't even spot who is lying.
- ▶ Fourthly, many investors spend their time trying to 'beat the gun' as Keynes put it. Effectively, everyone thinks they can get in at the bottom and out at the top. However, this seems to be remarkably hubristic.
- ▶ Fifthly, many investors seem to end up trying to perform on very short time horizons and overtrade as a consequence. The average holding period for a stock on the NYSE is 11 months! This has nothing to do with investment, it is speculation, pure and simple.
- ▶ Penultimately, we all appear to be hardwired to accept stories. However, stories can be very misleading. Investors would be better served by looking at the facts, rather than getting sucked into a great (but often hollow) tale.
- ▶ And finally, many of the decisions taken by investors are the result of group interaction. Unfortunately groups are far more a behavioural panacea. In general, they amplify rather than alleviate the problems of decision making.
- ▶ Each of these sins seems to be a largely self imposed handicap when it comes to trying to outperform. Identifying the psychological flaws in the 'average' investment process is an important first step in trying to design a superior version that might just be more robust to behavioural biases.

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Sin city

Over the last year or so we have produced a series of notes that have sought to provide an 'outside' perspective on the fund management industry. The driving force behind these notes is that whenever I present on behavioural finance to those in the industry the most frequent response I get is "That it is all very interesting but how do I apply it".

This note is my attempt to take some of the basic biases and then demonstrate just where they might crop up. Having been privy to a great many clients and their processes over the last twelve years or so, I decided to create a composite 'typical' large fund management house. As I thought about the various aspects of this firm's investment process, so I began to see the areas where behavioural biases may reach their zenith. These became the seven sins of fund management.

Sin 1: Forecasting (Pride)

An enormous amount of evidence suggests that we simply can't forecast. The core root of this inability to forecast seems to lie in the fact that we all seem to be over-optimistic and over-confident. For instance, we've found that around 75% of fund managers think they are above average at their jobs! It doesn't matter whether it is forecasting bonds, equities, earnings or pretty much anything else, we are simply far too sure about our ability to forecast the future.

Given the dreadful track records that can be seen from even a cursory glance at the data, it begs the question of why we bother to keep using forecasts? Let alone putting them at the very heart of the investment process? (A mistake probably 95% of the investment processes I've come across persist in making).

The answer probably lies in a trait known as anchoring. That is in the face of uncertainty we will cling to any irrelevant number as support. Little wonder, then, that investors continue to rely on forecasts.

Some have argued that any forecast is better than no forecast at all. For instance, Joe Nocera writing in the New York Times (1 October 2005) opined "*Indeed, I wound up thinking that forecasting is to the market what gravity is to the earth. As much as we like to poke fun at faulty predictions, we can't function without them. Even if we disagree with, say, the analysts' consensus on Cisco, that consensus gives us a basis that helps us form our own judgments about whether it is overvalued or undervalued. Without forecasts, the market would no longer be grounded to anything.*"

This misses the point on many levels. Firstly, when it comes to anchoring we know that irrelevant numbers can influence people's behaviour. For instance, Englich, Mussweiler and Strack¹ show that legal experts were influenced by irrelevant anchors when setting jail sentences even when the experts were fully aware of the irrelevance of the input.

In one study, participants (judges) were asked to role dice to determine the sentencing request from the prosecution. The pair of dice they used were loaded to either give a low number (1, 2) or a high number (3, 6). Having rolled the dice, participants were told to sum the scores and this number represented the prosecutions demand. Since the judges themselves rolled the dice, they could clearly see the input was totally irrelevant. However, the group who received the total score of 3 issued an average sentence of 5.3 months; those who received a total score of 9 issued an average sentence of 7.8 months! So by even providing a forecast, people are likely to cling to it.

¹ Englich, Mussweiler and Strack(2005) Playing dice with criminal sentences: the influence of irrelevant anchors on experts' judicial decision making, Personality and Social Psychology Bulletin, forthcoming

Secondly, and this is a really radical idea, how about we anchor share values in something we can measure like dividends! Since we know people will stumble into the pitfall of anchoring, our best hope is getting them to anchor to something vaguely sensible. Support for this idea is offered by the work of Hirota and Sunder². They show that in experimental markets, bubbles are much more likely to appear when investors lack dividends as an anchor.

Sin 2: The illusion of knowledge (Gluttony)

All too often it seems that we thirst for more and more information. Investors appear to believe that they need to know more than everyone else in order to outperform. This belief actually stems from an efficient markets view of the world. If markets are efficient, then the only way they can be beaten is by knowing something that everyone else doesn't know i.e. knowing more information or knowing the future. So it is all the more paradoxical to find fund managers regularly displaying such a belief.

The psychological literature suggests that we have cognitive limits to our capacity to handle information. Indeed we seem to make the same decision regardless of the amount of information we have at our disposal. Beyond pretty low amounts of information, anything we gather generally seems to increase our confidence rather than improve our accuracy. So more information isn't better information, it is what you do with it, rather than how much you collect that matters,

Sin 3: Meeting companies (Lust)

Why does meeting companies hold such an important place in the investment process of many fund managers? Is it because they provide deep insights into why we should invest in them? Or is it because we need to fill out time with something that makes us look busy?

There are at least five psychological hurdles that must be over-come if meeting companies is to add value to an investment process. Firstly, is the point just made above. More information isn't better information, so why join the futile quest for an informational edge that probably doesn't exist? Secondly, corporate managers are just like the rest of us. They tend to suffer from cognitive illusions, so their views are likely to be highly biased. Thirdly, we all tend to suffer from confirmatory bias – that is a habit of looking for information that agrees with us. So rather than asking lots of hard questions that test our base case, we tend to ask nice leading questions that generate the answers we want to hear. Fourthly, we have an innate tendency to obey figures of authority. Since company managers have generally reached the pinnacle of their profession, it is easy to envisage situations where analysts and fund managers find themselves effectively over-awed.

Finally, the sad truth is that we are simply lousy at telling truth from deception. We all think we are great at spotting liars, but the data show otherwise, we generally perform in line with pure chance. So even when you meet companies you won't be able to tell whether they are telling the truth or not.

Sin 4: Thinking you can out-smart everyone else (Envy)

One of the responses I occasionally encounter when teaching behavioural finance is "now I understand behavioural finance, I can out-smart everyone else". To me this fails to learn the two most common behavioural traits mentioned earlier, over-optimism and over-confidence. To try to illustrate just how hard it was to be just one step ahead of everyone else, we played a version of Keynes' beauty contests with our clients. The results illustrate just what a tall order such a strategy actually is. Only 3 people out of 1000 managed to pick the correct answer!

² Hirota and Sunder (2003) Stock market as a beauty contest: investor beliefs and price bubbles sans dividend anchor, available from www.ssrn.com

Sin 5: Short time horizons and overtrading (Avarice)

Because so many investors end up confusing noise with news, and trying to out-smart each other, they end up with ridiculously short time horizons. The average holding period for a stock on the New York Stock Exchange is 11 months! Over 11 months your return is just a function of price changes. It has nothing to do with intrinsic value or discounted cash flow. It is just people punting on stocks, speculating not investing.

Sin 6: Believing everything you read (Sloth)

We all love a story. Stock brokers spin stories which act like sirens drawing investors onto the rocks. More often than not these stories hold out the hope of growth, and investors find the allure of growth almost irresistible. The only snag is that all too often that growth fails to materialise.

Sadly, we appear to be hard-wired to accept stories at face value. In fact, evidence suggests that in order to understand something we have to believe it first. Then, if we are lucky, we might engage in an evaluative process. Even the most ridiculous of excuses/stories is enough to get results. For instance, Langer et al³ asked people in a queue for a photocopier if they could push in. Sometimes, they offered the 'placebic' excuse it was because 'they needed to make copies', on other occasions an excuse was omitted altogether. When the excuse was left out, 42% of people let the experimenter push in front of them. When the excuse was included nearly 60% of people gave way to the experimenter! We need to be sceptical of the stories we are presented with.

Sin 7: Group based decisions (Wrath)

The final sin I've covered in this collection is the generally held belief that groups are better at making decisions than individuals. The dream model of a group is that it meets, exchanges ideas and reaches sensible conclusions. The idea seems to be that group members will offset each other's biases.

Unfortunately, social psychologists have spent most of the last 30 years showing that groups' decisions are amongst the worst decisions ever made. Far from offsetting each others biases, groups usually end up amplifying them! Groups tend to reduce the variance of opinions, and lead members to have more confidence in their decisions after group discussions (without improving accuracy). They also tend to be very bad at uncovering hidden information. Indeed, members of groups frequently enjoy enhanced competency and credibility in the eyes of their peers if they provide information that is consistent with the group view. So using groups as the basis of asset allocation or stock selection seems to be yet another self imposed handicap on performance.

Alternative approaches and future directions

Over the course of publishing these notes, some have noticed that they tend to provide a list of 'don'ts', as in don't forecast, don't meet company managements, etc. Personally I have no problem with this, as knowing what not to do should itself be a useful guide. However, some would prefer a list of what to do. I've explored in many notes the possible use of alternative approaches, these generally rely on a quantitative approach to investing (see *Global Equity Strategy*, 16 March 2005) and I will be writing on this again soon. The seven sins listed here are not the only ones that could occur. Future work will be directed towards other sins including the illusion of control, the possibility of having too much choice, and benchmarking. But in the meantime we hope the notes selected here provide some hints as to how we might construct an investment process that may be slightly more robust to behavioural biases than many currently appear.

³ Langer, Blank and Chanowitz (1978) The mindlessness of ostensibly thoughtful action, *Journal of Personality and Social Psychology*, 36

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Forecasting

Sin 1

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Global Equity Strategy

The folly of forecasting: Ignore all economists, strategists, & analysts

Both an enormous amount of evidence and anecdotal experience suggests that people are very bad at forecasting. This is often because we all tend to be massively overconfident. This begs two questions, firstly why do we persist in forecasting despite the appalling track record? And, more importantly, why do investors put forecasts at the heart of the investment process?

- ▶ Lao Tzu, a 6th century BC poet observed, “Those who have knowledge don’t predict. Those who predict don’t have knowledge”. Despite these age-old words of wisdom our industry seems to persist in producing and using forecasts. This is all the more puzzling given the easily available data on the appalling nature of track records in forecasting. Economists, strategists and analysts are all guilty. In general, forecasts seem to be a lagged function of actual outcomes - adaptive expectations dominate forecasts.
- ▶ The two most common biases are over-optimism and overconfidence. Overconfidence refers to a situation whereby people are surprised more often than they expect to be. Effectively people are generally much too sure about their ability to predict. This tendency is particularly pronounced amongst experts. That is to say, experts are more overconfident than lay people. This is consistent with the illusion of knowledge driving overconfidence.
- ▶ Several studies confirm professional investors to be particularly overconfident. For instance, one recent study found that 68% of analysts thought they were above average at forecasting earnings! I’ve found that 75% of fund managers think they are above average at their jobs.
- ▶ Why do we persist in forecasting given such appalling track records? There are two avenues to explore – simply put, ignorance and arrogance. *Dunning and colleagues* have documented that the worst performers are generally the most overconfident. They argue that such individuals suffer a double curse of being unskilled and unaware of it. Dunning et al argue that the skills needed to produce correct responses are virtually identical to those needed to self-evaluate the potential accuracy of responses. Hence the problem.
- ▶ *Tetlock* argues that experts regularly deploy five ego defence mechanisms. Experts use various combinations of these defences to enable them to continue to forecast, despite their poor performance.
- ▶ Why do we persist in using forecasts in the investment process? The answer probably lies in behaviour known as anchoring. That is in the face of uncertainty we will cling to any irrelevant number as support. So it is little wonder that investors cling to forecasts, despite their uselessness.
- ▶ So what can be done to avoid these problems? Most obviously we need to stop relying on pointless forecasts. There are plenty of investment strategies that don’t need forecasts as inputs such as value strategies based on trailing earnings, or momentum strategies based on past prices. Secondly, we need to redeploy the armies of analysts. They should return to doing as their name suggests: analysing, rather than trying to guess the unknowable!

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The folly of forecasting

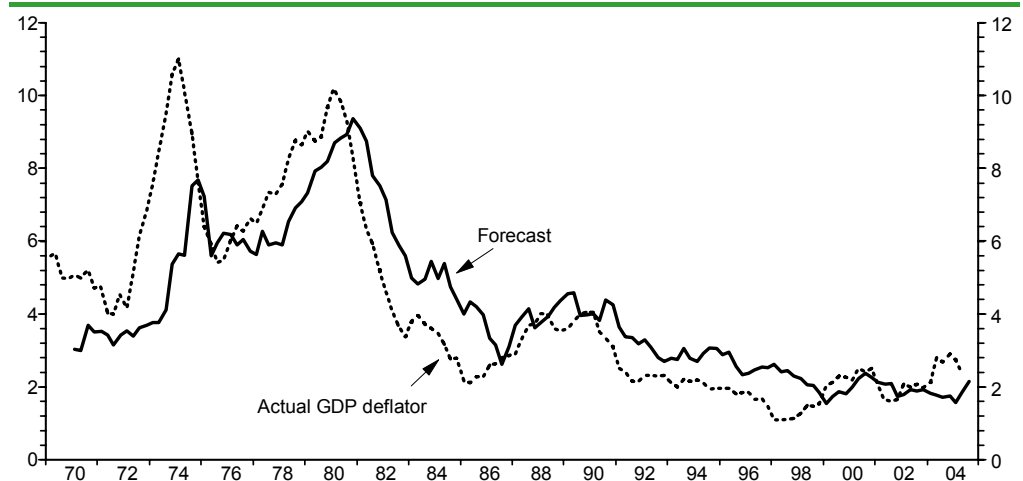
For those who have endured one of my behavioural finance presentations will have heard me rant and rave over the pointlessness of forecasting. I have finally got around to putting pen to paper on this subject⁴.

The 6th century BC poet Lao Tzu observed “Those who have knowledge, don’t predict. Those who predict don’t have knowledge.” Despite these age-old words of wisdom, our industry seems to eternally persist in basing the investment process around forecasts.

Before exploring the reasons for our dependency upon the irrelevant guess of unknowable future, I had better buttress my case by showing just how bad the track record of forecasting actually is. The charts below set out the forecasting performance of so-called professionals. For the ease of data accessibility, all series below are taken from the Federal Reserve Bank of Philadelphia Livingston survey or the Survey of professional forecasters. However, the findings are not the result of a strange data set, I have used different data and found similar patterns exist across them all.

The first chart shows economists attempts to forecast the rate of inflation as measured by the GDP deflator. Sadly it reveals a pattern that will become all too common in the next few charts. Economists are really very good at telling you what has just happened! They constantly seem to lag reality. Inflation forecasts appear to be largely a function of past inflation rates.

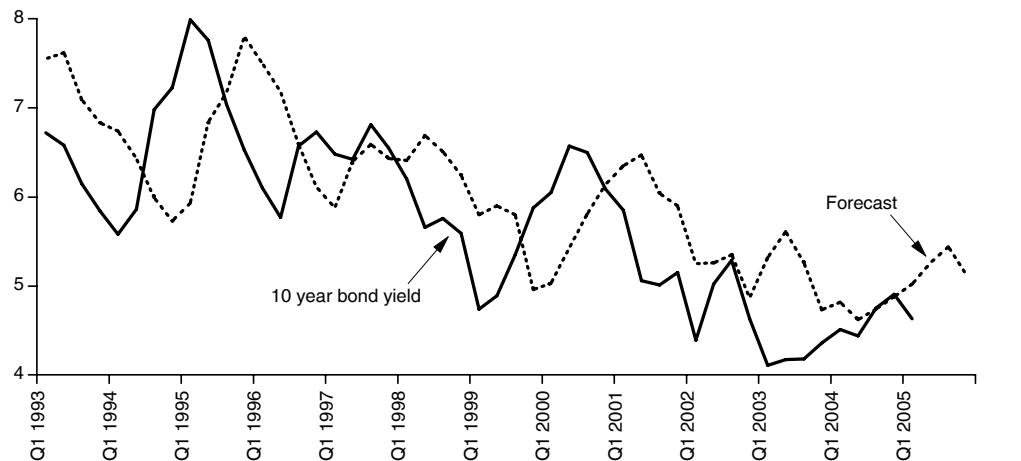
US GDP deflator and forecasts



Our second category are the bond forecasters. Previously, we have analysed their behaviour in depth (see *Global Equity Strategy*, 22 February 2005). Much like the economists above, their performance is found to be severely lacking. Not only are bond forecasters bad at guessing the *level* of the yield, they can’t get the *direction* of yield changes right either. The table below shows that when yields were forecast to rise, they actually fell 55% of the time!

⁴ I was much inspired to write this after reading Nassim Taleb’s recent paper *The Scandal of Prediction* (2005). He renewed my vigour for this subject.

Consensus one year ahead bond yield forecasts and reality (%)



Source: DrKW Macro research

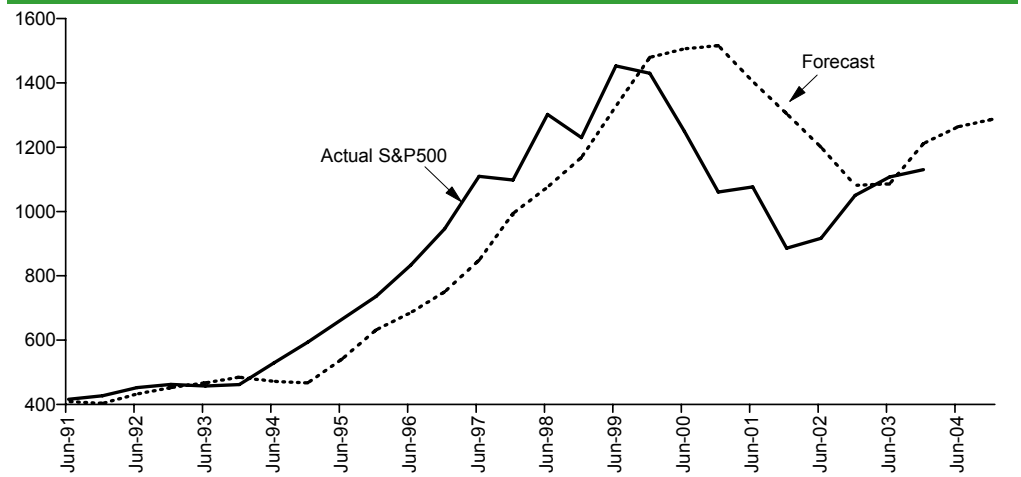
Predicted vs. actual yield movement (four quarters ahead , 1992-2004)

| % of occurrences | | Actual | |
|------------------|------|--------|------|
| Predicted | Up | Up | Down |
| | Down | 45 | 55 |
| | | 22 | 78 |

Source: DrKW Macro research

Just in case you think this is just a case of an equity man picking on debt, the chart below shows the feeble forecasting abilities of equity strategists. They too seem to think that the recent past is best extrapolated into the future, and hence end up lagging reality. Acknowledgement of our own limitations is one of the reasons why we don't even attempt to produce index forecasts.

S&P500 and forecasts

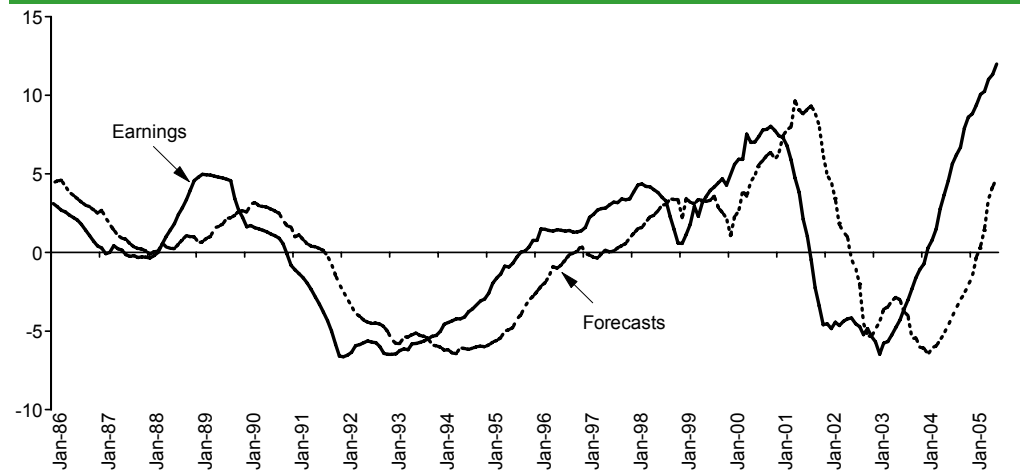


Source: DrKW Macro research

Our last category of truly inept seers are the analysts. Their inability is perhaps the most worrying, as their forecasts are possibly taken far more seriously than the average macro forecast.

The chart overleaf is constructed by removing the linear time trend from both the operating earnings series for the S&P500 and the analyst forecasts of those same earnings. I have simply plotted the deviations from trend in the chart overleaf. It clearly shows that just like the other forecasters examined here, analysts are terribly good at telling us what has just happened but of little use in telling us what is going to happen in the future.

Analysts lag reality (Operating earnings and forecasts, deviations from trend, \$/Sh)



Source: DrKW Macro research

Overconfidence as a driver of poor forecasting

The two most common biases that psychologists have documented are over-optimism and over-confidence. Technically speaking overconfidence refers to a situation where people are surprised more often than they expect to be. Statistically we describe such individuals as 'not well calibrated'. What we really mean by that is if we ask people for a forecast and then ask them for the 98% confidence intervals, so that the true answer should lie outside of the bounds just 2% of the time, it tends to lie outside of the bounds 30-40% of the time! People are simply far too sure about their ability to predict.

*Russo and Schoemaker*⁵ have devised a simple test. Before you go any further try and answer the questions below and see how you do.

Self-test of overconfidence

| | 90% confidence range | |
|---|----------------------|------|
| | Low | High |
| Martin Luther King's age at death | | |
| Length of the Nile River | | |
| Number of countries that are members of OPEC | | |
| Number of books in the Old Testament | | |
| Diameter of the moon in miles | | |
| Weight of an empty Boeing 747 in pounds | | |
| Year in which Wolfgang Amadeus Mozart was born | | |
| Gestation period (in days) of an Asian elephant | | |
| Air distance from London to Tokyo | | |
| Deepest (known) point in the ocean (in feet) | | |

Source: Russo and Schoemaker

The answers can be found at the bottom of the page⁶. If you are properly calibrated only one of the answers to the above questions should lie outside of the limits you wrote down. When I took the test two of my answers were outside of the bounds so I, like everyone else, am overconfident. However, compared to Russo and Schoemaker's sample of over 1000 participants I didn't do too badly. Less than 1% got nine or more answer correct, with most respondents missing four to seven items!

One key finding in the literature on overconfidence is that experts are even more overconfident than lay people. Experts do know more than lay people, but sadly this extra knowledge seems to trigger even higher levels of overconfidence.

⁵ Russo and Schoemaker (1989) Decision traps: Ten barriers to brilliant decision making and how to overcome them, Simon&Schuster

⁶ 39 years, 4187 miles, 13 countries, 39 books, 2160 miles, 390,000 pounds, 1756, 645 days, 5959 miles, 36,198 feet

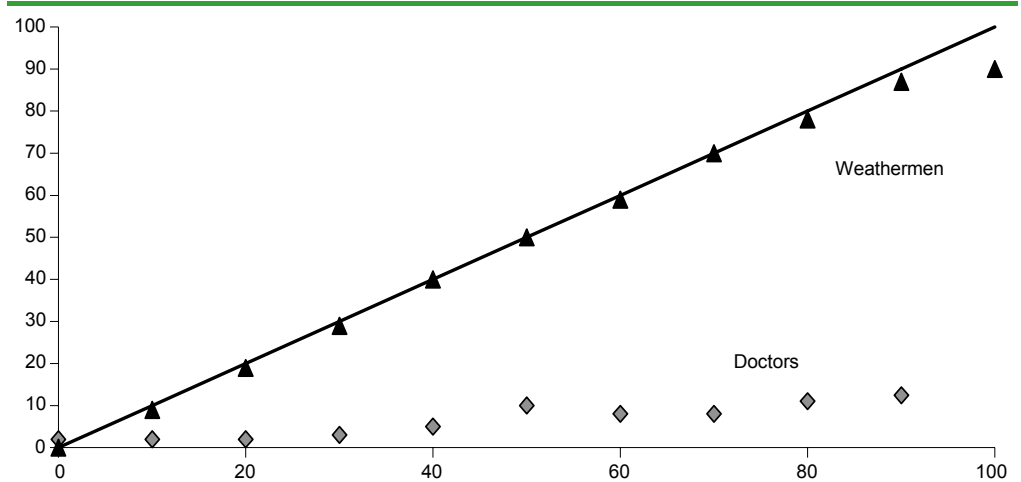
Overconfidence and experts

The chart below shows the calibration curves for two groups of experts – weathermen and doctors. Each group is given information relative to their own discipline, so weather men are given weather patterns and asked to predict the weather, doctors are given case notes and asked to diagnose the patient.

We are measuring predicted probability (confidence) against actual probability. So the 45° line is perfect statistical calibration. Weather forecasters actually do remarkably well. In contrast, doctors are a terrifying bunch of people. When they were 90% sure they were correct, they were actually right less than 15% of the time!

So why the difference in the performance between these two groups? It largely appears to relate to the illusion of knowledge (defined as a situation where we think we know more than everyone else). Weather men get rapid undeniable evidence on their abilities as forecasters, after all you have to do is look out of the window to see if they managed to get it right or not. Doctors, in contrast, often lack feedback so find it far harder to know when they have been right or wrong.

Calibration of weathermen and doctors



Source: Plous (1991) The psychology of judgement and decision-making

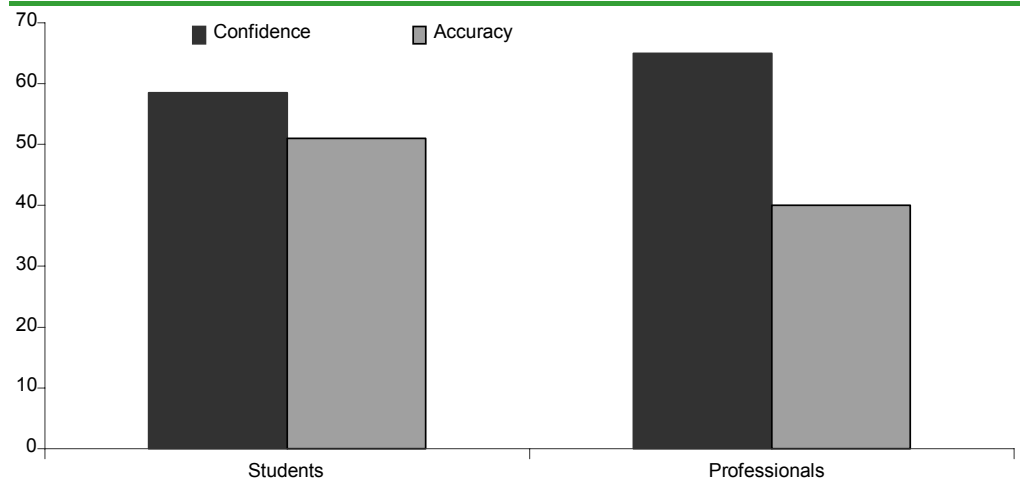
It might be tempting to think of our industry as akin to weather men, if we make decisions or forecasts we should be able to see in the fairly near term if they were correct or not. However, recent evidence suggests that most investors are more akin to doctors than weathermen, at least in terms of the scale of their overconfidence.

The chart below is based on a recent study by *Torngren and Montgomery*⁷. Participants were asked to select the stock they thought would outperform each month from a pair of stocks. All the stocks were well known blue chip names, and players were given the name, industry and prior 12 months' performance for each stock. Both laypeople (undergrads in psychology) and professional investors (portfolio managers, analysts and brokers) took part in the study.

Overall, the students were around 59% confident in their stock picking abilities. However, the professionals averaged 65% confidence. The bad news is that both groups were worse than sheer luck. That is to say you should have been able to beat both groups just by tossing a coin!

⁷ Torngren and Montgomery (2004) Worse than chance? Performance and confidence among professionals and laypeople in the stock market, *Journal of Behavioural Finance*, 5

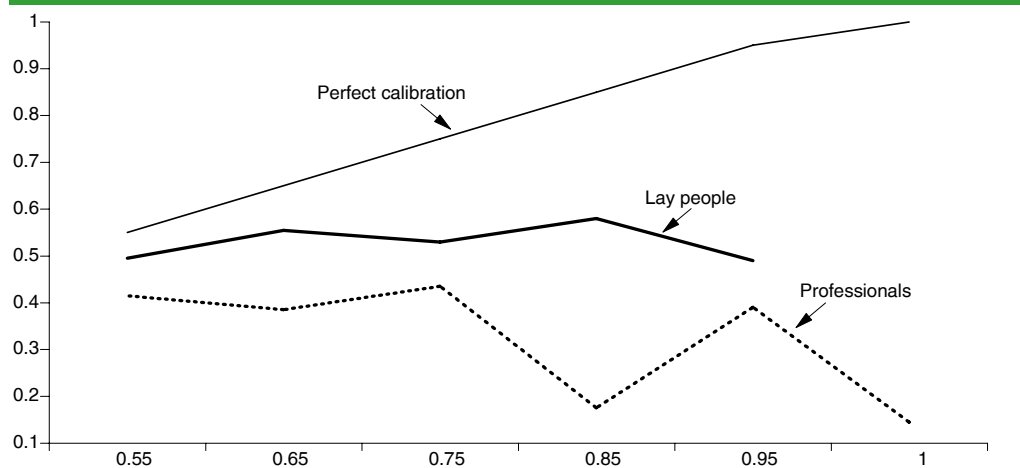
Average Accuracy and confidence on stock selection (%)



Source: Torngren and Montgomery (2004)

In addition to the overall statistics, at each selection, players were asked to state how confident they were in the outcome predicted. The even worse news was that professionals were really dreadful, underperforming laypeople by a large margin. For instance, when the professionals were 100% sure they were correct they were actually right less than 15% of the time!

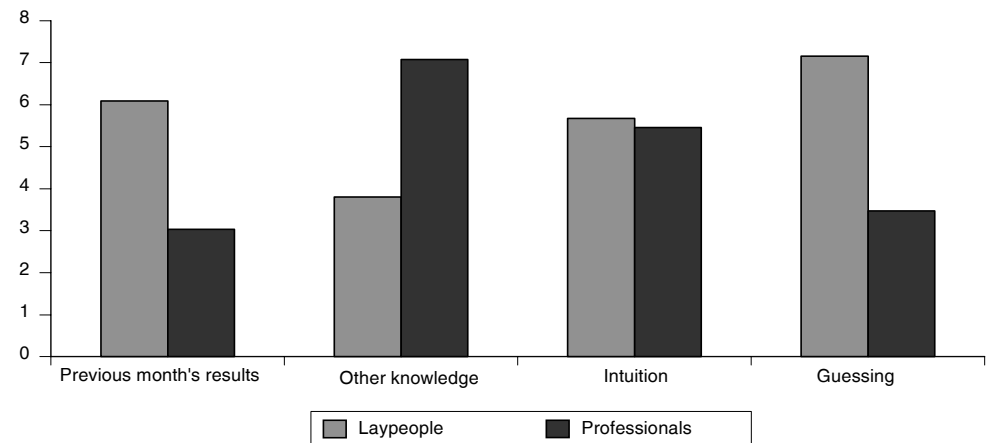
Accuracy and confidence on stock selection



Source: Torngren and Montgomery (2004)

Players were also asked to rank the inputs they used in reaching their decisions. The second chart below shows the average scores for the inputs. Laypeople were essentially just guessing, but were also influenced by prior price performance. In contrast, the professionals thought they were using their knowledge to pick the winners. It is hard to imagine a better example of the illusion of knowledge driving confidence.

Average rating of input importance

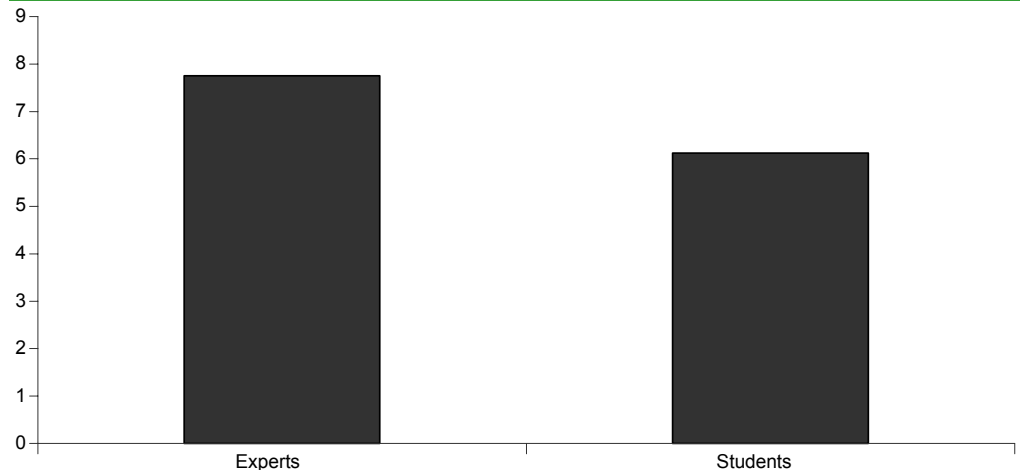


Source: Torngren and Montgomery (2004)

Glaser, Langer and Weber⁸ investigate overconfidence in professional investors and lay people by asking both groups to answer 10 general knowledge questions and 10 finance questions, much like the self-test set out on page 4. If people are well calibrated, the number of correct answers that fall outside the limits should be about one in ten. The chart below shows the actual number of answers that exceeded the confidence limits (the general knowledge and finance questions have been averaged together to give a score out of ten).

The professional investors had a median of nearly 8 questions outside of their confidence intervals; the laypeople (students) had a median 6 questions outside of their confidence ranges. Once again confirming that experts are more over-confident than the rest of us.

Average number of questions outside of the confidence interval



Source: Glaser, Langer and Weber (2005)

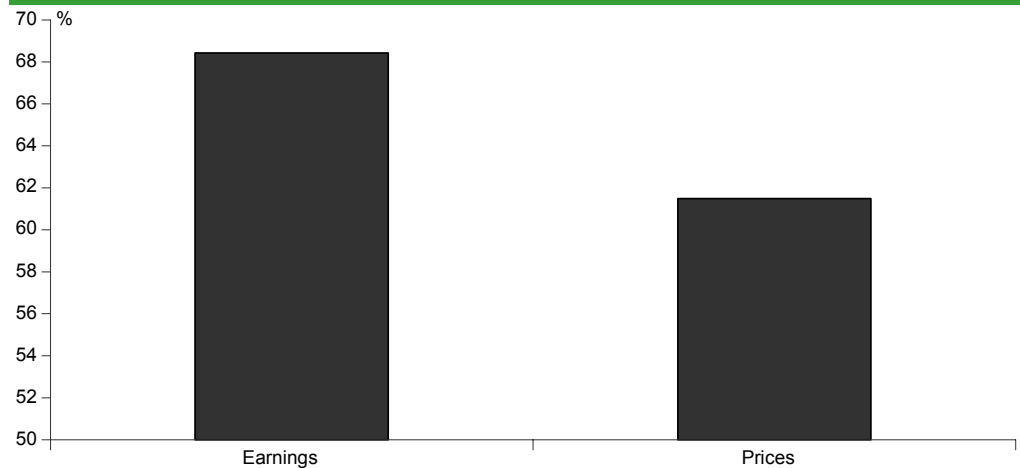
A new paper by Stotz and Nitzsch⁹ surveyed analysts at major investment banks. They were asked to say how many of their rivals were more accurate and less accurate than they themselves were with respect to both earnings forecasts and target prices. Unsurprisingly, the analysts thought that they were all above average. Indeed the average analyst's overconfidence with regard to earnings was 68.44%, and 61.49% with respect to target prices.

⁸ Glaser, Langer and Weber (2005) Overconfidence of professionals and lay men: Individual difference within and between tasks, University of Mannheim Working Paper

⁹ Stotz and Nitzsch (2005) The perception of control and the level of overconfidence: Evidence from analysts earnings estimates and price targets, The Journal of Behavioural Finance, Vol 6

Stotz and Nitzsch also asked the analysts to give reasons for their assessment of their ability. They found that when it came to target prices (where analysts were less overconfident) analysts often argued that “prices sometimes happen by chance”, or that they were the result of “irrational investors”, or that successful price forecasts had a large element of luck. In contrast, when it came to explain their earnings forecasts analysts said “detailed knowledge of the company or sector” helped to make good forecasts, as did “experience” and “hard work”. This would seem to be further evidence of the illusion of control and the illusion of knowledge driving overconfidence.

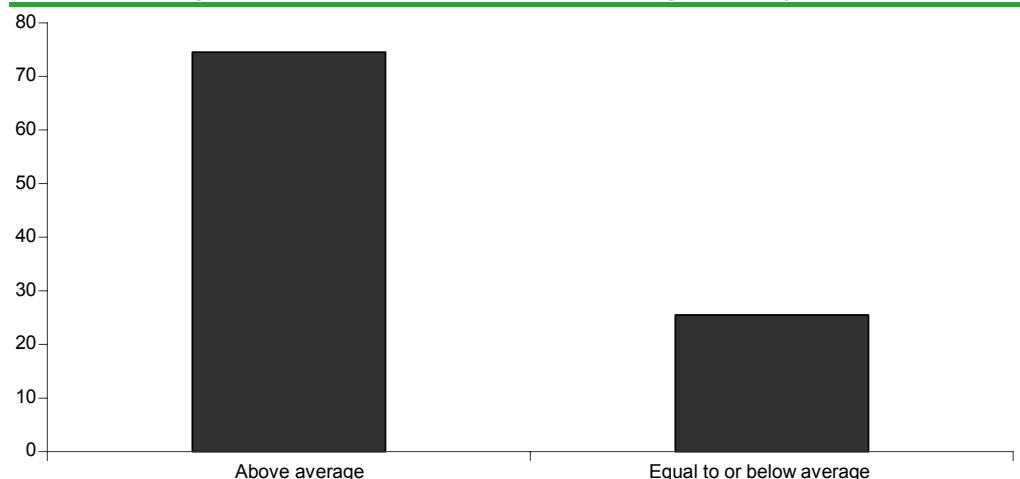
Average analysts confidence in their ability to forecast earnings and prices



Source: Stotz and Nitzsch (2005)

I have recently been subjecting participants at my behavioural finance seminars to a questionnaire designed to measure their behavioural biases. I've been collating these results and will soon publish a note on the findings. However, as a sneak preview, one of the questions is: Are you above average at your job? I have around 200 respondents; all of them are professional fund managers¹⁰. A stunning 75% of those who I have asked think themselves above average at their jobs. Many have written things like, “I know everyone thinks they are above average, but I am”!

% of fund managers who rate themselves as above average at their jobs



Source: DrKW Macro research

All of this begs at least two questions. Firstly, why do professionals manage to keep forecasting given that the evidence suggests they can't? Secondly, why do we keep using these useless forecasts? So let's examine each of these in turn.

¹⁰ If anyone is interested in taking the test, please email me, and I will be able to send you the questionnaire and add your response to the sample. James.Montier@drkw.com

Why forecast when the evidence shows you can't?

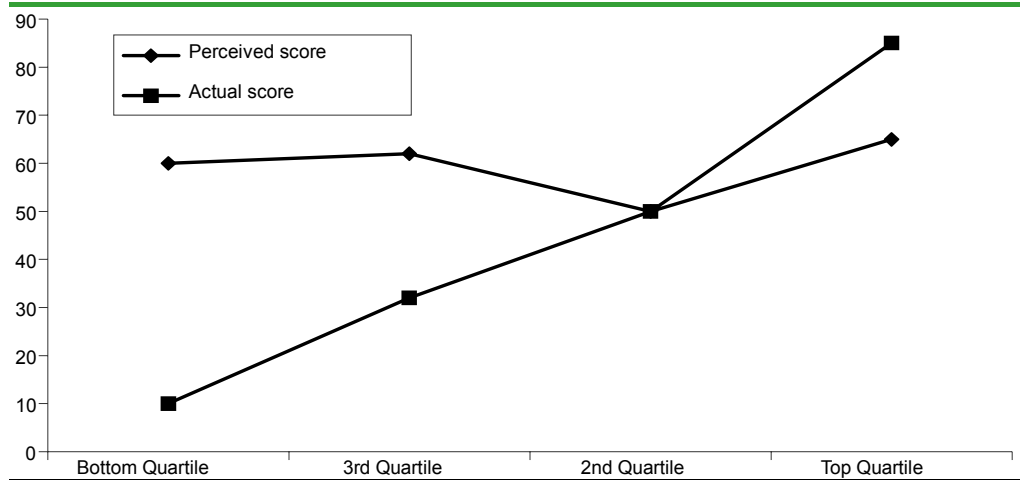
Two areas of psychology help to explain how forecasters keep forecasting in the face of pretty overwhelming evidence that they aren't any good at it. They can perhaps be explained as ignorance (not knowing the overconfidence exists) and arrogance (ego defence mechanism).

Unskilled and unaware

David Dunning and a variety of co-authors over the years have documented a disturbing pattern of behaviour. **Those who are amongst the worst performers actually are the most over-confident.**

For instance, *Kruger and Dunning*¹¹ ask people to rate how they have performed on a logic-reasoning test. The chart below shows the perceived score and the actual score. Those in the bottom two quartiles by actual score thought they would be in the 60 percentile (i.e. well above average). However, their actual scores put those in the bottom quartile in the tenth percentile. A massive case of overconfidence.

Perceived and actual scores: Unskilled and unaware



Source: Kruger and Dunning (1999)

In a follow-up paper, Dunning et al¹² explore some of the mechanisms that prevent people from realizing just how unskilled they actually are. They note "People fail to recognize their own incompetences because that incompetence carries with it a double curse... the skills needed to produce correct responses are virtually identical to those needed to evaluate the accuracy of one's responses... Thus, if people lack the skills to produce correct answers, they are also cursed with an inability to know when their own answers, or anyone else's are right or wrong."

Dunning et al also point out that very often people's estimates of their ability arise from a 'top-down' approach. That is to say people start with a preconceived belief about their skills or abilities (along the lines of 'I'm good at my job' or 'I'm good at forecasting') and use those beliefs to estimate how well they will do at a specific task.

Unfortunately, all the evidence suggests that people's impressions of their skills and abilities are at best moderately correlated and frequently uncorrelated with their actual performance. Indeed this is nicely evidenced by the example above where all groups had a perceived score of between 50 and 60% - bearing no relation to the actual outcome!

¹¹ Kruger and Dunning (1999) Unskilled and unaware of it: How difficulties in recognizing one's own incompetence lead to inflated self-assessments, *Journal of Personality and Social Psychology*, Vol. 77

¹² Dunning, Johnson, Ehringer and Kruger (2003) Why people fail to recognize their own incompetence, *Current Directions in Psychological Science*

Ego defence mechanism

A second group of techniques deployed by forecasters could be best described as ego defence mechanisms. *Philip Tetlock*¹³ has investigated the use of 'excuses' for forecast failures amongst experts on world politics. Tetlock has been monitoring expert's views on world politics in real time for more than a decade. He notes "Almost as many experts as not thought that the Soviet Communist Party would remain firmly in the saddle of power in 1993, that Canada was doomed by 1997, that neo-fascism would prevail in Pretoria by 1994, that EMU would collapse by 1997... that the Persian Gulf Crisis would be resolved peacefully."

He found that across the vast array of predictions with respect to a wide range of political events experts who reported they were 80% or higher confident in their predictions were actually correct only around 45% of the time. Across all predictions, the experts were little better than coin tossers. As Tetlock notes, "Expertise thus may not translate into predictive accuracy but it does translate into the ability to generate explanations for predictions that experts themselves find so compelling that the result is massive over-confidence."

After each of the events passed the forecasts were shown to be either right or wrong, Tetlock returned to the experts and asked them to reassess how well they thought they understood the underlying process and forces at work. The table below shows the experts belief in their own abilities both before the events and after the events. Look at the judged probabilities both pre and post events for those whose forecasts were incorrect. They are virtually identical. So despite the incontrovertible evidence that they were wrong, the experts showed no sign of cutting their faith in their own understanding of the situation. A true Bayesian would have slashed their assigned probability (last column in the table below). This is prime evidence of the conservatism bias – a tendency to hang on to your views for too long, and only slowly adjust from them.

Subjective probabilities experts assigned to their understanding of the underlying forces at the beginning and end of the forecast periods

| Predicting the future of | Status of forecast | Judged prior probability (Before the outcome is known) | Judged posterior probability (after the outcome is known) | Bayesian predicted posterior probability |
|--------------------------|--------------------|---|--|---|
| Soviet Union | Inaccurate | 0.74 | 0.70 | 0.49 |
| | Accurate | 0.69 | 0.83 | 0.80 |
| South Africa | Inaccurate | 0.72 | 0.69 | 0.42 |
| | Accurate | 0.70 | 0.77 | 0.82 |
| EMU | Inaccurate | 0.66 | 0.68 | 0.45 |
| | Accurate | 0.71 | 0.78 | 0.85 |
| Canada | Inaccurate | 0.65 | 0.67 | 0.39 |
| | Accurate | 0.68 | 0.81 | 0.79 |

Source: Tetlock (2002)

Tetlock identified five common strategies/defences used to explain the forecast error whilst preserving the faith in the view:

1. The 'if only' defence – if only the Federal Reserve had raised rates, then the US stock price bubble would have been avoided. Effectively, the experts claim they would have been correct 'if only' their original advice or analysis had been followed. This makes their forecast an historical counterfactual, which is impossible to prove.

¹³ Tetlock (2002) Theory-driven reasoning about plausible pasts and probable futures in world politics, in Gilovich, Griffin and Kahneman (2002) Heuristics and Biases: The psychology of intuitive judgement, CUP

2. The 'ceteris paribus' defence - Although the experts' advice or analysis was correct, something else occurred, which was covered in the ubiquitous ceteris paribus, that resulted in the forecast being blown off course. So the stock market would have crashed but for the presence of government led manipulation.
3. The 'I was almost right' defence - Although the predicted outcome did not occur, it 'almost' did. Tetlock gives the examples of so-called close call counterfactuals such as "the hardliners almost overthrew Gorbachev" or "The EU almost disintegrated during the currency crisis of 1992".
4. The 'It just hasn't happened yet' defence – although the predicted outcome has not yet occurred, it will eventually come to pass. This is one of my favourites! I know that I regularly use this defence to assert that high valuations will inevitably and eventually lead to low returns for investors, thus maintaining my faith in my view of markets.
5. The 'single prediction' defence – Although the conditions of the forecast were met, and the outcome never came close to occurring and now never will, this failure shouldn't be held against the framework/view that inspired it. The "everyone knows (or should know) that forecasting is pointless" thus the analysis is valid, but the act of forecasting was flawed.

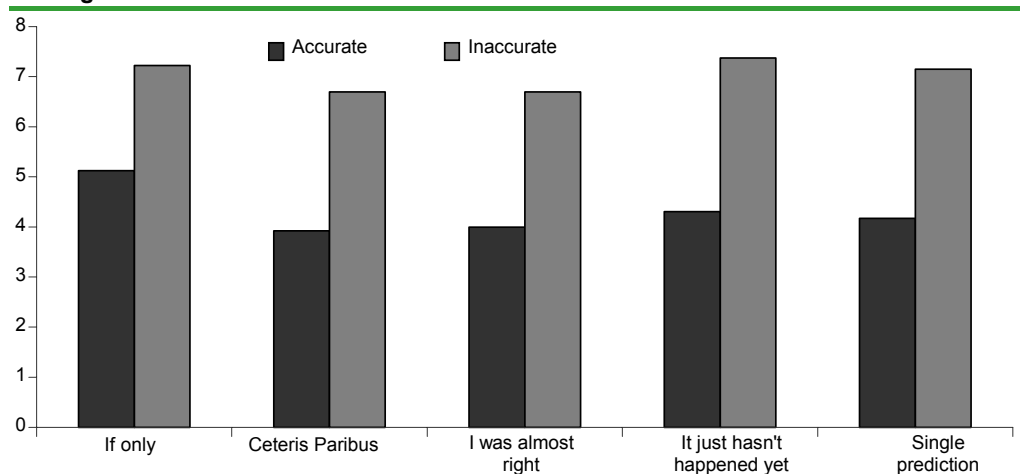
These five defence mechanisms are regularly deployed by experts to excuse the dismal failure of their forecasts. The table below shows scores (on a nine point scale) of how important these defences are. Unsurprisingly those who gave inaccurate forecasts rely much more heavily upon the mechanisms than those who gave accurate forecasts. In fact, across the four cases used here, those who gave inaccurate forecasts were 1.6x more likely to reply on one of these defence mechanisms than the accurate forecasters.

Average reactions of experts to confirmation and disconfirmation of their conditional forecasts

| Predicting the future of | Status of forecast | If only | Ceteris Paribus | I was almost right | It just hasn't happened yet | Single prediction |
|--------------------------|--------------------|---------|-----------------|--------------------|-----------------------------|-------------------|
| Soviet Union | Inaccurate | 7.0 | 7.1 | 6.8 | 6.4 | 7.3 |
| | Accurate | 4.1 | 3.9 | 3.6 | 5.0 | 3.1 |
| South Africa | Inaccurate | 7.1 | 7.0 | 7.3 | 7.3 | 7.1 |
| | Accurate | 4.5 | 3.5 | 3.3 | 4.0 | 4.8 |
| EMU | Inaccurate | 7.2 | 5.9 | 6.2 | 7.8 | 7.0 |
| | Accurate | 5.1 | 4.6 | 4.9 | 3.8 | 4.3 |
| Canada | Inaccurate | 7.6 | 6.8 | 6.5 | 8.0 | 7.2 |
| | Accurate | 6.8 | 3.7 | 4.2 | 4.4 | 4.5 |

Source: Adapted from Tetlock (2002)

Average use of defence mechanism across four cases



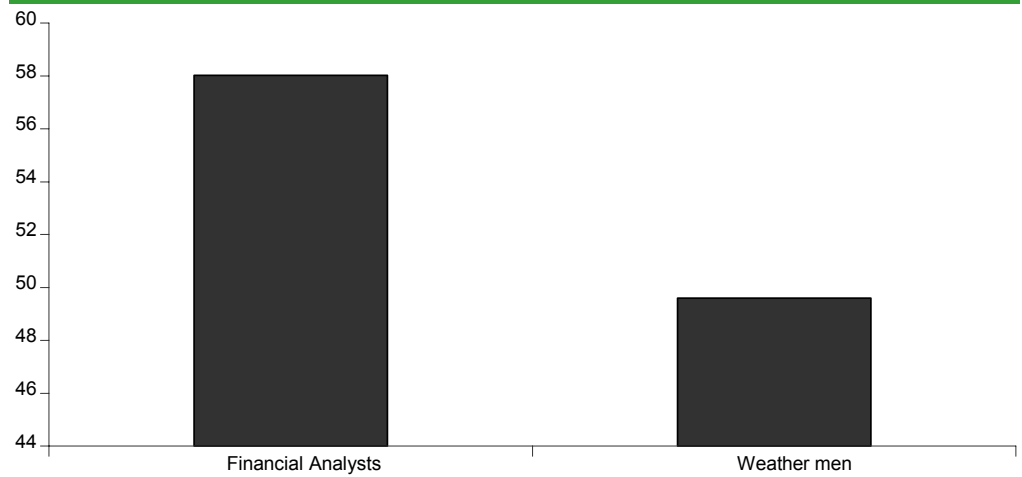
Source: Adapted from Tetlock (2002)

*Tyska and Zielonka*¹⁴ applied Tetlock's approach to analysts and weathermen. As we have already noted weathermen are one of those rare groups that are actually well calibrated. Financial analysts, in contrast, have been found to be very overconfident as documented above.

Tyska and Zielonka asked financial analysts to predict a stock market level in about a month and half's time. Weathermen were asked to predict the average temperature in April (again around one and half months into the future). In both cases, three mutually exclusive and exhaustive outcomes were specified in such a way that each outcome was roughly equally likely (i.e. had a 0.33 chance of happening). For example, the analysts were asked would the index be below y , between x and y , or above x . They were also asked how confident they were in their predictions.

The chart below shows the average scale of overconfidence that was reported. Remember that the three choices were constructed so that each option was roughly equally likely, so a well-calibrated individual would have reported 33% confidence. However, the analysts had an average confidence of just over 58%, the weatherman had an average confidence of just over 50%. So both groups were, as usual, overconfident, but the analysts were more overconfident.

Average confidence probability



Source: Tyska and Zielonka (2002)

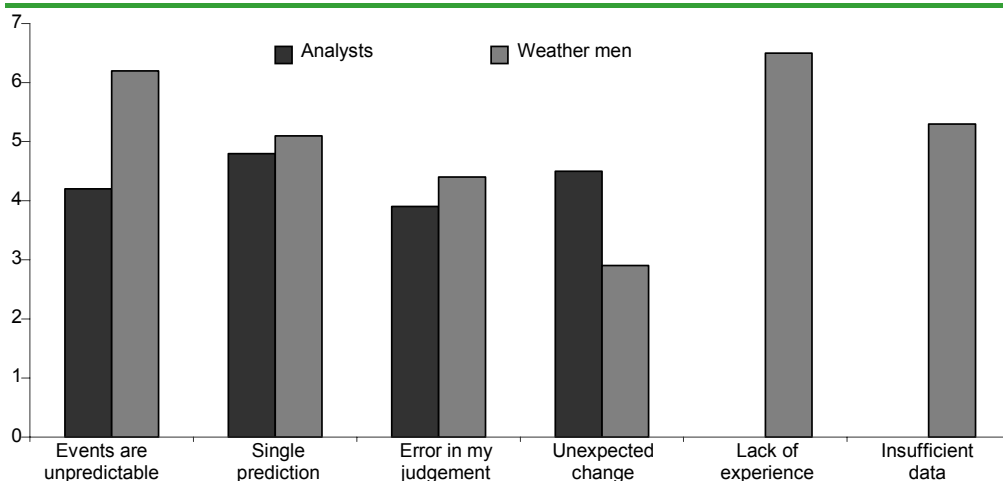
In fact only around one third of the analysts were actually correct, and around two thirds of the weathermen were correct. Those who gave incorrect forecasts were once again contacted and asked to assign importance ratings on a eight point scale to various reasons for their forecast failure.

It is interesting to note that the less confident weathermen's single biggest justification for their forecast failure was a lack of personal experience, followed by an acknowledgment that the weather is inherently unforecastable. Analysts, on the other hand, argued that they shouldn't be judged on the basis of a single prediction (the single prediction defence), and that something else happened that altered the outcome that would have otherwise been achieved (the 'ceteris paribus' defence from above).

So just like Tetlock's political experts, financial analysts seem to be using mental defence mechanisms to protect themselves from the reality of their appalling bad track record at forecasting.

¹⁴ Tyska and Zielonka (2002) Expert judgements: Financial analysts versus weather forecasters, *The Journal of Psychology and Financial Markets*, Vol. 3

Justifications of the forecast failure



Source: Tyszka and Zielonka (2002)

So why use forecasts?

Given all the evidence that people are generally dreadful at forecasting¹⁵ why do so many investors use forecasts at the very centre of their investment processes? In part the obsession with forecasts probably stems from the ingrained love of efficient markets. It might seem odd to talk of efficient markets and active managers in the same sentence, but the behaviour of many market participants is actually consistent with market efficiency (EMH). That is, many investors believe they need to know more than everyone else to outperform. This is consistent with EMH because the only way to beat an efficient market is to know something that isn't in the price (i.e. non public information). One way of knowing more is to be able to forecast the future better than everyone else.

However, one psychological trait above all others helps explain the continued use of forecasts – anchoring. We have discussed anchoring in the context of valuations in a previous note (see *Global Equity Strategy*, 27 August 2004). Anchoring refers to our tendency to grab onto the irrelevant when faced with uncertainty.

The classic example of anchoring comes from *Tversky and Kahneman's* landmark paper¹⁶. They asked people to answer general knowledge questions such as what percentage of the UN is made up of African nations? A wheel of fortune with the numbers 1 to 100 was spun in front of the participants before they answered. Being psychologists, Tversky and Kahneman had rigged the wheel so it gave either 10 or 65 as the result of a spin. The subjects were then asked if the answer was higher or lower than the number on the wheel, and also asked their actual answer. The median response from the group that saw the wheel spot at 10 was 25%, and the median response from the group that saw 65 was 45%! Effectively, people were grabbing at irrelevant anchors when forming their opinions. (For the record the correct answer was 20%).

Another well-known example concerns solving 8 factorial (8!). Except that it is presented in two different ways either (i) $1*2*3*4*5*6*7*8$ or (ii) $8*7*6*5*4*3*2*1$. The median answer under case i was 512, the median answer under case ii was 2250. So people appear to anchor on the early numbers in forming their expectations. By the way, the actual answer is 40,320.

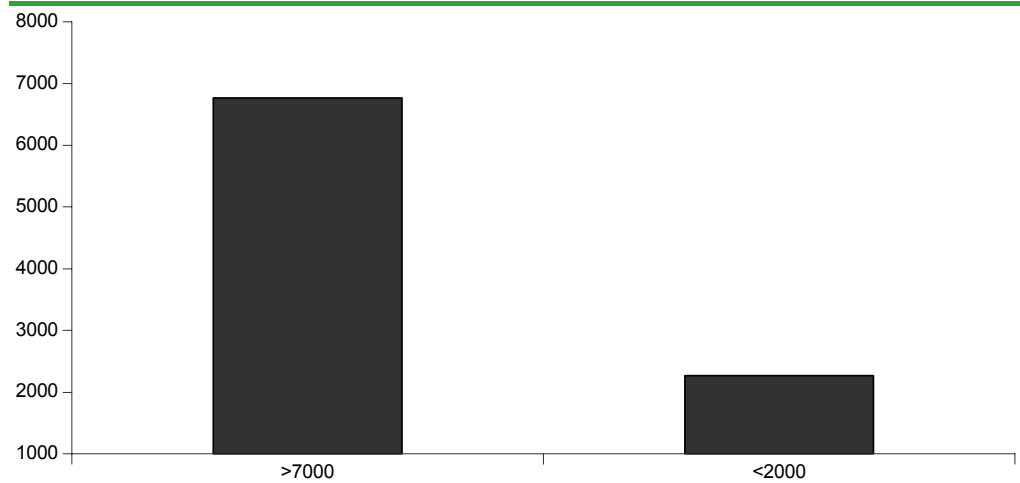
¹⁵ Dawes, Faust and Meehl note that there is an important difference between clinical and actuarial forecasts. Clinical forecasts describe those whereby the decision-maker combines or processed information in his head. Actuarial forecasts rely on well-specified models that have been tested. A vast amount of data shows that actuarial forecasts massively outperform clinical forecasts. We will leave a discussion of what this means for investors until another note, but for the time being recognise that our industry is one in which clinical method often hides behind an actuarial façade. See Dawes, Faust and Meehl (1991) Clinical versus Actuarial Judgement, *Science*, 243

¹⁶ Tversky and Kahneman (1974) Judgement under uncertainty, heuristics and biases, *Science*, 185

Anchoring is not just a cheap parlour trick. *Englich and Mussweiler*¹⁷ take criminal trial judges with an average of more than 15 years of experience as subjects. The judges hear the cases at the end of which the prosecutor asks for either a 36-month sentence, or a 12-month sentence for exactly the same case. Those prosecutors who asked for a 36-month sentence extracted a jail time that was 8 months longer than those who sought a 12-month sentence. Intriguingly, these findings were independent of whether a true prosecutor or a student played the role of the prosecutor!

One of the questions I have asked on my behavioural finance questionnaire has been for people to write down the last four digits of their telephone numbers. Then say whether the number of doctors in their capital city is higher or lower than the last four digits of their telephone number, and finally asked people for their best guess as to the number of doctors in their capital city. The results are shown below. Those with the last four digits greater than 7000 on average report 6762 doctors, whilst those with telephone numbers below 2000 arrived at an average 2270 doctors! So professional fund managers seem to be as liable as everyone else to suffer from anchoring.

Anchoring amongst fund managers



Source: DrKW Macro research

When faced with the unknown, people will grasp onto almost anything. So it is little wonder that investors cling to forecasts, despite their uselessness.

Debasing

So what can be done to avoid these problems? The most obvious solution is to stop relying upon pointless forecasts. This comes as anathema to most investors. But there are plenty of strategies that one can implement without the use of forecasts. Many examples of such strategies have appeared on these pages such as value-based strategies based on trailing earnings or Graham and Dodd PEs (see *Global Equity Strategy*, 16 March 2005, 28 June 2005 for example).

Secondly, we should redirect our efforts away from forecasting. Having armies of analysts and economists all forecasting is a complete waste of time. There is a good reason we call analysts analysts not forecasters:- they are meant to analyse not guess the unknowable future. They would be better utilised in analysing the present and understanding what that means for the future rather than coming up with spurious anchors for investors to cling to. However, this requires a radical re-think of the investment process and hence is exceptionally unlikely to occur.

¹⁷ Englich and Mussweiler (2001) Sentencing under uncertainty: Anchoring effects in the courtroom, *Journal of Applied Social Psychology*, Vol 31

Global Equity Strategy

Do analysts understand Value: who is the greater fool?

How do analysts come up with their recommendations? They certainly don't follow a value approach. A simple analysis of recommendations reveals that they would rather you buy expensive momentum growth stocks with low dividend yields. Doesn't sound like great investment advice to me. But then again, sadly, speculation rather than investment is the *raison d'être* for our industry.

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- ▶ You might hope with the ever-expanding number of CFAs that analysts might actually understand and perhaps even use the basic tenets of Value. However, this appears to remain a heresy as far as professional analysts are concerned. In 1999, a survey revealed that only 3 out of 300 analysts ranked dividends as the most important input into their models. The same survey revealed that 70% of respondents thought that 'growth opportunities' were the single most important determinant of PEs. Perhaps most worrying of all, the single most important input into the buy/hold/sell decision was 'current price relative to historical trading range'!
- ▶ For those of us who think longer term, it would be nice to think that these disturbing findings were merely a reflection of the wider mania that was the investment landscape in 1999. However, our simple analysis of consensus analyst *current* recommendations and their characteristics, reveals something deeper behind the analysts' behaviour. In the US, the stocks most favoured by analysts tend to be expensive in terms of PE, price to sales, and price to cash flows (PCF). They tend to have very low dividend yields, and very high-expected growth rates. They also have high price momentum over the last 12 months.
- ▶ In fact, dividend yield has the wrong sign in a correlation analysis. As the yield rises so the analysts become less and less positive on the stock. Price momentum appears to be one of the strongest inputs into the analysts' recommendation structure. This tells us something about analysts' time horizons. Price momentum effects are generally found up to around the 12-18 month mark. Beyond that you tend to observe reversals. That is to say, at time horizons beyond 12 months, past losers start to outperform past winners (by 8% in year two on average between 1980-2005!)
- ▶ US analysts also ignore implicit earnings quality in their analysis. By having positive recommendations on stocks with high PEs and high PCFs, and negative recommendations on stocks with high PEs but low PCFs, they are ignoring the temporarily depressed nature of earnings (i.e. high earnings quality).
- ▶ A similar picture emerges from an investigation of European analyst recommendations. They too prefer expensive, low yielding, high momentum, growth stocks. All of this looks like glamour investing as far as I can see. High momentum expensive growth stocks are usually the market's darlings. Hence, analysts in pursuit of glamour and fame will be drawn to these stocks, like moths to a light. But perhaps investors would do better to remember that winners and losers reverse, and value investing has a long and proven track record. During the Japanese bull market the phrase "Only the fools are dancing, but the greater fools are watching", was popular. We prefer to watch, knowing the music will shortly stop.

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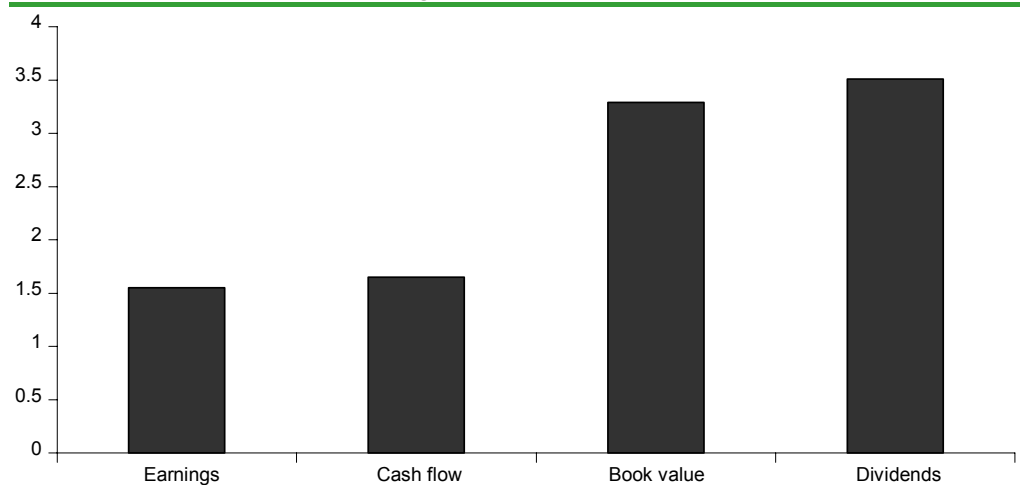
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Do analysts understand value?

You might hope, that given the ever-expanding number of CFAs, that analysts might actually understand and use the tenets of finance. However, all too often analyst recommendations seem to be simply a function of momentum (at least it makes a change from being a function of investment banking clients I suppose).

In 1999, Stanley Block¹⁸ surveyed financial analysts to uncover what they thought of finance and its theories. The results don't bode well for those that believe with an army of analysts everything worth knowing must be already imputed into market prices. For instance, Block asked analysts to rank various inputs in order of their importance. He found that analysts focused on earnings and cash flows, and that dividends were the least important element in their eyes. Only 3 out of the 300 respondents rated dividends as the most important input!

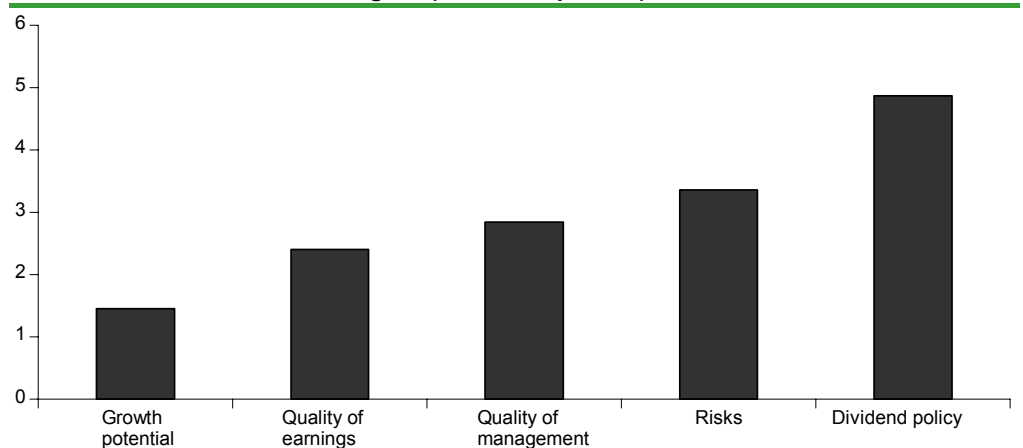
Inputs in order of importance (1= highest)



Source: Block (1999)

Block also asked which variables were of primary importance in determining the PE attached to a stock. As before only 1% of respondents said dividend policy was the most important factor. 93% of respondents actually said out of the five factors listed below dividend policy was the least important variable in determining the PE. Growth potential was seen as the single most important determinant of PE by analysts (with 70% holding such an opinion).

Rank of variables in determining PE (1=most important)

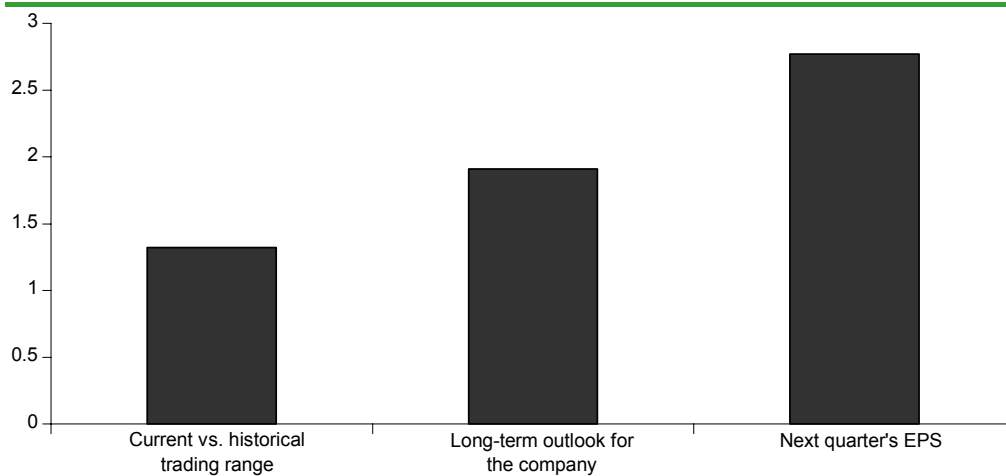


Source: Block (1999)

¹⁸ A study of financial analysts: practice and theory (1999) Stanley Block, Financial Analysts Journal July/August 1999

The final question of interest to us is the rank of variables in determining buy, hold and sell decisions from analysts. The most important input according to the survey respondents was the current price relative to the historical trading range!

Rank of variables in determining buy, hold and sell decisions (1=most important)



Source: Block (1999)

In the post-bubble world one might hypothesize that analysts would have re-focused on the primary driver of returns, dividends. A simple exercise can help to see if analysts have altered their opinions. Consensus recommendations can be translated into numeric terms as per the table below. We can then group stocks into deciles based around the average analyst view. The characteristics of stocks in each basket can then be examined.

Recommendations and numerics

| Recommendation | Numeric value |
|----------------|---------------|
| Buy | 5 |
| Add | 4 |
| Hold | 3 |
| Reduce | 2 |
| Sell | 1 |

Source: DrKW Macro research

The table below shows the results of such an analysis for the S&P500. Several things stand out from the table. Firstly, the optimistic bias of analysts shows up with the average rating on a stock being 3.5 (i.e. above a hold). Only in the bottom decile do we find stocks with an average recommendation of less than a hold (i.e. below 3).

Current characteristics of analysts views (S&P500)

| | Recommendation | PE | PB | DY | PS | PCF | LTG | Trailing returns |
|----------------|----------------|-------------|------------|------------|------------|-------------|-------------|------------------|
| | 4.2 | 26.7 | 4.0 | 1.1 | 2.8 | 16.7 | 15.6 | 25.2 |
| | 4.0 | 21.6 | 3.3 | 1.2 | 2.8 | 12.7 | 14.1 | 11.6 |
| | 3.9 | 20.9 | 2.9 | 1.1 | 2.1 | 11.7 | 12.7 | 19.7 |
| | 3.8 | 21.3 | 4.5 | 1.3 | 3.1 | 14.7 | 13.5 | 11.4 |
| | 3.7 | 20.9 | 3.9 | 1.2 | 2.4 | 18.5 | 13.2 | 11.4 |
| | 3.5 | 18.7 | 3.5 | 1.4 | 1.9 | 12.1 | 10.8 | 13.2 |
| | 3.4 | 18.7 | 3.2 | 2.0 | 2.0 | 12.8 | 10.5 | 8.9 |
| | 3.2 | 25.4 | 3.9 | 2.1 | 1.9 | 13.7 | 10.0 | 19.0 |
| | 3.0 | 23.7 | 5.1 | 1.9 | 1.9 | 11.7 | 10.5 | 11.3 |
| | 2.7 | 26.9 | 5.7 | 1.9 | 1.7 | 11.8 | 10.1 | -2.7 |
| Average | 3.5 | 22.5 | 4.0 | 1.5 | 2.3 | 13.7 | 12.1 | 12.9 |

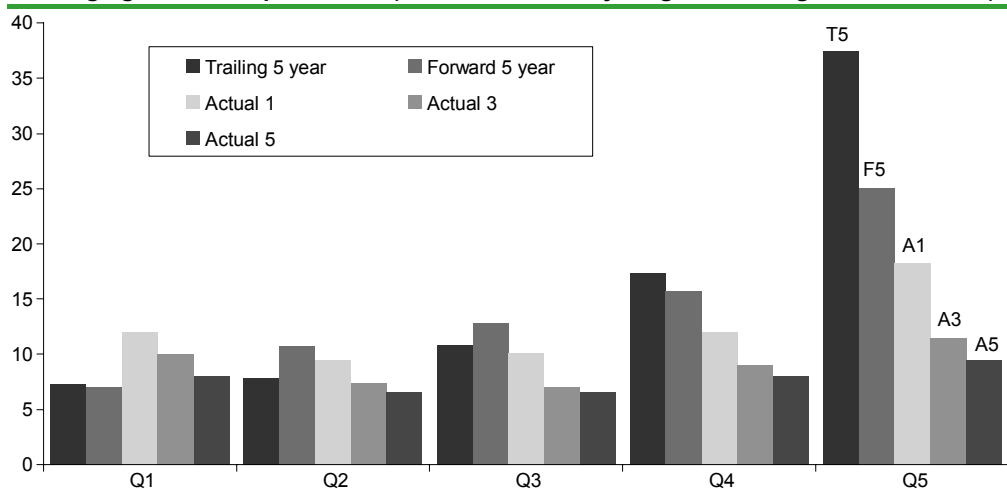
Source: Bloomberg, DrKW Macro research

Looking at the stocks the analysts favour most, we can see that they like expensive stocks in terms of PE, with very low dividend yields, high price to sales and very high price to cash flows. Their favoured stocks also have very high-expected long-term

earnings growth (LTG). Of course, this makes sense as the analysts make up the long-term growth numbers and the recommendations. Sadly, as we have shown many times before, the analysts aren't much good at forecasting which firms will have rapid long-term earnings growth. The chart below is one that we have used before but it bears repeating. It shows portfolios sorted into Quintiles, ranked on the basis of long-term earnings growth forecasts for consensus analysts (Q5 being the highest). The first bar shows the per annum growth rate in the five years prior to expectation formation (T5). It also traces out the compound earnings growth per annum in the 1,3 and 5 years following the forecasts.

The low growth portfolio (Q1) generates nearly as much future EPS growth (A5) as the high growth portfolio (Q5). In fact the biggest input into forecast long-term earnings growth seems to be past 5-year earnings growth. Isn't extrapolation a marvellous thing!

Earnings growth isn't persistent (Quintiles sorted by long-term EPS growth forecasts)



Source: DrKW Macro research and Chan et al

The other outstanding feature of analysts' strongest buy recommendations is that they have all done exceptionally well over the last 12 months (returns). It could appear that analysts are little more than fully paid up members of the momo tribe. Of course, this will be dressed up in a deep and meaningful(less?) discussion of the fundamentals, but the reality of the analyst as momentum investor should be clear from even a cursory glance at the table on page 3.

Of course, momentum is a feature of markets. And there are many studies showing that buying high momentum stocks is a perfectly reasonable strategy¹⁹. However, back in 1985 Thaler and DeBondt²⁰ showed that stocks that had done well over the past three years tended to reverse and do badly over the next three years, conversely those stocks that had a torrid time in the past three years started to outperform.

The top chart overleaf shows a typical winner/loser reversal pattern. It was constructed by **Rui Antunes** of our Quant team. We ranked our universe on the basis of the prior year's returns. The top 10% of the market based on past performance was put in one basket and its performance tracked over the next three years. The same process was repeated for each decile for each year from 1980 to 2005.

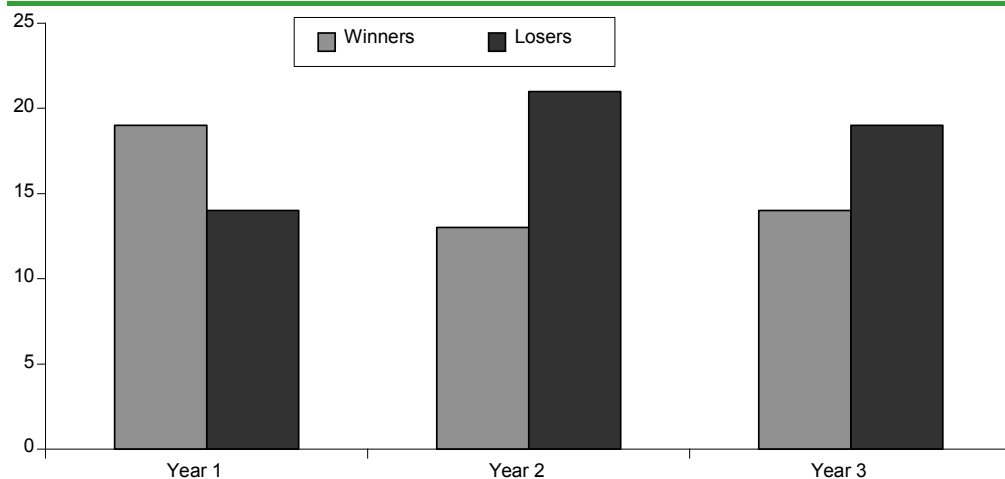
The chart shows the top ('winners') and bottom ('losers') deciles average return per year. Those stocks that have done well in the past ('winners') continue to do well in the first 12 months after the portfolios were formed. They beat both the average stock and the 'loser' portfolio by 5% (19% vs. 14%). This is of course the momentum effect referred to above.

¹⁹ See Griffin, Ji and Martin (2005) Global Momentum Strategies: A portfolio perspective, Journal of Portfolio Management for an excellent summary

²⁰ Thaler and DeBondt (1985) Does the stock market overreact? Journal of Finance, 40

However, the victory of the first year is soon undone. In year two, the 'loser' portfolio starts to outperform the 'winner' portfolio (21% vs. 13%). (Indeed the winner portfolio underperforms the market by 2% in year two as well). In year three the 'losers' continue to outperform. They beat the 'winners' by an average 5% and the market by an average 4%²¹ (the beginnings of the Thaler-DeBondt reversal pattern).

Winner/loser reversals (% p.a.)- Global equity market (1980-2005)



Source: DrKW Macro research

So the analysts' obsession with momentum reveals something about their time horizons. Just like the rest of the industry (see *Global Equity Strategy*, 7 June 2005) analysts are concentrating on short-term issues. The dependency of analyst recommendations upon momentum does beg the question why analysts produce so much research if what they seem to be doing is following price and chasing one year returns.

Looking at the stocks that analysts would actually reduce reveals that they are expensive in terms of PE but have a pretty good dividend yield. They are cheap on price to sales and cheap on price to cash flow. They have low expected long-term earnings growth and have seen poor momentum over the last 12 months.

By comparing the recommendations based on PEs with those based on cash flows we can see if analysts exploit the 'accruals' trade. It would appear that analysts prefer stocks that are expensive on both a PE and a PCF basis! In contrast, they seem willing to sell stocks that have high PEs but low PCFs. This suggests that analysts get carried away with cyclically depressed earnings, whilst ignoring solid cash flows. This isn't a good idea. Houge and Loughran²² show that stocks with low earnings but high cash flows (analysts' sells) outperform stocks with high earnings and low cash flows (analysts' favourites) by around 16% p.a!

The correlations below summarise much of the discussion above. Analyst recommendations seem to be inversely correlated to the dividend yield, at least PE and PB have the right sign! Price to Sales and Price to Cash flow both have the wrong sign, like dividend yield. In summary it would be safe to say that analysts' preferred stocks are expensive, high momentum growth stocks.

²¹ We also ran a version based on ranking the deciles on the basis of past three year returns as per Thaler and DeBondt. The results are stunning. The 'losers' outperformed the 'winners' by 7%, 13%, 7% in years one, two and three respectively! We will write this up in a future weekly.

²² Houge and Loughran (2000) Cash flow is king: Cognitive errors by investors, *Journal of Psychology and Financial Markets*

Correlation with recommendations

| Variable | Correlation |
|----------|-------------|
| PE | -0.28 |
| PB | -0.66 |
| DY | -0.83 |
| PS | 0.78 |
| PCF | 0.43 |
| LTG | 0.89 |
| RETURNS | 0.70 |

Source: Bloomberg, DrKW Macro research

Does the same pattern of findings hold true for the European universe? The table below reveals the situation for European analysts with the DJ Stoxx 600 as the universe. Once again the tendency towards optimism is apparent, the average rating for a stock is once again 3.5 (above a hold).

Look at the stocks where the analysts have the highest recommendations. They have above average PEs, well below average dividend yields, above average price to sales and price to cash flow ratios, high long-term earnings growth expectations and strong momentum over the last 12 months. So European analysts like their US counterparts prefer expensive, low yielding, high momentum growth stocks.

DJ Stoxx 600 current recommendation deciles

| | Recommendation | PE | PB | DY | PS | PCF | LTG | Trailing returns |
|----------------|----------------|-------------|------------|------------|------------|-------------|------------|------------------|
| | 4.3 | 26.2 | 3.0 | 2.3 | 3.8 | 15.6 | 10.5 | 31.9 |
| | 4.1 | 24.7 | 3.7 | 2.6 | 1.7 | 12.2 | 11.1 | 12.2 |
| | 3.9 | 22.6 | 4.3 | 2.2 | 2.6 | 19.0 | 12.0 | 19.0 |
| | 3.7 | 32.9 | 3.1 | 2.4 | 2.3 | 13.0 | 10.2 | 13.0 |
| | 3.6 | 18.3 | 3.0 | 2.5 | 2.0 | 13.4 | 9.7 | 13.4 |
| | 3.4 | 19.4 | 3.4 | 2.4 | 1.8 | 11.1 | 11.0 | 11.1 |
| | 3.2 | 18.6 | 2.9 | 3.3 | 1.7 | 14.2 | 7.6 | 14.2 |
| | 3.1 | 22.7 | 2.5 | 3.4 | 1.9 | 14.3 | 7.3 | 14.3 |
| | 2.9 | 37.7 | 2.6 | 3.4 | 1.9 | 13.5 | 8.6 | 13.5 |
| | 2.4 | 25.3 | 3.5 | 3.2 | 4.0 | 18.6 | 9.0 | 18.6 |
| Average | 3.5 | 24.8 | 3.2 | 2.8 | 2.4 | 14.5 | 9.7 | 16.1 |

Source: Bloomberg, DrKW Macro research

Looking at the analysts' least favoured stocks, we find stocks with above average PEs, above average dividend yields, above average price to cash flows, and low long-term earnings growth expectations.

The table below shows the correlations between the various variables and the analysts' recommendations. Dividend yield has the wrong sign, that is analysts seem to strongly prefer low dividend yield stocks to higher yielding stocks. Like the US long-term growth forecasts play an important role in determining recommendations, although momentum isn't as important to European analysts as it is to US analysts.

Correlation with recommendations

| Variable | Correlations |
|----------|--------------|
| PE | -0.12 |
| PB | 0.35 |
| DY | -0.79 |
| PS | -0.04 |
| PCF | -0.17 |
| LTG | 0.67 |
| RETURNS | 0.38 |

Source: Bloomberg, DrKW Macro research

It seems that most analysts pay scant attention to such matters as valuation or dividends in constructing their recommendations. Instead they seem intent on buying expensive momentum growth stocks. Each to their own I guess!

The illusion of knowledge

Sin 2

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Global Equity Strategy

The illusion of knowledge or Is more information better information?

The amount of information that assails us on a daily basis is truly staggering. Unfortunately, we tend to equate information with knowledge. Sadly the two are often very different beasts. We also tend to labour under the misapprehension that more information is the same as better information. Experimental evidence suggests that often where information is concerned less is more!

- ▶ The traditional view holds that more information is always preferably to less. After all, the argument goes, if the information is useless it will be ignored. However, implicit within this viewpoint is an assumption that we are all supercomputers who can deal with the seemingly endless torrent of informational deluge.
- ▶ However, we aren't idealised supercomputers. Instead we have only limited capacity to process information. Despite our obvious cognitive constraints, many investors persist in believing that in order to outperform they need to know more than everyone else. Hence they get caught up trying to know absolutely everything there is to know about a stock before investing.
- ▶ Numerous studies have shown that increasing information leads to increased overconfidence rather than increased accuracy. For instance, *Slovic* asked bookmakers to select information they would like to know in order to work out the odds on a horse race. They were then given increasing amount of information and asked for their prediction and their confidence in those predictions. Whilst accuracy was pretty much a flat line regardless of information, confidence was strongly increased with the amount of information. So all that happened was the extra information made the bookies more and more overconfident without improving their performance at all.
- ▶ Information can actually be detrimental to decision-making. *Handzic* set participants a challenge to estimate the demand for ice cream the next day given either one useful signal or three useful signals. The group with three signals were less efficient in processing the information, and made worst forecasts!
- ▶ *Davis et al* asked people to forecast fourth quarter earnings based on the last three quarters EPS, net sales and stock prices (the base line), or the baseline plus some extra information (which in some cases was useful, in others it was irrelevant/redundant). Just the presence of extra information (be it useful or not) was enough to significantly increase the error rate of forecasts. As with many of the other studies discussed here, more information led to increased confidence; with redundant information increasing confidence above the baseline, and relevant information leading to a marked increase in confidence over irrelevant information. In all cases, subjects displayed massive overconfidence.
- ▶ All of these studies suggest that rather than obsessing with the bewildering informational fusion of news and noise, we should concentrate on a few key elements in stock selection, i.e. what are the five most important things we should know about any stock we are about to invest in? Of course, if I knew the answer I would have retired long ago!

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The illusion of knowledge or Is more information better information?

Regular readers will know that I have a penchant for quoting ancient Asian seers. This week's words of wisdom come from Confucius, who stated "To know that we know what we know, and that to know we do not know what we do not know, that is true knowledge". For those who prefer more modern quotations then Daniel J. Boorstin's view that "The greatest obstacle to discovery is not ignorance – it is the illusion of knowledge" will suffice.

In last week's note I observed that the behaviour of many investors is consistent with a belief in the efficient market hypothesis (EMH). That is to say, that many investors seem to believe that they need to know more than everyone else in order to outperform the market. This is related to EMH because under EMH the only way to beat the market is to know something that isn't embodied in prices. So they spend their days in what I have previously described as the futile quest for edge. That is, reading, learning and researching absolutely everything there is to know about the firm they are about to invest in, in the belief that information edge will lead to outperformance.

This is generally part of a larger body of thinking that has its roots in economics, which is that more is always preferred to less (for a normal good). To most who have trained in economics, more choice is always preferable to less choice, and more information is always better than less information. After all, the economists argue, if the information is useless then people will simply ignore it.

At first glance this may well seem like a reasonable proposition. However, the key question must surely be: Is it true empirically? Is more information equivalent to better information? Are the cognitive constraints inherent in our brains binding?

The first person to study this conundrum was Oskamp²³ way back in 1965. Oskamp set up a profile of a young man (Joseph Kidd) who was seeking clinical psychological help. In the first stage the psychologists were given just a very brief demographic based analysis of Kidd. They were told he was 29 years old, white, unmarried, a veteran of World War II. They were also informed he was a college graduate who now works as a business assistant in a floral decorating studio.

At the end of each presentation of material the psychologists had to answer questions on Kidd's behavioural patterns, attitudes, interests and typical reactions to real life events. Stage I was deliberately minimal to establish a base rate to compare later stages with.

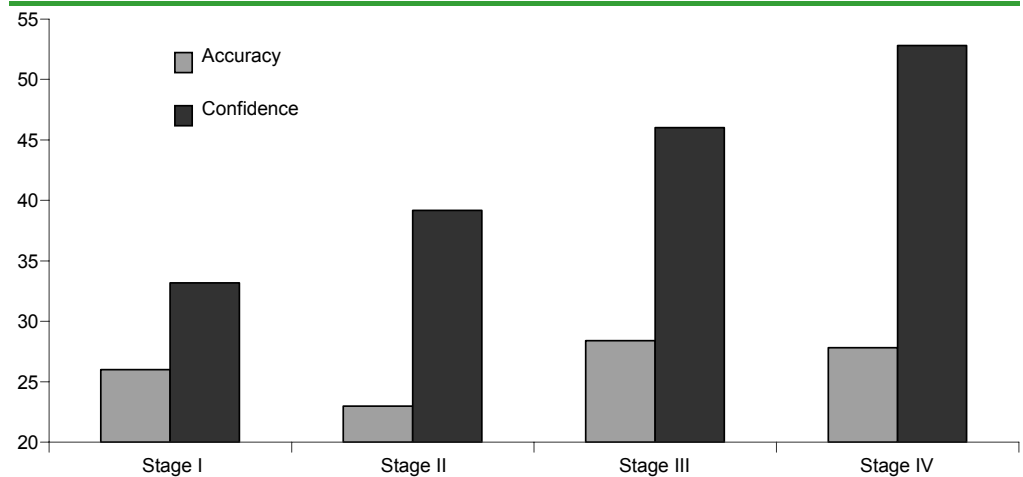
Stage II added 1 ½ pages of information about Kidd's childhood through to the age of 12. Stage III was 2 pages on his high school and college experiences. The final stage of information covered his army service and later life up to the present day.

The chart below shows the impact of increasing information on accuracy and self-reported confidence amongst the psychologists. As Oskamp notes "No judge ever reached 50% accuracy and the average final accuracy was less than 28%, where chance was 20%."

Despite the fact that accuracy only increases marginally as the information increases, look what happens to the confidence measures. They explode from an average 33% in Stage I to an average 53% in Stage IV.

²³ Oskamp (1965) Overconfidence in case-study judgements, The Journal of Consulting Psychology, 29

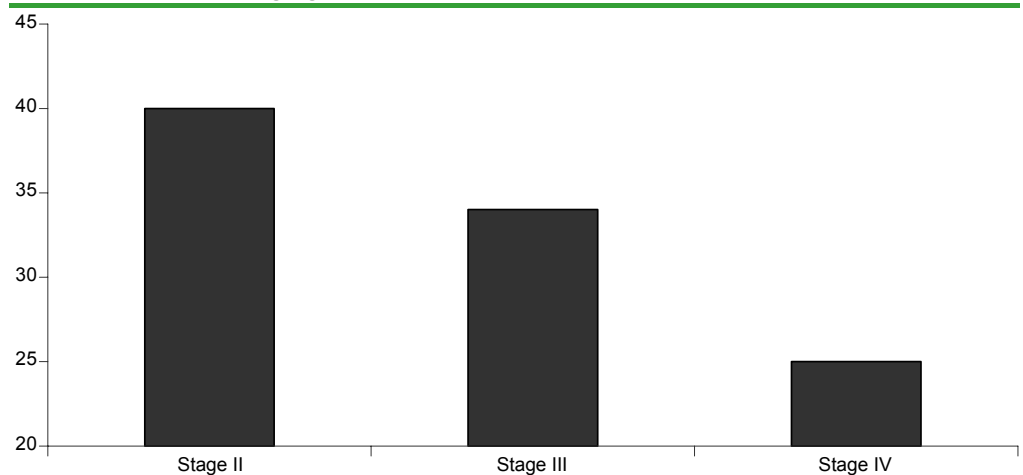
Accuracy and confidence (%)



Source: Adapted from Oskamp

Oskamp also monitored the number of psychologists who changed their minds at each stage. He found that as the amount of information increased, so the number of participants changing their minds dropped! From 40% in stage II to just 25% in stage IV. As Oskamp notes the psychologists **“May frequently have formed stereotype conclusions rather firmly from their first fragmentary information and then been reluctant to change their conclusions as they received new information”**.

% of participants changing their minds each round



Source: Adapted from Oskamp

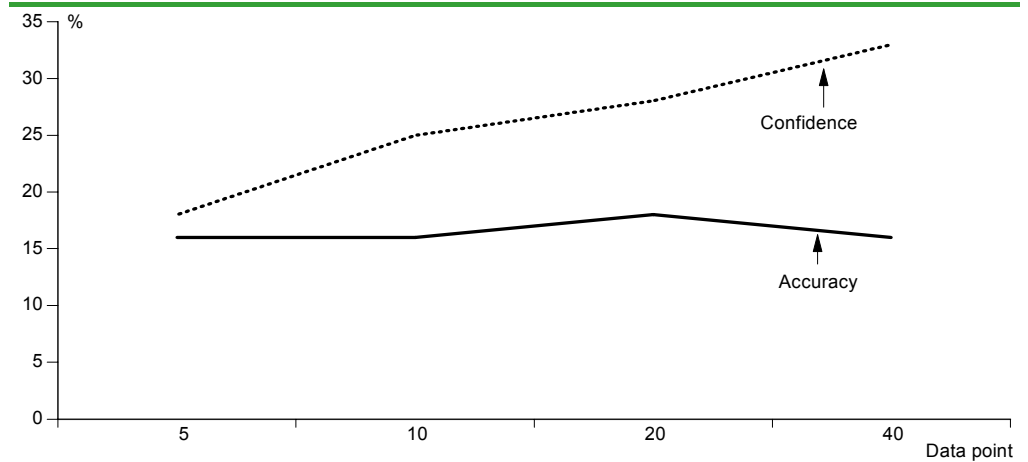
Oskamp's findings were confirmed in a very different setting by work by Paul Slovic²⁴. Eight experienced bookmakers were shown a list of 88 variables found on a typical past performance chart on a horse, e.g. the weight to be carried, the number of races won, the performance in different conditions, etc. Each bookmaker was then asked to rank the pieces of information by importance.

Having done this, the bookmakers were then given data for 40 past races and asked to rank the top five horses in each race. Each bookmaker was given the past data in increments of the 5, 10, 20 and 40 variables he had selected as most important. Hence each bookmaker predicted the outcome of each race four times – once for each of the information sets. For each prediction the bookmakers were asked to give a degree of confidence ranking in their forecast.

²⁴ Slovic (1973) Behavioral problems adhering to a decision policy, unpublished paper

The chart below shows how both accuracy and confidence change as the information set grows over time. Accuracy is pretty much a flat line regardless of the amount of information the bookmakers had at their disposal!

Accuracy vs. confidence for bookmakers as a function of the information set



Source: Slovic (1973)

However, look what happened to the bookmakers' confidence. It soared as the information set increased. With five pieces of information, accuracy and confidence were quite closely related. However, by the time 40 pieces of information were being used, accuracy was still exactly the same, but confidence has soared to over 30%! **So more information isn't better information, it is what you do with it rather than how much you can get that truly matters.**

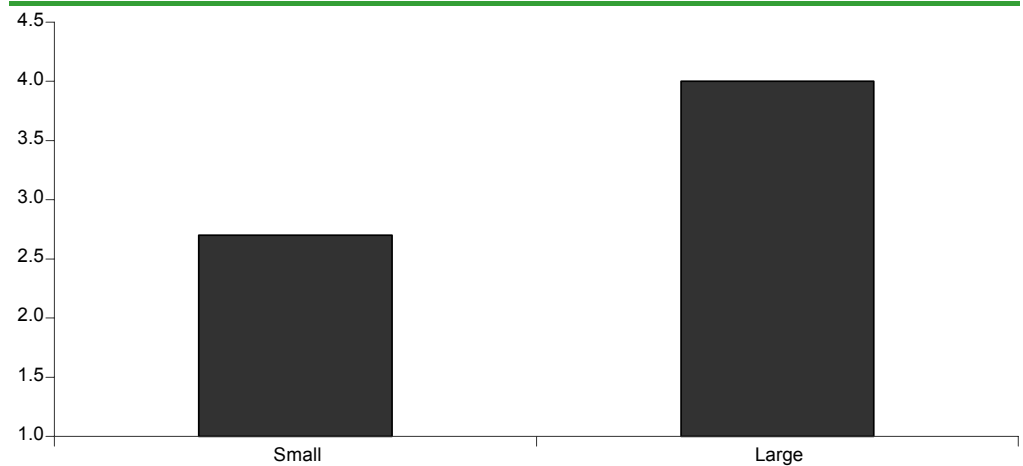
Two other experiments are worth bringing in at this stage. The first comes from work by Meliha Handzic²⁵. She set an experimental task in which the objective was to make optimal production targets. She created an imaginary dairy firm supplying ice cream to an outlet at Bondi Beach. Participants took on the role of production manager at the dairy firm. They were told that underestimating and overestimating demand incurred equal costs (through loss of market to other outlets, or through spoilt product respectively). The goal was to try and minimise the costs incurred by incorrect production decisions.

At the end of each day, participants were asked to set production quotas for ice cream to be sold the next day. In order to help them with their decisions they were given either one piece of information or three pieces of information. After discussing with actual ice cream vendors on Bondi Beach the factors identified as critical were the ambient air temperature, the amount of sunshine and the number of visitors. All these cues were deemed to be equally reliable in predicting the daily product demand. Participants were split into two groups; the only difference between the groups was the amount of information they received.

Handzic constructed two measures of performance. Firstly, processing efficiency (ROE) which was measured as an individual's error relative to the optimal error, where the optimal error was the result of a regression equation using the three informational cues. A ROE of 1 indicated an individual behaved in exactly the same way as the optimal regression model, a score above indicates suboptimal information processing efficiency.

The chart below shows the ROE scores for the two groups. The group that received more information actually performed far worse than the group who received only one item of information. So in terms of information processing, more information certainly hampered decision-making.

²⁵ Handzic (2001) Does more information lead to better informing? Informing Science, Challenges to Informing Clients: A transdisciplinary approach

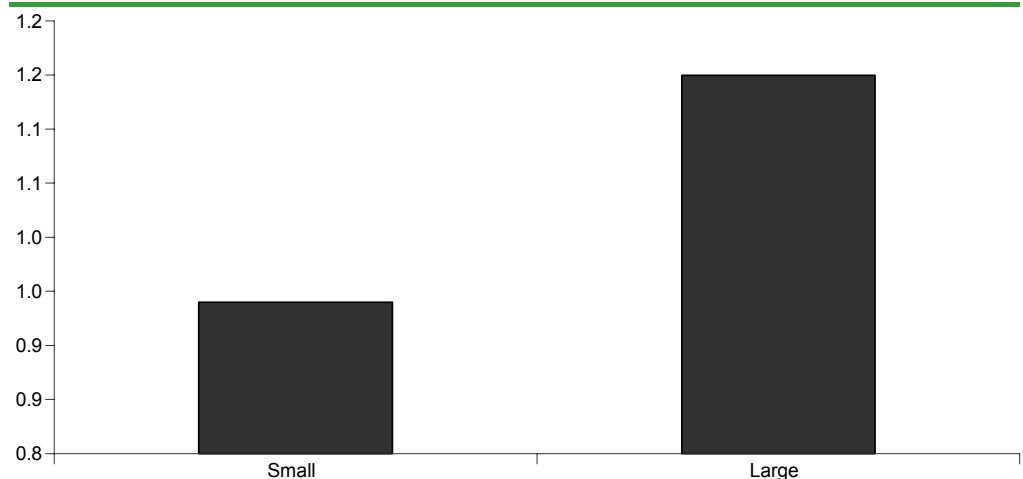
Processing efficiency (ROE) 1 = optimal, >1 sub-optimal

Source: Adapted from Handzic (2001)

The other performance measure that Handzic used was decision accuracy (RNE), defined as the ratio of the absolute error in an individual's decision relative to the corresponding error from a simple naïve (random walk) prediction that the best guess of today's quota was yesterday's actual sales outturn. Because such models ignore all contextual information they usually perform poorly.

A RNE score of 1 indicates that individuals match the performance of the naïve model, indicating no improvement, whilst scores lower than one indicate an improvement relative to the naïve model. The chart below shows the average RNE scores for each group.

The group with only one informational cue managed to produce a marginal improvement on a simple random walk. However, the group with all the information actually managed to significantly underperform the random walk, and the group with less information!

Decision accuracy (RNE, 1 indicates random walk, <1 improvement on random walk)

Source: Adapted from Handzic (2001)

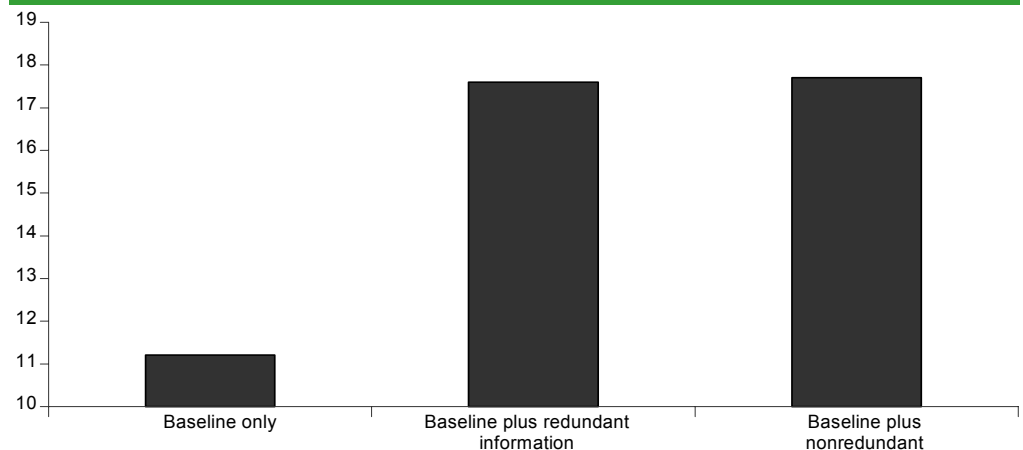
The final study I would like to draw to your attention is from Davis et al.²⁶. This study is particularly relevant to finance as it concerns the impact of information on earnings forecasts. Davis et al.'s guinea pigs were students on an MBA course on advanced financial statement analysis, most had worked in the industry prior to taking their MBAs. The task they were given was to forecast fourth quarter earnings for various different firms. In fact, there were 15 firms, but each firm was presented in one of three different information formats. The information formats were (i) baseline data consisting of the past three quarters of EPS, net sales and stock price; (ii) baseline data plus redundant or

²⁶ Davis, Lohse and Kottemann (1994) Harmful effects of seemingly helpful information on forecasts of stock earnings, *Journal of Economic Psychology*, 15

irrelevant information, ie information that was already embodied in the baseline data such as the PE ratio; (iii) baseline data plus non-redundant information which should have improved forecasting ability such as the dividend was increased. None of the participants realised that they had seen the same company in three different formats, perhaps because each presentation was separated by at least seven other profiles.

Each respondent was not only asked for their forecast but also for their confidence in their forecast. The chart below shows the mean square error $((\text{forecast} - \text{actual})^2 / \text{actual})$ as a measure of accuracy. **Both redundant and non-redundant information significantly increased forecast error!**

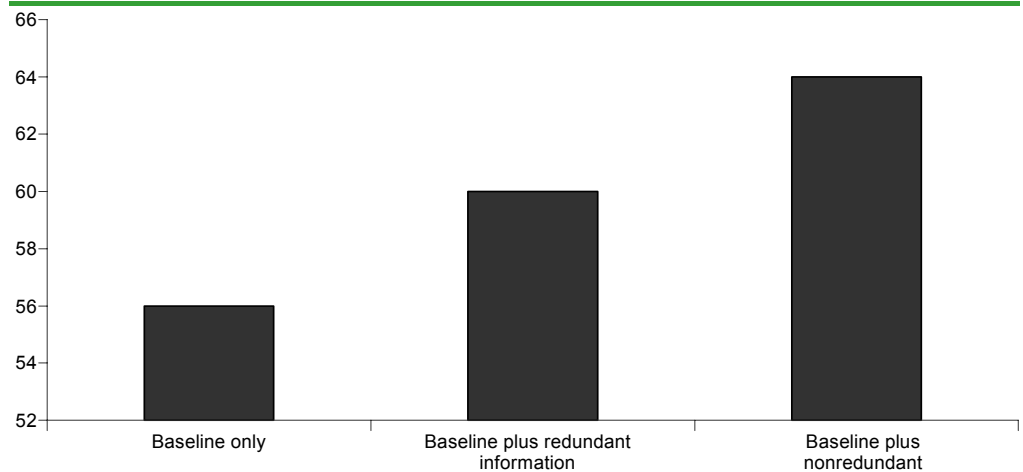
Mean square error of forecast



Source: adapted from Davis et al (1994)

The chart below shows the self-reported confidence ratings for each of the conditions. Davis et al found that redundant information led to a significant increase in confidence over and above the baseline information, and non-redundant information led to a marked increase over redundant information.

Confidence as a function of information (%)



Source: adapted from Davis et al (1994)

The amount of information that assails us on a daily basis is truly staggering. Noise and news have fused together in a bewildering deluge of data. Rather than obsessing about every piece of information that crosses our screens, we should attempt to avoid being sucked into the mire of emails, voicemails and other wild goose chases. Instead we should devote time to working out what we should really be looking at. What are the five most important things we should know about any stock we are about to invest in? Of course, if I knew the answer I would have retired a long time ago! A hint might be that spending hours in meeting companies to gather information, may not be the best use of your time!

Meeting companies

Sin 3

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Global Equity Strategy

Why waste your time listening to company management?

Why does meeting companies hold such an important place in the investment process of many fund managers? Is it because they provide deep insights into why we should invest in them? Or is it because we need to fill our time with something that makes us look busy? We outline five psychological reasons why meeting company management could well be a complete waste of time.

- ▶ The first of the reasons is simply that much of the information provided by companies is noise. We are already suffering informational deluge, so why add to the burden? As we noted last week, more information isn't equivalent to better information. Yet the primary reason for seeing companies seems to be collect more of it! All too often more information simply translates into increased confidence, rather than better investment performance, but of course, this won't stop people trying to gain what they mistakenly think is an informational edge.
- ▶ Secondly, corporate managers are just as likely as the rest of us to suffer from cognitive illusions. Corporate managers display just as much over-optimism and over-confidence as anyone else. For instance, the Duke University CFO survey reveals that managers are always more optimistic about the outlook for their firm than they are the economy as a whole.
- ▶ Thirdly, we tend to suffer from confirmatory bias. That is a habit of only looking for information that agrees with us, and interpreting all information as supportive of our base case, even if it clearly isn't. So rather than asking probing questions that look to disconfirm the base case, we tend to end up asking leading questions that support our original viewpoint. This tendency is exacerbated by the fact that company management tend to tell you what you want to hear. When was the last time a company turned up at your office and said they were a disaster and you should stay well clear?
- ▶ The fourth hurdle is our innate tendency to obey figures of authority. *Stanley Milgram* has clearly shown we will obey orders if they come from someone who has even the pretence of power, even if they involve hurting someone else. Company managers are often seen as being at the pinnacle of their profession hence it is easy to imagine situations where analysts and fund managers find themselves effectively over awed.
- ▶ The final psychological barrier to making company meetings useful is that we are simply lousy at telling deception from the truth. We perform roughly in line with pure chance; despite the fact we all think we are excellent at spotting deception. For instance, if you are talking to a manager who couldn't look you in the eye, and fidgeted throughout the meeting, and kept correcting himself, you might well think he was hiding something. Unfortunately none of these signs are useful cues in spotting liars.
- ▶ Given the large number of psychological hurdles and the difficulties entailed in overcoming most of them, it would seem improbable that company meetings really add value that so many investors seem to think they do. Indeed, one top performing European fund manager of our acquaintance actively eschews company meetings! A lesson for us all perhaps?

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Why waste time listening to company management?

This is the sixth in a series of notes I have written as assaults or a behaviouralist critique (if you prefer) on the way in which the 'average' fund management house goes about its business. The other five cover the lunacy of short time horizons, the folly of forecasting, the obsession with noise, the difficulty of being just one step ahead of everyone else, and the dangers of running decision making by groups (see *Global Equity Strategy*, 7 June 2005, 24 August 2005, 31 August 2005, 17 February 2004, 9 September 2004 respectively).

This note turns on another aspect of the standard approach to fund management that strikes me as largely a waste of time. The subject of my vitriolic diatribe is obvious from the title above, but why do investors spend so long meeting and talking to companies? (Let alone actually paying investment banks to bring companies around to see them!)

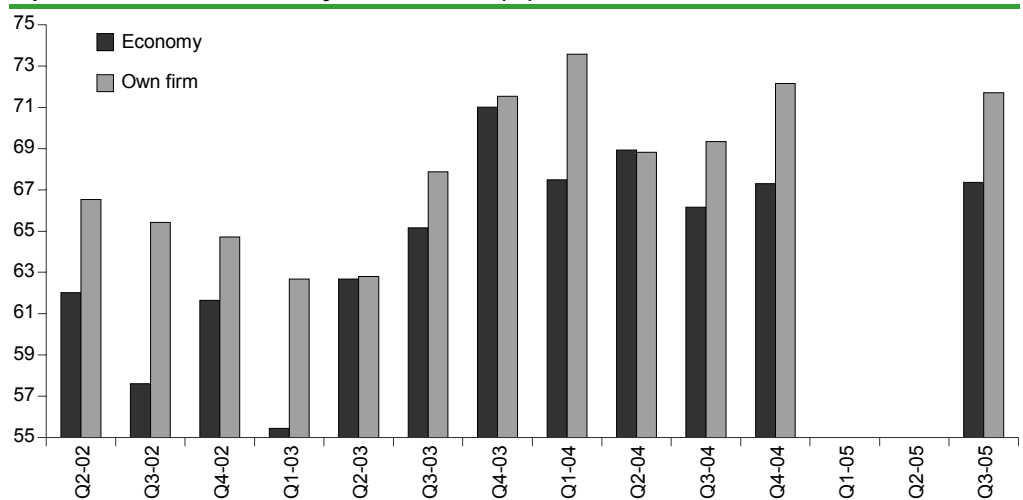
The most obvious answer is that companies provide information to investors. There are two issues here. Firstly, as we explored last week, more information is often not an aid to better decision-making, very often it just results in overload. Secondly, are the managers of companies any better than the rest of us when it comes to behavioural biases?

Managers are just as biased as the rest of us

The data shows that corporate managers are just as likely as the rest of us to display behavioural biases. A great source of information on management views is the Duke Survey of CFOs (see www.cfosurvey.org for details). This survey is carried every quarter and covers around 500 of Americas major companies. The average firm in the sample has sales revenue of \$2309mn, and roughly half of the companies are listed.

Each quarter these CFOs are asked a variety of questions. Many of which are pertinent to our discussion here. For instance, they have regularly been asked to say how optimistic they were on both the economy and their own firms (with 100% being maximum bullish). The chart below shows the percentage optimism that was expressed. **In every case, managers were more optimistic about their own company than they were about the economy as a whole!** This is a classic case of illusion of control driving overconfidence.

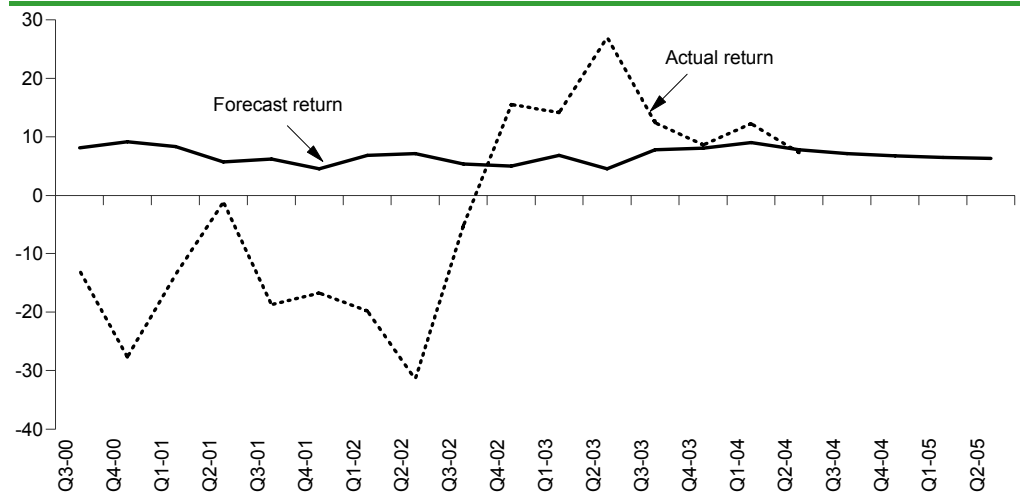
Optimism over the economy and own firm (%)



Source: Duke survey

An alternative measure of managers over-optimism is provided in a new paper by *Graham and Harvey*²⁷. They use the Duke survey but focus on corporate managers one-year ahead forecasts of equity returns and track how their forecasts stack up against actual outturns. **Just like everyone else, corporate managers turn out to be overoptimistic. At a one-year time horizon they are around about 10% too optimistic.**

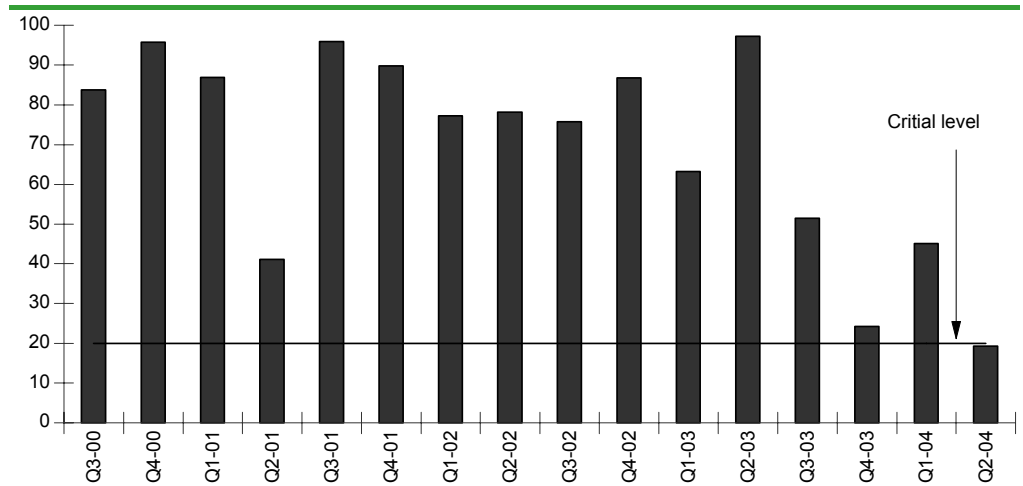
Corporate managers market expectations and outturns – over-optimistic



Source: Duke survey

Graham and Harvey also use the survey to investigate managers overconfidence with regard to their estimates, because not only are the managers asked to provide forecasts, they are also asked to provide 80% confidence intervals. The chart below shows the percentage of time that the actual outturn was outside the intervals provided. **Only a mere 30.5% of the time were the actual returns within the managers 80% confidence intervals.** So just like everyone else, corporate managers are also overconfident.

% of returns outside the 80% confidence intervals



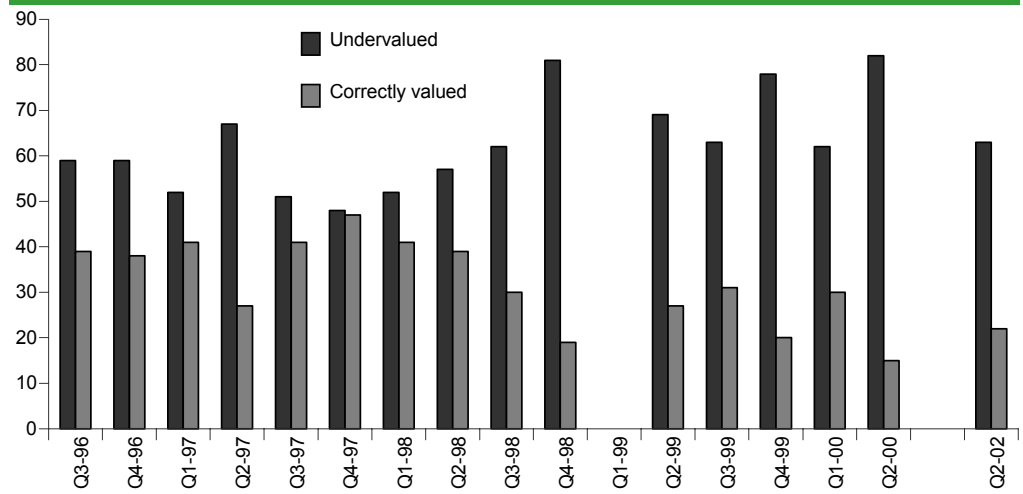
Source: Duke survey

An alternative perspective on overconfidence is also provided in the Duke survey. In the early days of the survey CFOs were asked if they thought their stock was undervalued by the market. **On average 63% of CFOs thought they stock was undervalued, and 32% thought their stocks were correctly valued!**

²⁷ Graham and Harvey (2005) Expectations, optimism and overconfidence, unpublished paper

Most amusing of all was Graham and Harvey's examination of tech CFOs views of their stock. At the peak of the bubble nearly 90% of tech CFOs thought their stock was undervalued!

% of CFOs who think they stock is undervalued or correctly valued



Source: Duke survey

Of course, you may retort that you don't care what the CFO says about the market, you care what they say about the firm. Fair enough, but here too there are problems. The table below was constructed a few years ago by our Japanese consultant, **Peter Tasker**. It shows the management forecasts for earnings growth of their firms against the actual outturn. As Peter so aptly called the exhibit – guidance is useless!

Guidance is useless! - recurring profits vs outcomes

| Date of estimate | Year to | Estimated profits A | Outcome B | Reality gap B-A |
|------------------|---------|---------------------|-----------|-----------------|
| Mar-91 | Mar-92 | 3.2 | -20.3 | -23.5 |
| Mar-92 | Mar-93 | -0.1 | -23.9 | -23.8 |
| Mar-93 | Mar-94 | 11.6 | -20.7 | -32.3 |
| Mar-94 | Mar-95 | 0.5 | 17.1 | 16.6 |
| Mar-95 | Mar-96 | 17.4 | 25.5 | 8.1 |
| Feb-96 | Mar-97 | 17.3 | 25.1 | 7.8 |
| Mar-97 | Mar-98 | 13.6 | -7.9 | -21.5 |
| Feb-98 | Mar-99 | 6.6 | -32.0 | -38.6 |
| Mar-99 | Mar-00 | 25.6 | 18.4 | -7.2 |
| Mar-00 | Mar-01 | 29.2 | 48.3 | 19.1 |
| Mar-01 | Mar-02 | 5.8 | -56.9 | -62.7 |
| Mar-02 | Mar-03 | 101.7 | 102.4 | 0.7 |
| Mar-03 | Mar-04 | 16.8 | 31.3 | 14.5 |
| Mar-04 | Mar-05 | 15.3 | 24.5 | 9.2 |

Source: Nikkei, DrKW Macro research

Ok, let's assume that you took my note on the folly of forecasting to heart, and that you promise to eschew listening to and using any forecasts, and that you are prepared to take everything managers say with a large pinch of salt because they are overoptimistic and overconfident, are you then safe to meet with company management?

Confirmatory bias and biased assimilation

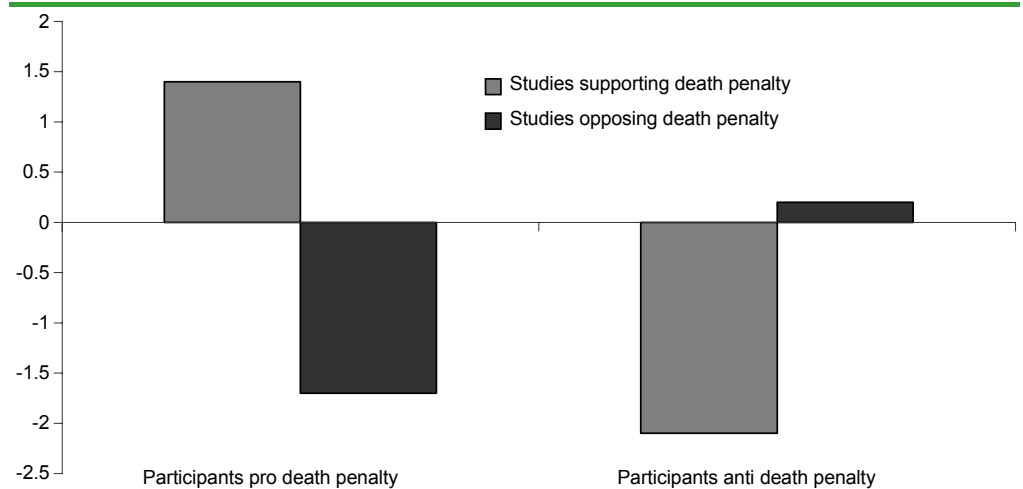
Sadly the answer is probably not. There are several more hurdles to overcome. Firstly, there is **confirmatory bias**. This is the unfortunate habit we have of **only looking for information that happens to agree with our current view**. Time after time, people have been shown to commit biased assimilation. That is not only looking for information that agrees with them, but also **seeing pretty much all information as consistent with their prior beliefs**.

The classic example of biased assimilation comes from *Leeper, Lord and Ross*²⁸. They asked 151 undergraduates to complete a questionnaire dealing with capital punishment. 48 of these students were then selected for a further experiment. 24 of the group were pro capital punishment, and 24 anti the death sentence. Subjects were then asked to read randomly selected studies on the deterrent efficacy of the death sentence (and criticisms of those studies). Subjects were asked to rate the studies in terms of the impact they had had on their views on capital punishment and deterrence.

The chart below shows that all those who started with a pro death sentence stance thought the studies that supported capital punishment were well argued, sound and important. They also thought that the studies that argued against the death penalty were all deeply flawed. Those who held the opposite point of view at the outset reached exactly the opposite conclusion.

As Lord et al concluded, "Asked for their final attitudes relative to the experiments start, proponents reported they were more in favour of capital punishment, whereas opponents reported that they were less in favour of capital punishment."

Biased assimilation: ratings of capital punishment studies (scale -5 to +5)



Source: Leeper, Lord and Ross (1979)

*Westen et al*²⁹ conduct a series of investigations into biased assimilation in the context of political viewpoints. For instance, in an experiment completed just ahead of the presidential election, the participants were told a soldier at Abu Ghraib prison was charged with torturing prisoners. He wanted the right to subpoena senior administration officials. He claimed he'd been informed the administration had suspended the Geneva Conventions.

Westen et al gave different people different amounts of evidence supporting his claims. For some, the evidence was minimal; for others, it was overwhelming. Westen et al found that the evidence barely mattered at all. 84% of the time, they could predict whether people believed the evidence was sufficient to subpoena Donald Rumsfeld based on just three things: the extent to which they liked Republicans, the extent to which they liked the US military, and the extent to which they liked human rights groups like Amnesty International. Adding the evidence into the equation allowed them to increase the prediction from 84% to 85%.

²⁸ Leeper, Lord and Ross (1979) Biased assimilation and attitude polarization: The effects of prior theories on subsequently considered evidence, *Journal of Personality and Social Psychology*, XXXVII

²⁹ Westen, Blagov, Feit, Arkowitz and Thagard (2004) When reason and passions collide: emotional constraint satisfaction in motivated political reasoning, unpublished paper

Westen et al also use several real time, real situation examinations. For instance, at the time of the Clinton-Lewinsky scandal just after the point at which Lewinsky has testified before a grand jury, Westen et al asked people whether they thought the President had obstructed justice. The only two significant predictors of their judgements were whether they liked Clinton, and whether they were Democrats!

Of course, both the death sentence and politics are emotionally charged events. Has such behaviour been documented in less emotionally fraught situations? Strangely enough the answer is yes.

For example, *Carlson and Russo*³⁰ investigate whether jurors' suffer biased assimilation in mock trial situations. They explore what they call predecisional distortion, which is the biased interpretation, and evaluation of new information to support whichever alternative is currently leading during a decision process.

They run two sets of tests: one using students, the other using real jurors. Both groups are asked to assess both a civil case and criminal case. They are given seven sections of information. The first is a background statement concerning the nature of the case.

In the civil case test, the lawsuit was brought by the grandmother of a teenage accident victim against the owner of the company that had built the porch on which the accident occurred. In the criminal version, the case was a pre-trial hearing on the admissibility of cocaine seized during the search of a car.

Following the background information participants were given six witness affidavits to evaluate. After each piece of information had been presented, people were asked three questions. The first was to rate on a nine-point scale how much the information supported the plaintiff. The second question asked which party was in the lead. The third question recorded the participant's confidence that the current leader would eventually win the race.

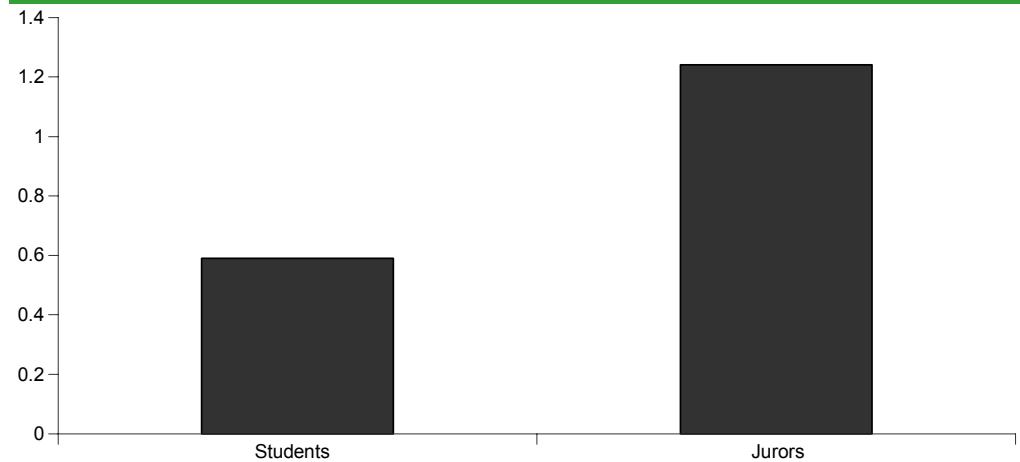
Before they were given any of the information, all participants were shown a video designed to introduce jurors to the legal process. It explicitly mentioned that forming conclusions before hearing all the evidence was to be avoided at least three times.

Each affidavit is presented in each possible ordering sequence an equal number of times across the experiments. This allowed Carlson and Russo to construct a simple measure of information distortion. For each witness statement they found someone who favoured each side in the case and averaged their score to give a so-called leader-free value on the nine-point scale mentioned earlier. Then each individual's response was evaluated as a deviation from this leader-free value. If the score deviated in a way that favoured the individual's belief in the leading verdict then it was scored as +1, and if it favoured the trailing verdict it was scored -1.

The chart below shows the mean level of information distortion amongst the students and the mock jurors. Both are statistically significantly different from zero, so both groups were **guilty of distorting the information presented so that it favoured the current leading view**. In fact the jurors exhibited about twice the magnitude of the students distortion!

³⁰ Carlson and Russo (2001) Biased interpretation of evidence by mock jurors, *Journal of Experimental Psychology: Applied*, 7

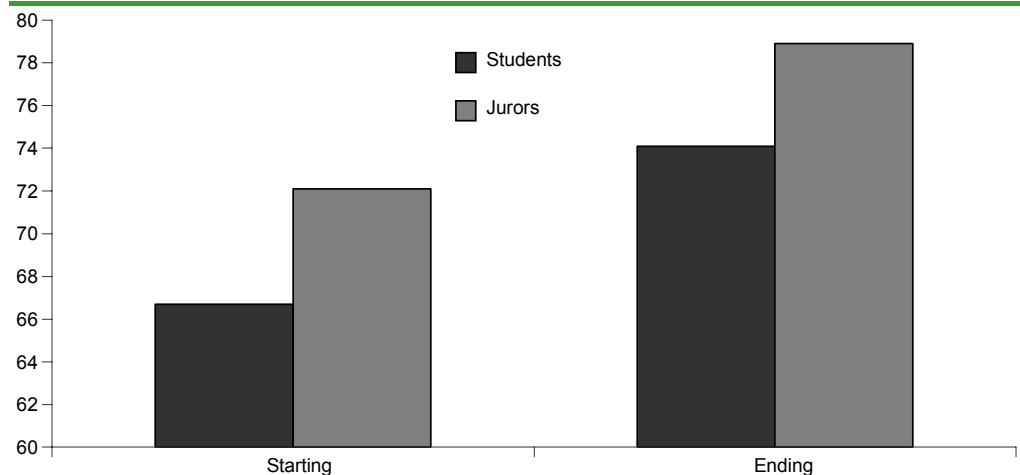
Mean level of information distortion measures



Source: Adapted from Carlson and Russo

Carlson and Russo also tracked the confidence levels at the start of each case, and compared them to the final confidence reported. The chart below shows yet another example of information driving confidence (as we documented last week). In fact the researchers found information distortion increased with confidence. **That is the more sure people were that they had the correct verdict, the more they distorted new evidence to suit their existing preference.** Russo and colleagues have found similar effects in a wide range of domains including consumers, auditors and salespeople.

Starting and ending confidence ratings (%)



Source: Adapted from Carlson and Russo

Just think about this in the context of our current topic. The chances are you already have a view on a company when you go and meet with them (which might well coincide with whether you hold the stock or not). On the basis on the evidence presented here it is highly likely that you will fail to be objective when you do see them. Rather than searching out all the disconfirming evidence, you are likely to interpret all the information you gather in the light of your previous view. **If all you are doing is re-confirming what you already believe there seems little point in meeting with the company.**

This tendency to biased assimilation will be made all the worse by the fact that company managements always tell you what you want to hear. **When was the last time a company arrived at your office and started to confess that they were a dreadful company with disastrous management, and little or nor hope of ever actually improving?** Of course, it hardly ever happens. Instead, companies turn up and tell you that they have had a rough time, but whatever the problem was (be it unexpected inventory build, or gross margin pressure) that is has now be solved and everything will be alright going forward.

Obedience to authority

Not only do we have to contend with this tendency to look for information that agrees with us, and our bad habits of biased assimilation but **we also have to be aware of our marked tendency to believe what we are told by people in positions of authority.** I have explored this issue in the context of corporate governance before (see *Global Equity Strategy*, 31 January 2005).

Stanley Milgram's work was triggered in the wake of World War II. He wanted to investigate why it was that so many ordinary people either simply said nothing about their leaders clearly abhorrent policies, or even worse chose to follow their example.

Milgram³¹ devised a simple but stunningly effective experiment. Subjects were asked to help in an experiment. They were told they would be administering electric shocks to a 'learner' at the instruction of a 'teacher'. The subjects were told that they were involved in a study on punishment effects on learning and memory.

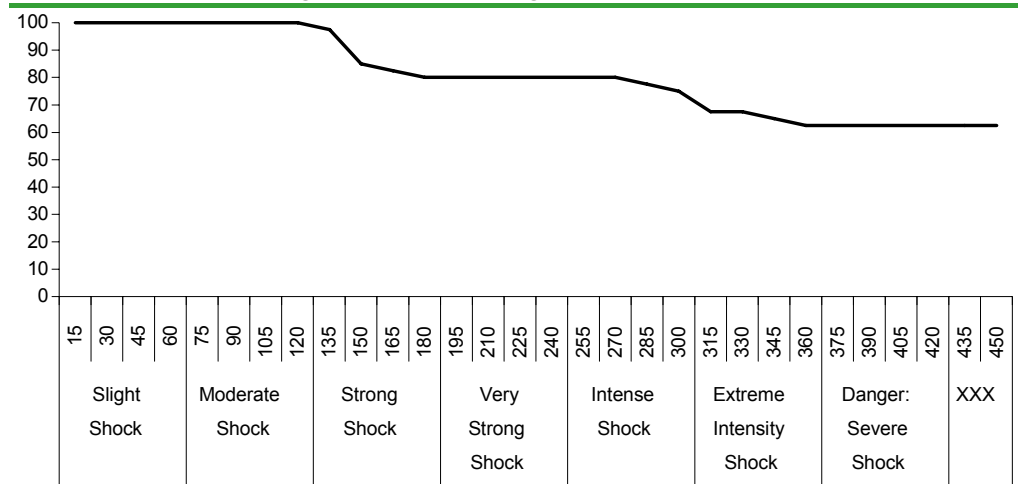
The subjects sat in front of a box with electric switches on it. The switches displayed the level of volts that was being delivered, and a text description of the level of pain ranging from 'slight' through to 'very strong' and up to 'danger severe', culminating in 'XXX'. When the buttons were depressed, a buzzing sound could be heard. The 'teacher' was a confederate of the experimenters, and wore a white coat and carried a clipboard. They would instruct the subjects when to press the button.

In the classic variant of the experiment, the subject couldn't see the person they were shocking, but they could hear them. At 75 volts, the 'learner' grunts, at 120 volts he starts to complain verbally, at 150 volts he demands to be released, at 285 volts the 'learner' makes a response that Milgram said could only be described as 'an agonized scream'. At 425 volts, a grim and deathly silence greeted the participants.

Before conducting the experiment, Milgram's prior belief was that very few people would administer high levels of shock. Indeed forty psychiatrists canvassed by Milgram thought that less than 1% would give the full 450-volt shock. After all, they reasoned, Americans just didn't engage in such behaviour. (Sounds like a classic case of the fundamental attribution error doesn't it!)

The chart below shows the percentage of respondents who progressed to each level of voltage. 100% of ordinary Americans were willing to send up to 135 volts (at which point the 'learner' is asking to be released) through someone they didn't know. 80% were willing to go up to 285 volts (at which point they are hearing agonising screams). Over 62% were willing to administer the full 450 volts, despite the screams and the labels on the machine stating 'severe danger' and 'XXX'!

³¹ Milgram (1974) Obedience to authority

% of participants reaching each level of voltage

Source: Milgram (1974)

Nor are Milgram's results unique. The table below shows the average compliance level to the maximum voltage from a number of studies. Incidentally, spoil sport university ethics boards outlawed Milgram style experiments in the late 1980s, so no more modern studies are available; although we have little reason to believe they would show anything different from the majority of findings below.

International 'Milgram' studies

| Study | Country | Percentage obedient to the highest level of shock |
|-----------------------|-----------|---|
| Milgram | USA | 62.5 |
| Rosenham | USA | 85 |
| Ancona and Pareyson | Italy | 85 |
| Mantell | Germany | 85 |
| Kilham and Mann | Australia | 40 |
| Burley and McGuiness | UK | 50 |
| Shanab and Yahya | Jordan | 62 |
| Miranda et al | Spain | 90 |
| Schurz | Austria | 80 |
| Meeus and Raaijmakers | Holland | 92 |

Source: Smith and Bond (1994)

So simply because we are told to do something by a man in a white coat and carrying a clipboard we appear willing to obey his instructions. This is the power of authority. Company managements are, of course, in a position of authority. They are generally reached the top of their field. As such it is **all too easy for analysts and fund managers to think of them as authority figures, and hence believe whatever they are told.**

The more god-like the management, the easier it will be for them to influence analysts who cover the stock. CEOs are generally successful people. They have made it. As such we tend to interpret their success as the result of their disposition (the fundamental attribution error). We are in awe of such individuals. Few, if any, analysts were willing to ask critical questions of Bernie Ebbers at the height of the TMT boom, when he and his ilk were regarded as the new masters of the universe³². We need to train people to not only search for disconfirming evidence, but to be critical of company managements.

³² Intriguingly, Malmendier and Tate (2004) Superstar CEOs show that award winning CEOs extract more compensation from their companies following awards. They spend more time writing books and lecturing and gaining board seats. Most importantly, firms with Superstar CEOs have stocks that underperform the market on a one, three and five year horizon!

Truth or lie?

Ok let's assume that so far you are sitting there reading this and feeling pretty pleased with yourself because you know that managers are over-optimistic and overconfident, and you never listen to their forecasts, you always ask lots of difficult disconfirming questions and you certainly aren't in awe of company CEOs. So surely you have nothing to worry about!

There is one final psychological hurdle for you to pass. **Can you tell the truth from a lie?** Do you know when someone is trying to deceive you? Of course, like so many areas of behavioural biases we tend to answer that each and every one of us can tell truth from lies. However, the reality is very different.

*Kassin et al*³³ have explored people's abilities to tell truth from lies. They got serving prisoners to videotape and audiotape confessions to their true crimes and a crime they didn't commit as well. They asked 61 students and 57 federal, state and local investigators to watch/listen to the tapes and asked them who was telling the truth and who was making a false confession. The professionals were all experienced with an average of nearly 11 years service, no less than 58% had received special training in deception detection training.

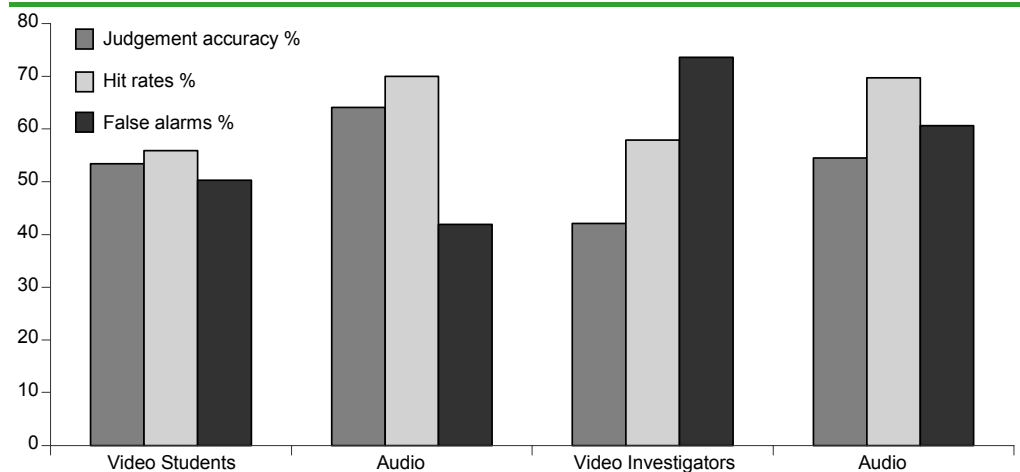
Across all participants (professionals and students) and all conditions (video and audio) the average overall accuracy rating was 53.9%, statistically indifferent from a pure chance performance! The table below details the main findings of Kassin et al. Students significantly outperformed the trained professionals with higher accuracy and lower confidence.

Can we tell the truth from lies

| | Students | | Investigators | |
|----------------------|----------|-------|---------------|-------|
| | Video | Audio | Video | Audio |
| Judgement accuracy % | 53.4 | 64.1 | 42.1 | 54.5 |
| Hit rates % | 55.9 | 70 | 57.9 | 69.7 |
| False alarms % | 50.3 | 41.9 | 73.6 | 60.7 |
| Confidence | 6.18 | 6.25 | 7.65 | 6.7 |

Source: Kassin et al (2005)

Judgement accuracy, hit rates and false alarms



Source: Kassin et al (2005)

It is worth noting that the investigators pretty much thought everyone was guilty. That is to say they had a much higher rate of false alarms (that is false confessions perceived as true) than the students did. This has become known as investigator bias.

³³ Kassin, Meissner and Norwick (2005) I'd know a false confession if I saw one: A comparative study of college students and police investigators, *Law and Human Behavior*, 29

Intriguingly both groups performed better on the audio versions of the test rather than the videotape evidence. That is an area we will return to shortly.

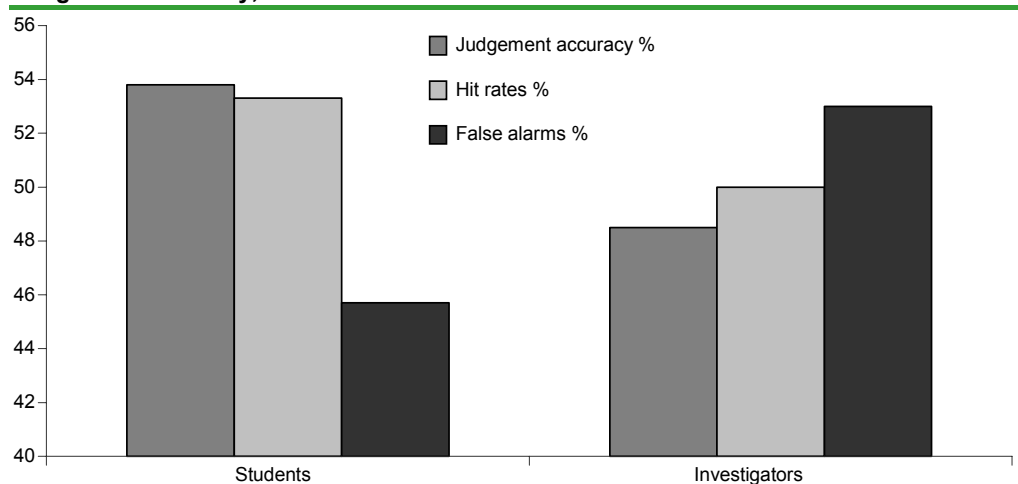
Those with a touching faith in law and order may well suggest that the test was biased because investigators may well come across more true confessions than false confessions in their jobs, and so may have started the experiment with very different base rate expectations than the students. To counteract such claims, Kassin et al ran a variant of the experiment in which both the students and investigators were told that half of the confessions they would see would be true and half false. The table below details the results.

Rates when told that half are true

| | Students | Investigators |
|----------------------|----------|---------------|
| Judgement accuracy % | 53.8 | 48.5 |
| Hit rates % | 53.3 | 50 |
| False alarms % | 45.7 | 53 |
| Confidence | 5.74 | 7.03 |

Source: Kassin et al (2005)

Judgement accuracy, hit rates and false alarms when told 50% will be true



Source: Kassin et al (2005)

Once again the students performed better than the professionals. They had higher accuracy and lower confidence. However, note that both groups did little better than simply guessing.

In another pair of papers Kassin and co-authors³⁴ explore the impact of training on deception training. They took three groups, students, students who had been trained in the most common methods of deception detection and professional investigators. To provide their confessions they recruited students from a different university. Some of whom were asked to commit one of four criminal acts: - vandalism, shoplifting, breaking and entering, and computer break-in. Those selected to be guilty actually carried out the crimes (under controlled conditions), whilst those who were innocent were placed in the vicinity of the crime.

For instance, in the case of shoplifting, the guilty participants were instructed to enter a local shop and steal an item of jewellery. They were not told how to commit the crime, only that they mustn't get caught. The co-operating storeowner pretended not to notice the crime. They were arrested on exiting the shop. The innocents in this case were told to enter, browse and exit the shop. They were told they would find a paper bag outside the shop upon their exit and they should pick it up. When they did this, they were arrested.

³⁴ Kassin and Fong (1999) I'm innocent: effects of training on judgements of truth and deception in the interrogation room, *Law and Human Behavior*, 23 and Meissner and Kassin (2002) He's guilty: Investigator bias in judgements of truth and deception, *Law and Human Behavior*, 26

The guilty and innocent were then taken to a police station and interviewed. The guilty were told to maintain their innocence and make up whatever excuses they needed to in order to avoid admitting the crime. These interactions were taped and it was these tapes that the participants then got to review.

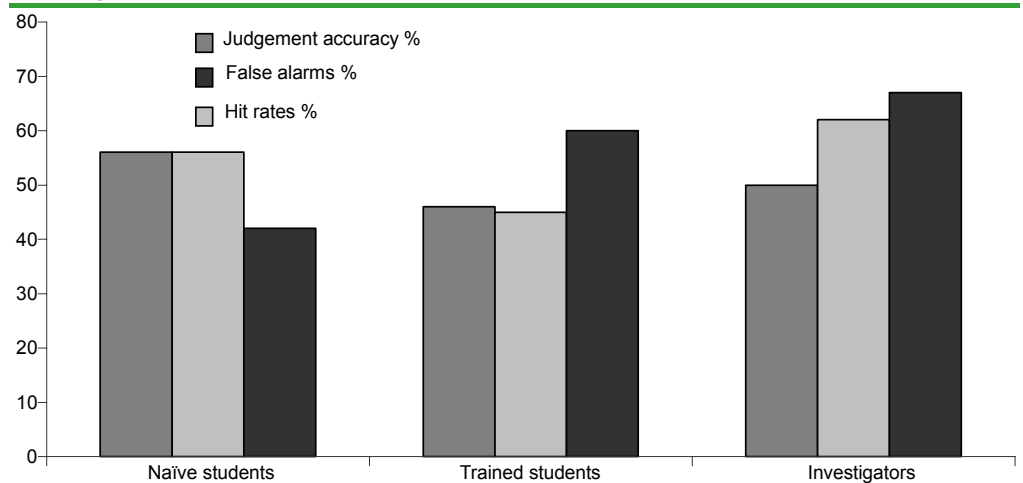
The table below shows the results from their experiments. The trained students and the investigators underperformed the naïve students. Once again they seemed to think that everyone was guilty! It is also interesting to note that **confidence increased with training and experience but accuracy didn't!**

Training is a disadvantage

| | Naïve students | Trained students | Investigators |
|----------------------|----------------|------------------|---------------|
| Judgement accuracy % | 56 | 46 | 50 |
| Hit rates % | 56 | 45 | 62 |
| False alarms % | 42 | 60 | 67 |
| Confidence | 5.91 | 6.55 | 7.05 |

Source: Kassin et al (1999,2002)

Training hampers performance!



Source: Kassin et al (1999,2002)

So how good are you at spotting when someone is not telling the truth? Which of the following is more likely to be lying: - (i) someone who avoids eye contact, doesn't smile, and shifts his posture a lot or (ii) someone who answers with short replies, tells you lots of irrelevant information and whose pupils dilate when answering questions?

The majority of people pick the first candidate. This is because lay psychology tells us that these are traits associated with those who are lying. This perception is then enhanced whenever we watch television and someone who lies is portrayed as a shifty character with wandering eyes etc.

However, the second person above is actually more likely to be lying than the first. The first three traits have no correlation with whether people are telling the truth or not. The second three are relatively highly correlated.

DePaulo et al³⁵ have recently completed a massive meta-analysis (study of other studies) to discern the most likely cues to deception. They took 1338 estimates of 158 different cues and analysed which showed up as significant.

³⁵ DePaulo, Lindsay, Malone, Muhlenbruck, Charlton and Cooper (2003) Cues to deception, Psychological Bulletin, 129

They find that liars tend to fit the profile outlined in the table below. Intriguingly they find that very few physical signs are of use in spotting deception. This accords with the finding from Kassin et al above that people generally were better at spotting deception when they were listening rather than watching.

Spotting liars

| Category | Primary characteristics |
|---|--|
| (I) Liars are less forthcoming | Take less time in responses Provide fewer details Press their lips together |
| (II) Liars tell less convincing stories | Less plausible Lack logic Internally inconsistent Sound more evasive, unclear and impersonal Sound more uncertain Often had raised chin/direct eye contact Repetition of words and phrases |
| (III) Liars are less positive and pleasant | Less co-operative More negative statements Faces are less pleasant (don't smile) |
| (IV) Liars are more tense | More nervous and tense Vocally tense Higher pitch Dilated pupils |
| (V) Liars have fewer imperfections/content corrections | Lack of spontaneous corrections No memory failures More non-significant events |

Source: Adapted from DePaulo et al (2003)

Given that we all appear to be so bad at spotting deception from truth it might perhaps be better if we avoided putting tremendous faith in our ability to judge elements such a company management in the context of meetings with them.

For fans of US imports to our screen this general message should be familiar. In CSI Gil Grissom spends his entire time reminding anyone who will listen that the evidence doesn't lie, with the implicit statement that people do. Or if your tastes run to medical dramas then House provides a weekly reminder that patients lie, but symptoms don't.

Conclusions

It would seem there are numerous psychological hurdles (listed below) to be passed before we can classify meeting with company managements as a key part of the investment process. It is also difficult to debias away from these problems. Given that we can't easily correct these biases perhaps company meetings are best avoided! Indeed one of the best performing European fund managers of our acquaintance eschews meeting companies altogether. A lesson for us all perhaps?

The psychological barriers to the usefulness of company meetings

- i) Managers are just as likely to suffer the same biases as the rest of us
- ii) Information overload
- iii) Confirmatory bias, biased assimilation, predecisional distortion
- iv) Obedience to authority
- v) We aren't good at telling deception from the truth

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**Thinking you can out smart
everyone else**

Sin 4

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Global Equity Strategy

Who's a pretty boy then? Or beauty contests, rationality and greater fools

We have played a “Keynes’ beauty contest” with our clients. The results show that most investors are gaming the market, using an average two steps of strategic thinking. The game demonstrates the difficulty of “beating the gun”, and highlights the extreme risk that investors run in momentum orientated markets.

- ▶ Keynes likened professional investment to a newspaper beauty contest in which the aim was to pick the face that the average respondent would deem to be the prettiest. We have played a version of this game with our clients. The game was to pick a number between 0-100, the winner would be the player who picked the number closest to 2/3rds of the average number chosen.
- ▶ In fact, we had over 1000 respondents (my thanks to everyone who participated), making this the fourth largest such game ever played, and the first played purely amongst professional investors on such a scale. The average number picked was 26, giving a 2/3rds average of 17.4.
- ▶ Many clients suffered a curse of knowledge. That is, once the solution is known, it is hard to imagine that others can't see it. Hence 8.5% of the players in our game ended up at the “rational” solution of zero. The largest spike occurred at 22, with nearly 9% of the players picking this number. On average, our market is characterised by those doing between one and two steps of strategic thinking.
- ▶ Hence, in order to escape the market before the mass exodus, you would need to be using three step thinking. In our sample that represents very few players. Perhaps this lends some support to our oft-voiced scepticism over the ability of the majority to “beat the gun”.

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Beauty contests, rationality and greater fools

Background

In what must be the second most common quotation from Keynes (the first presumably being “In the long run, we are all dead”) the great man opines:

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.

This battle of wits to anticipate the basis of conventional valuation a few months hence, rather than the prospective yield of an investment over a long term of years, does not even require gulls amongst the public to feed the maws of the professional; — it can be played by professionals amongst themselves. Nor is it necessary that anyone should keep his simple faith in the conventional basis of valuation having any genuine long-term validity. For it is, so to speak, a game of Snap, of Old Maid, of Musical Chairs — a pastime in which he is victor who says Snap neither too soon nor too late, who passes the Old Maid to his neighbour before the game is over, who secures a chair for himself when the music stops. These games can be played with zest and enjoyment, though all the players know that it is the Old Maid which is circulating, or that when the music stops some of the players will find themselves unseated.

Or, to change the metaphor slightly, professional investment may be likened to those newspaper competitions in which the competitors have to pick out the six prettiest faces from a hundred photographs, the prize being awarded to the competitor whose choice most nearly corresponds to the average preferences of the competitors as a whole; so that each competitor has to pick, not those faces which he himself finds prettiest, but those which he thinks likeliest to catch the fancy of the other competitors, all of whom are looking at the problem from the same point of view. It is not a case of choosing those which, to the best of one's judgment, are really the prettiest, nor even those which average opinion genuinely thinks the prettiest. We have reached the third degree where we devote our intelligences to anticipating what average opinion expects the average opinion to be. And there are some, I believe, who practise the fourth, fifth and higher degrees.

If the reader interjects that there must surely be large profits to be gained from the other players in the long run by a skilled individual who, unperturbed by the prevailing pastime, continues to purchase investments on the best genuine long-term expectations he can frame, he must be answered, first of all, that there are, indeed, such serious-minded individuals and that it makes a vast difference to an investment market whether or not they predominate in their influence over the game-players. But we must also add that there are several factors which jeopardise the predominance of such individuals in modern investment markets. Investment based on genuine long-term expectation is so difficult to-day as to be scarcely practicable.

John Maynard Keynes, Chapter 12, General Theory of Employment, Interest, and Money, (1935) p155-6

The game

I fear that some of you think I have finally flipped. Two weeks ago I sent out an email to the e-readers of our strategy product to ask them to participate in a guessing game. The email is reproduced below:

Dear all,

We would like to ask your help. Please consider the following question and email your reply to me. The overall results will be written up in a forthcoming weekly. However, as ever, none of your individual responses will be disclosed. As an incentive, we are offering a bottle of champagne to the winner.

You are taking part in a competition with the other readers of our strategy products. The aim of the game is to pick a (real) number between 0-100 ($[0,100]$). The winner will be the respondent who chooses the number closest to $2/3$ ds of the average number chosen.

Many thanks in advance for your input.

If you weren't on the e-mail list, to get the most out of the rest of the note consider your answer before you go any further. Having just read the quotation from Keynes it is presumably obvious that the game outlined in the email is a version of Keynes' beauty contest³⁶. So why are we playing a beauty contest game with you? We will show a little later that it has applications in understanding the dynamics of gaming the market, but for now please bear with us.

The solution

The game itself should be a simple one under the standard assumptions of economics. i.e. rationality *and* common knowledge. Since all players want to choose $2/3$ ds of the average, there is only one number that satisfies the equation $x = 2/3 * x$, zero. So the only equilibrium³⁷ answer to this question is zero (as many of you pointed out).

The game can be solved by a process known as "iterated dominance". A dominated strategy is one that yields a lower payoff than another, regardless of what other players are doing. For example, choosing a number greater than 67 is a dominated strategy because the highest possible solution to the game is 67 (i.e. if everyone else picks the maximum number 100). However, if no-one violates dominance by choosing a number above 67, then the highest outcome is $2/3$ ds of 67 and so on. Deleting dominated strategies in this fashion will eventually lead you to zero³⁸. This fact was explicitly identified by some 14.5% of our sample (and probably many more who didn't bother to state the "rational" answer as it wasn't required).

Of course, this only works under the assumption that everyone you are playing against is rational, and they know that you are rational as well. As one client put it "the whole thing gets much more difficult when you can't assume that everybody is a perfect logician trying to maximize his or her own best interest". As soon as we start to see that at least some of the market is not fully rational then the problem becomes more and more complex.

³⁶ This game was first played by Nagel (1995) Unraveling in Guessing Games: An Experimental Study, American Economic Review, 85

³⁷ Technically, zero is the only fixed point Nash equilibrium

³⁸ This process is also known as backward induction

Before looking at the results, I'll try to link this work back to our work on rational bubbles. In *Global Equity Strategy*, 12 January 2004, we outlined the conditions for various kinds of bubbles. One of these was the near rational bubble driven by myopia (short time horizons) and overconfidence. We concluded that this kind of bubble most closely matched the current market conditions.

A lack of backward induction is also part of this process. Even if all investors foresee a crash, they don't backward induct all the way to today – otherwise there would be no bubbles and no busts. They guess that other investors will try to sell a couple of steps before the crash. Hence everyone expects and plans to sell just before the mass exodus. This failure of backward induction helps to explain why bubbles can persist even when everyone knows that they must eventually burst.

Another failure of backward induction – The paradox of the unexpected hanging

A man was sentenced on Saturday. "The hanging will take place at noon on one of the seven days of next week" said the judge, he continued "But, you will not know which day it is, until you are informed on the morning of the day of the hanging".

Can the judge's sentence be carried out?

It would seem not. If the man has not been hung by next Friday, he will then know that he must be hung the next day. However, this violates the judge's ruling that he won't know until the day itself. Thus we can rule out next Saturday as the execution day. Then by the same logic, if the man has not been hung by next Thursday, then he knows he must be hung on Friday (since we have just ruled out Saturday). This, of course, contradicts the judge's orders that he mustn't know the day until the morning of the day itself. And so on, we end up ruling out all the days. Hence it appears the judge's sentence can't be carried out.

Actually, the man was hung on Monday, and he did not know in advance that Monday would be the day of his death, just as the judge ordered!

The results

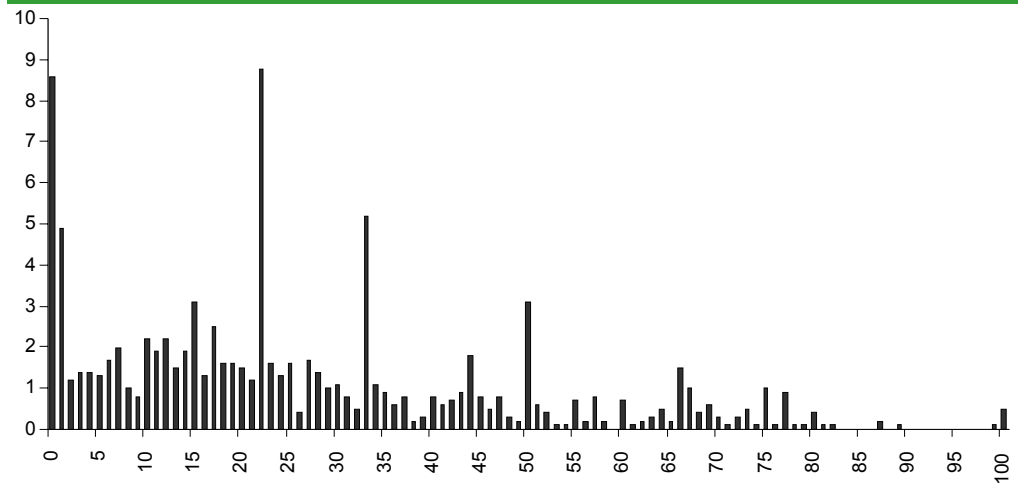
The beauty contest provides a simple way of roughly measuring the number of steps of strategic thinking that players are doing. As one client response noted "I am curious how this little game will end... So, let's see how inefficient this market is. Isn't that the dilemma/contradiction we are all in? We know the efficient (right) answer should be 0, however as a rational investor our estimates have to include our guesstimates on how rational our competitors are!"

Since our email list consists of professional investors alone, we can take our results as a proxy for the market as a whole. In fact, we had a truly impressive 1002 replies – making this the fourth largest such contest ever played! Thank you to everyone who took part.

The average number selected was 26, giving a 2/3rds average of 17.4. The chart below shows the relative frequency of the choices in our game³⁹. This reveals some interesting features about the level of strategic thinking that market participants are using.

³⁹ For pedagogical, expository, and graphical ease I've transformed the answers into integers. However, rest assured that the average was calculated on the true answers.

Relative frequency of choices in our game (%)

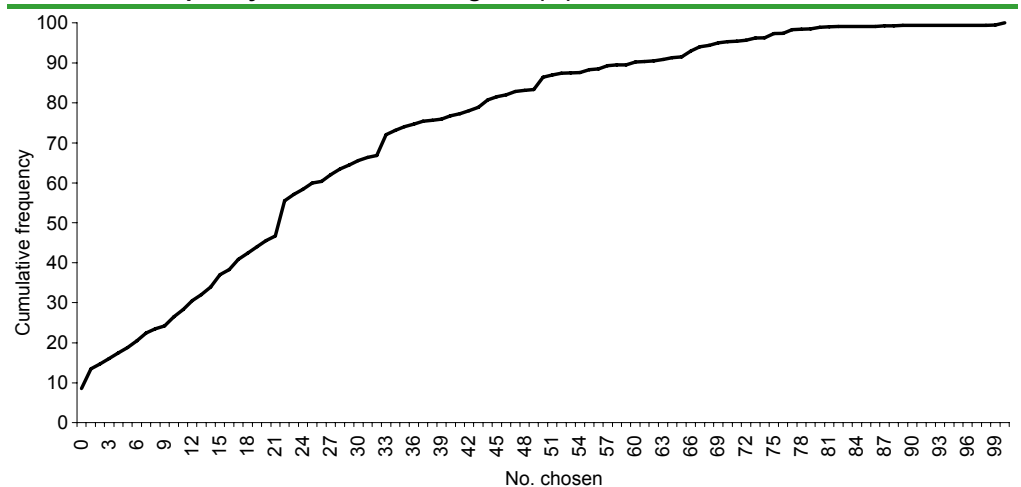


Source: DrKW Macro research

Only 5% of the sample chose numbers above 67, implying that they didn't understand the question or that they are clearly irrational. As one player wrote "100... I'm not a rational investor, my favourite stocks are Amazon and EBAY". (US\$46.38, US\$68.60).

However, such responses don't really have market power because of the size of our sample. Technically we can define market power as the number of additional votes of "100" that would be necessary to change the result by "1", given that sample size. This comes down to $1002 / (99 - 26) = 13.7$. So we would require a considerable number of "100" picks in order to affect our market.

Cumulative frequency of choices in our game (%)



Source: DrKW Macro research

Even if we exclude all those who chose numbers greater than 67, we still end up with an average number of 23, and hence a 2/3rds average of 15.2 – still massively above the Nash equilibrium.

Rather than using the iterated dominance strategies outlined earlier, most players assume (perfectly rationally) that the starting point should be 50, i.e. the mean from a random draw. Hence level zero players chose 50 (3% of our total sample). Level one players chose the best reaction to the level zero players i.e. they picked 2/3rds of 50, providing a spike at 33 (5% of our sample). Level two players "best react" to a 33, yielding the massive spike at 22 (nearly 9% of our sample – the highest single selection). Level three players end up with 15 as their pick (3% of the sample). Once past level two or three reasoning, players frequently slide down the slippery slope towards the infinite iterations that produce zero (8.5% of our sample).

It is easy to measure the number of steps of strategic thinking that are being carried out by the following formula (for choices less than 50) $\ln(x/50)/\ln(2/3)$. So with an average of 26, the average level of thinking comes out at 1.6. The most common level of thinking (the mode) was 2 steps of thinking (corresponding to 22).

This pattern of behaviour fits well with other studies of such contests. For instance, Nagel et al⁴⁰ (1999) actually called their paper “One, Two, (Three), Infinity” because the pattern of thinking seems to follow exactly the same behaviour as that outlined above.

As noted earlier some 14% of our players identified zero as the “rational” equilibrium. A majority identifying the “rational” answer ended up with that as their final answer. The following answers help identify this sentiment:

“If we were 100% logical, then everyone should enter 0. Since people seldom are, I should therefore, (also logically!), choose another, higher, number, reflecting human nature. However, I cannot bring myself to believe people are so irrational. I therefore stick with 0.”

“My guess is 0. But if I am right, nobody should win: It does not pay to be rational!”

This group was effectively suffering from the curse of knowledge. One particular form of the curse of knowledge is once we know something, we can’t ever imagine thinking otherwise. This makes it hard for us to realise that what we know may be less than obvious to others who are less informed. Better informed players are unable to ignore private information even when it would be in their interest to do so, more information isn’t better information!⁴¹

Some 41% of those identifying the zero equilibrium chose a number other than zero as their estimate of the likely outcome. Effectively they are taking a rational view on the degree of irrationality or the amount of bounded rationality that governs the market. This kind of thinking was typified by responses such as:

“If I remember correctly, that’s a question about rational expectations and game theory and a rational answer should tend towards zero, but let’s go for 10 to account for frictions and rigidities in real life.”

“Theoretically, the answer should be 0, if all participants were rational. Since I do not assume all participants to be rational, my pick is 6.”

“If all contestants are rational, the answer should be zero. However as I suspect that your recipients spend their time in the market for stocks, rationality is an irrational assumption, and I will therefore select the number 12 (!!!)”

“I would like to choose 5.852. I know this is theoretically too high, but I’m relying on a lot of people picking randomly.”

“If everyone is rational and everyone knows that everyone else is rational and everyone knows that everyone knows that everyone is rational, then everyone will guess zero. So everyone gets half a thimble of champagne. So I’m guessing 1 in the hope that some people guess a random number.”

This group also suffered from a curse of knowledge. In effect, they were suffering a false consensus effect. That is the tendency to think that others are just like us. Ask a group of mixed smokers and non-smokers how common smoking is in the population and the

⁴⁰ Nagel, Bosch-Domènech, Satorra and Garcia-Montalvo (1999) “One, Two, (Three) Infinity: Newspaper and Lab Beauty-Contest Experiments”, available from www.ssrn.com

⁴¹ See Camerer, Loewenstein and Weber (1989) The curse of knowledge in economic settings: An experimental analysis, *Journal of Political Economy*, 97, for evidence that such biases can affect market prices and behaviour

chances are you will find that the smokers think more people smoke, and the non-smokers will think that smoking is a minority pastime.

Players who identified zero as the “rational” solution seemed to anchor on that figure. That is to say, although they picked a number higher than zero, they generally stayed too close to zero, i.e. underestimating the degree of irrationality within the market.

The classic experiment in this field was conducted by Tversky and Kahneman (1974)⁴² (weren't they all!). In this experiment, people were asked a general knowledge question such as “What percentage of the UN is made up of African nations?” A wheel of fortune with numbers 1 to 100 was spun in front of the participants before they answered. Being psychologists Tversky and Kahneman had rigged the wheel so it gave either 10 or 65 as the result of a spin. The subjects were then asked if their answer was higher or lower than the number on the wheel, and also asked their actual answer. The median response from the group that saw the wheel present 10 was 25, whilst the median response from the group that saw 65 was 45! Effectively people were grabbing at irrelevant anchors when forming their expectations.

Of course, zero isn't irrelevant in our contest, but it may be that players were fixating on zero as too much of an anchor in forming their expectations of the overall game. However this shouldn't be taken as proof that all non-zero choices are a “rational” comment on the degree of irrationality within the market.

In an intriguing paper Grosskopf and Nagel (2001)⁴³ use two player beauty contest games to assess whether players are boundedly rational or whether they are making a “rational” comment on the irrationality of others. The two-player game is a special case of the beauty contest because zero is always a first best choice regardless of the number picked by your opponent (assuming a 2/3rds like game). For instance, say one-player picks 15, and the other picks 0, then two thirds of the average will be 5, and the zero player wins. This holds true for all numbers.

Thus, if players were truly rational one would expect them to pick zero in two player games. Grosskopf and Nagel used participants who were in general pretty familiar with the beauty contest game (many of whom used the game in teaching). Yet despite this experience, in the first round a mere 12% of participants chose 0! Grosskopf and Nagel go on to show how information feedback can improve performance. However, their conclusion is that very few players are independently rational; instead players seem to grope almost blindly, using imitation and adaptation, towards equilibrium.

So our market can be characterised by the following facts:

- ▶ Most players use one, two, (three) or infinity levels of thinking.
- ▶ A significant number who reach zero choose a number greater than zero because they believe others are boundedly rational. However, virtually all such players still ended up choosing too low a number.
- ▶ A significant proportion of players do choose either zero or one – doomed by their own rationality, or the curse of knowledge.

⁴² Tversky and Kahneman (1974) Judgement under uncertainty: Heuristics and biases, Science, 185

⁴³ Grosskopf and Nagel (2001) Rational reasoning or adaptive behaviour? Evidence from two-person beauty contest games, available from www.ssrn.com

A simple model of our contest

Camerer, Ho and Chong (2003)⁴⁴ argue a simple model can characterise many strategic games including the kind we have played. The model assumes bounded rationality and overconfidence on the part of the players.

The model is based on the fact that players do not realise that other players are using more than a certain level of steps, that is to say players have limited cognitive abilities (bounded rationality). The model also assumes that people are overconfident, in as much as they don't realise that others are using as many steps of thinking as they are.

Based on their model, Camerer et al have found that most games are characterised by one or two steps of thinking. They recommend using a 1.6 average level of reasoning for a one shot game. This would generate a mean number of 33, and a 2/3rds average of 22.

However, in games with those trained in logic (as one would generally hope market participants are!) a higher level of reasoning should probably be expected. Hence I ran their model based on an average 2 steps of reasoning before the results of our game were known. Using this model resulted in a prediction of a mean number of 29.8, with a 2/3rds average of 20. Not bad, compared to the actual outcome, and certainly a massive improvement on the standard game theory prediction of Nash equilibrium – zero.

In fact one client came very close to using a very similar methodology without even knowing about the cognitive hierarchy model:

"I believe that most people are going to go for 50 as the mean response and 2/3 of that is clearly 33.3. However I am anticipating that most of the people on your distribution list are going to anticipate that the average answer is 33.3 and will therefore go for 2/3 of that which is 22.2. The quandary now is to determine how many iterations the average person in your survey will assume that the other participants go through. On the assumption that 25% of the respondents are naive and say 33, and that 50% are more sophisticated and say 20, with the remaining 25% going to the logical extreme and saying zero, then I'm left with a weighted average of 19.4."

In actual fact, it transpires that our market is best characterised by an average of 2.8 steps in the thinking process (if we model up to level six players). Level zero players essentially pick a random number (i.e. 50). Level 1 players assume that everyone else is a level zero player, and hence pick 2/3rds of 50. Level 2 players assume that they are the only level 2 player (overconfidence) and so normalise the true distribution to give the relevant weights i.e. they assume that there are 30% level 0 players, and 70% level 1 players (8/28 level 0, and 20/28 level 1). Hence they "best react" to the combined mixture of level 0 and level 1, an average of 38.7, and pick a 2/3rds figure of 25.1. This process continues at each level of thinking. The cognitive hierarchy model suggests that our game consists of a population as shown below.

Cognitive hierarchy model of our game

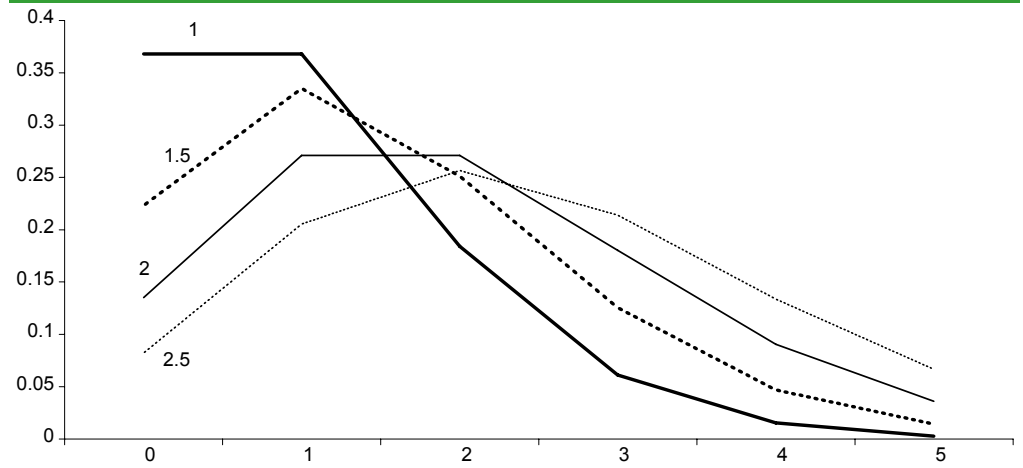
| No of steps | % of population | Number selected |
|-------------|-----------------|-----------------|
| 0 | 7.9 | 50 |
| 1 | 20 | 33.3 |
| 2 | 25.4 | 25.1 |
| 3 | 21.5 | 25.1 |
| 4 | 13.7 | 25.1 |
| 5 | 6.9 | 25.1 |

Source: DrKW Macro research

⁴⁴ Camerer, Ho and Chong (2003) A Cognitive Hierarchy Theory of One-Shot Games and Experimental Analysis, forthcoming in the Quarterly Journal of Economics, available from <http://www.hss.caltech.edu/~camerer/camerer.html>

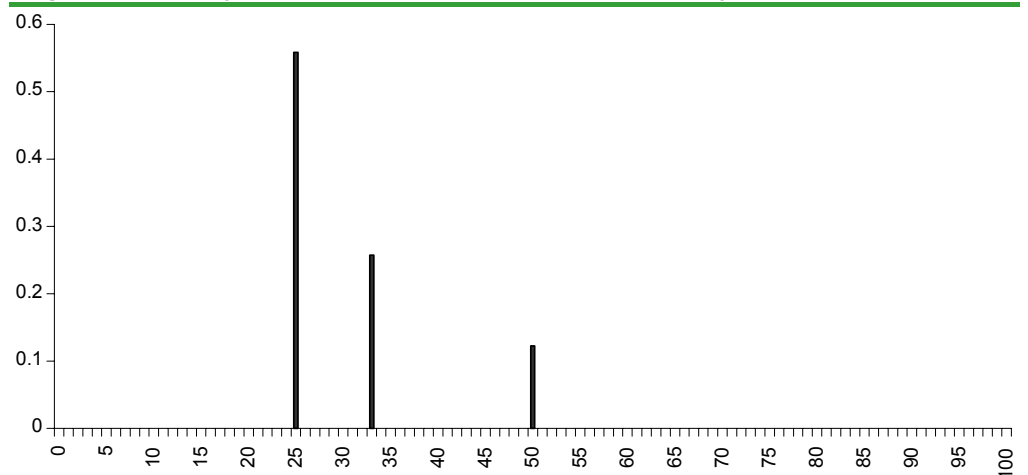
Note that something interesting happens in this model. All players using 2 or more steps of strategic thinking end up selecting the same number. Effectively no one in this contest would need to think beyond two steps of reasoning, so even if players can, they are better off not doing so (i.e. avoiding the curse of knowledge). This occurs because the size of the distribution is so large at groups 1, 2 and 3.

Population of the universe as a function of average number of thinking steps



Source: DrKW Macro research

Cognitive hierarchy model prediction of the distribution of players in our contest



Source: DrKW Macro research

Comparison with other experiments

So how do our results stack up against other beauty contests? The table below shows a summary of beauty contests that have been played with a wide variety of participants. We have also estimated the average level of thinking from the cognitive hierarchy model outlined earlier. In general, the results we have obtained are very similar to those found by other researchers.

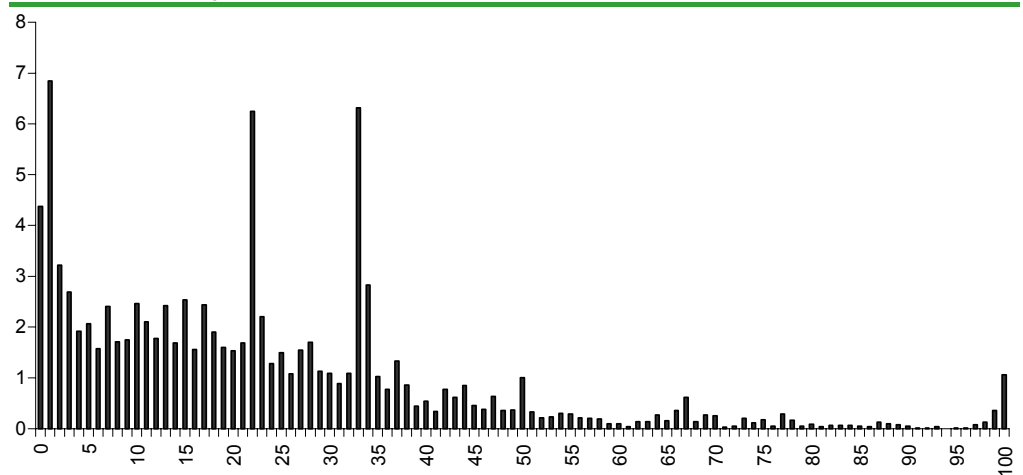
Summary of beauty contests

| | Average | 2/3rds | No of players | Experimenter | Average level of thinking |
|----------------------------------|---------|--------|---------------|--------------|---------------------------|
| Caltech Board | 42.6 | 28.4 | 73 | Camerer | 0.5 |
| CEOs | 37.9 | 25.3 | 20 | Camerer | 1 |
| German students | 37.2 | 24.8 | 14-16 | Nagel | 1.1 |
| 70 year olds | 37 | 24.7 | 33 | Kovalchik | 1.1 |
| US high school | 32.5 | 21.7 | 20-32 | Camerer | 1.6 |
| Econ Phds | 27.4 | 18.3 | 16 | Camerer | 2.6 |
| Portfolio Managers | 24.3 | 16.2 | 26 | Camerer | 3.2 |
| CalTech Students | 23 | 15.3 | 17-25 | Camerer | 3.5 |
| FT | 18.9 | 12.6 | 1476 | Thaler | 4.3 |
| Expansion | 25.5 | 17 | 3696 | Nagel | 3 |
| Spektrum | 22.1 | 14.7 | 2728 | Nagel | 3.7 |
| Game theorists | 19.1 | 12.7 | 136 | Nagel | 4.3 |
| CalTech students | 30.2 | 20.1 | 10-12 | Weber | 2.1 |
| Portfolio managers (single firm) | 29.3 | 19.6 | 22 | Montier | 2.3 |
| Harvard Econ students | 18.3 | 12.2 | 124 | Laibson | 4.4 |
| DrKW Strategists/Economists | 12.3 | 8.2 | 6 | Montier | 5.7 |
| BF Group | 24.2 | 16.1 | 22 | Montier | 3.3 |
| German institutions (Sentix) | 40.5 | 27 | 61 | Hüber | 0.8 |
| German private clients (Sentix) | 44.3 | 29.6 | 185 | Hüber | 0.4 |
| Global Investors | 26 | 17.3 | 1002 | Montier | 2.8 |

Source: DrKW Macro research, Camerer et al (2003)

The closest games in terms of size have been those played in newspapers. The results of aggregation of all three papers (FT, Expansion and Spektrum) are shown in the chart below.

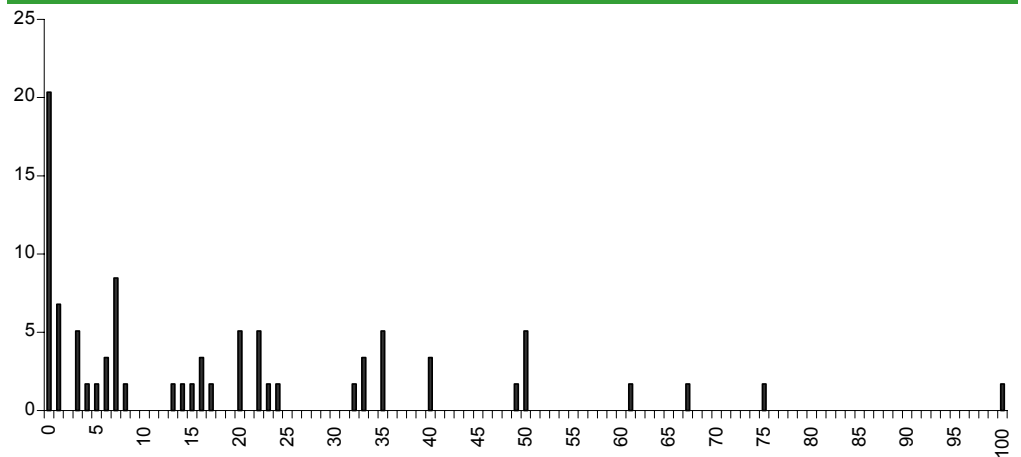
Newspaper beauty contests



Source: DrKW Macro research

I've also included four other new games. The first was played over Christmas 2001 by some of my colleagues in the macro team at DrKW. As you might expect from the game theorists examined by Nagel, the average number chosen was markedly lower, when economists were playing amongst themselves.

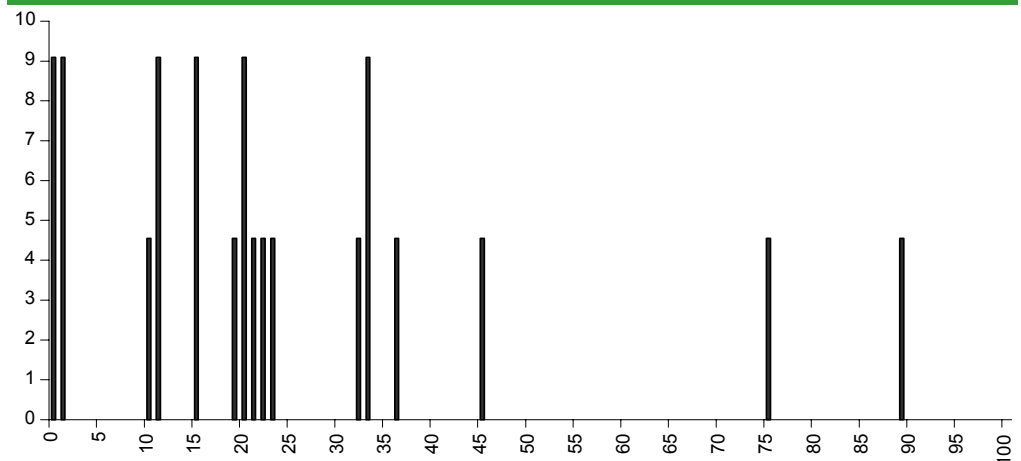
Game theorists and Experimenters contest



Source: Nagel

The other three games were played simultaneously with the contest amongst our clients. I played the game with the Yahoo Behavioural Finance group. They showed a very similar performance to the newspaper readers in the table above.

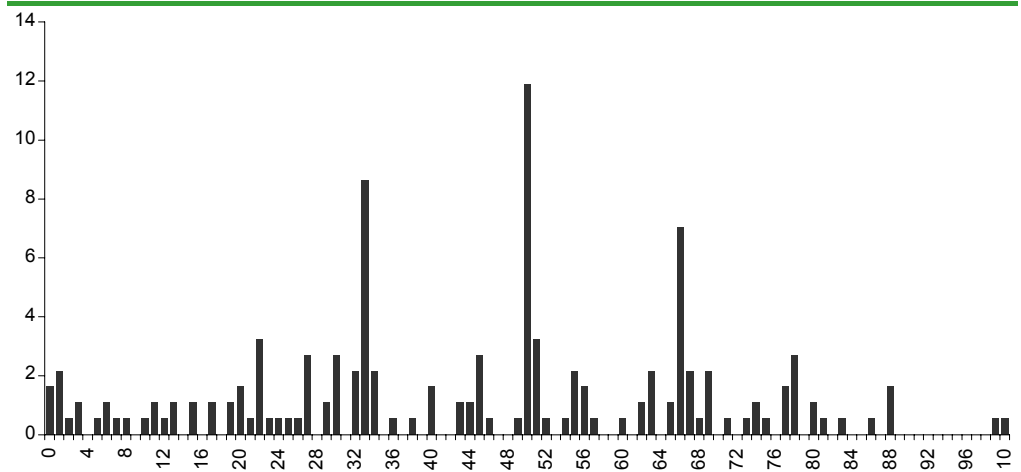
Yahoo Behavioural Finance group



Source: DrKW Macro research

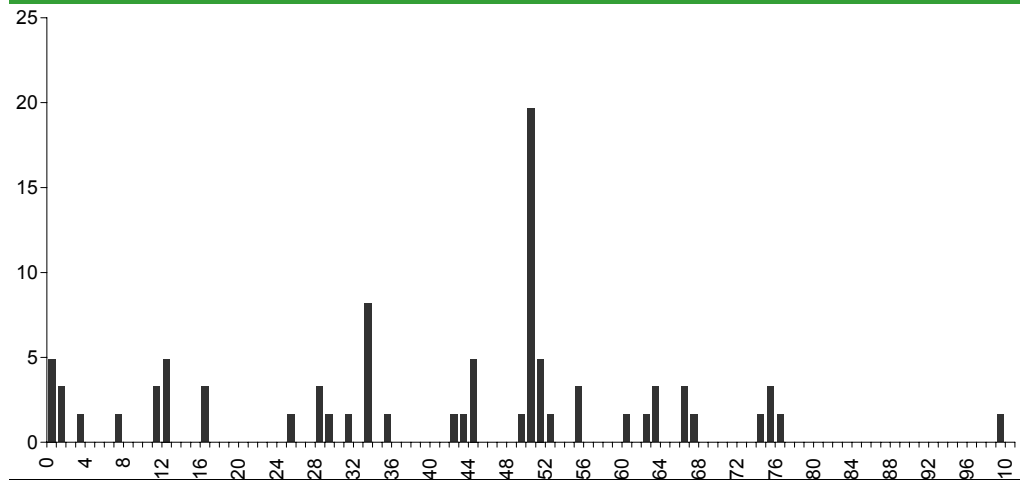
The final two games were played by a survey organisation based in Germany (www.sentix.de). Manfred Hüber, founder of the site, offered to run the beauty contest as part of their weekly poll of sentiment. Always greedy for information I eagerly accepted Manfred's kind offer. Sentix separated the responses into private investors and institutional investors.

Sentix private investors contest



Source: DrKW Macro research, Sentix

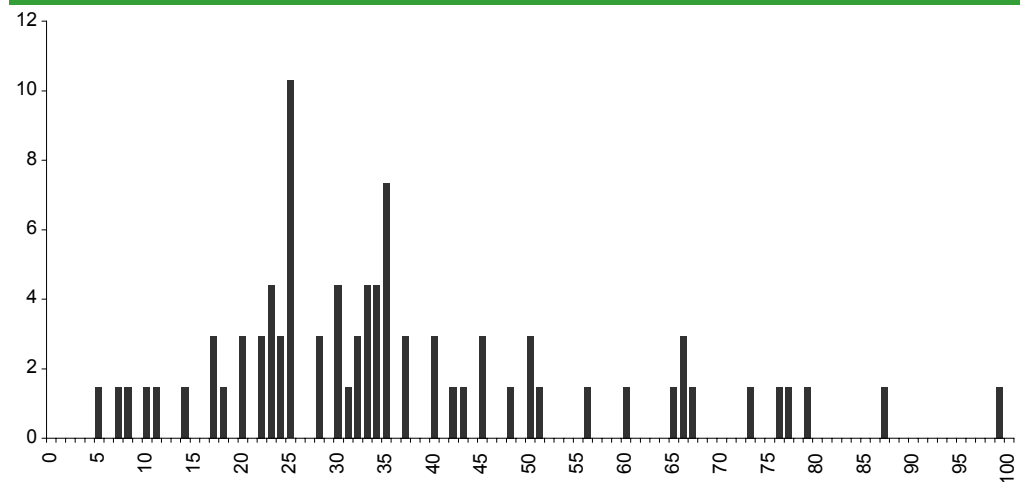
Sentix institutional investors contest



Source: DrKW Macro research, Sentix

Perhaps because the question was written in English, the average answers were noticeable higher in both the Sentix polls, and hence characterised by much lower average levels of strategic thinking than our other experiments. For comparison I've also shown the average results from student games played by Nagel (1995).

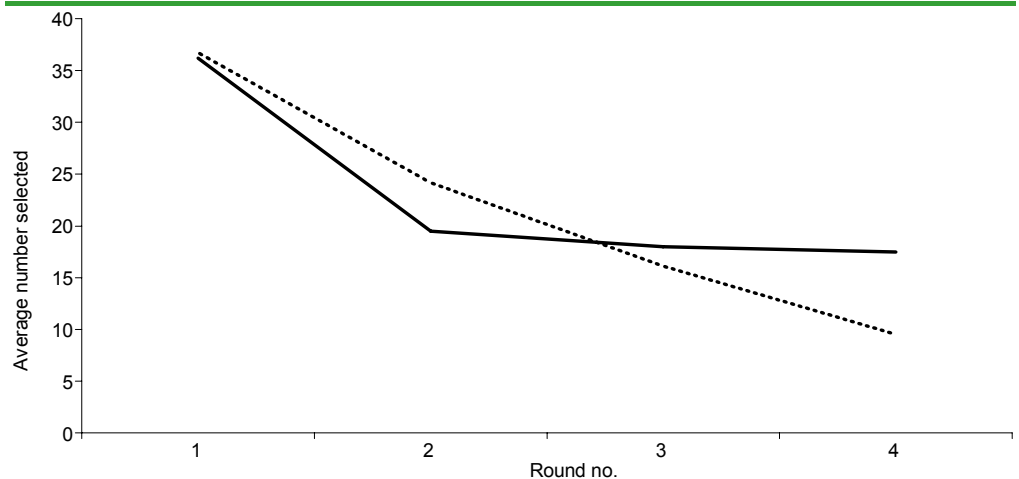
Student contest



Source: Nagel(1995)

Learning

Just in case you are assuming everything I've discussed here is a function of this being a one shot game, cast your eyes over the chart below which shows two typical multi-round game averages. In each case, the contest was played by several groups over many rounds. The average mean number across groups in each round is shown below. Learning seems to occur only very slowly over time, a finding which sits very comfortably with the vast swathes of psychological research which suggest learning is generally far more difficult than most of us tend to blithely assume!

Typical learning time paths – average choice in each period

Source: Camerer (2003)

Conclusions

We have recently argued that the equity markets are currently experiencing a near rational bubble. This is being driven by increasingly short time horizons and investors' overconfidence. This combination gives birth to the momentum culture that we have all witnessed in recent years.

The pressure to perform on a month-by-month basis is driving professional investors to prolong their exposure to a risky situation. As Keynes noted "It makes a vast difference to an investment market whether or not they predominate in their influence." Because of this pressure to perform on all time horizons, they are being forced to rely on their ability to time this market to perfection. However, not everyone can get out at the top. Inevitably, some will be crushed under foot in the rush for the exit. It was to assess this risk that we have used the classic "Keynes' beauty contest".

If our beauty contest is a proxy for market behaviour, then most investors seem to practice two steps of strategic thinking. In Keynes' parlance most investors seem to be concerned with "The third degree where we devote our intelligences to anticipating what average opinion expects average opinion to be".

Our market seems to be best characterised by investors using between one and two degrees of strategic thinking. Hence if you are to beat the exodus, then you need to be thinking in terms of three steps, but no more. In terms of our sample that represents just 4% of the players! Perhaps this lends some support to our oft-voiced scepticism over the ability of the majority of investors to "beat the gun".

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Short time horizons and overtrading

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Global Equity Strategy

ADHD, time horizons and underperformance

ADHD seems to plague financial markets at all levels. Performance is measured on increasingly short time horizons. Such myopia is often self-fulfilling, the more an investment is checked the more likely you are to find a loss. Even in an artificial universe of skilled investors we found runs of 3 years of back-to-back underperformance were common place. We need to extend our time horizons.

- ▶ Attention deficit hyperactivity disorder (ADHD) seems to be pervasive in our industry. Trustees, consultants and internal managers seem to want to evaluate fund managers as frequently as possible. Indeed recent evidence suggests that the average holding period of mutual fund investors has fallen from over 10 years in the 1950s to around 4 years currently.
- ▶ Short time horizon performance measurement leads to closet indexing. Fund managers are often rewarded with respect to assets under management. Hence they will try maximising those assets. Retention is usually therefore the end objective. The easiest way of losing funds under management is to underperform. The easiest way of avoiding underperformance is to track your benchmark.
- ▶ Professional investors have seen their time horizons contract as well. The average holding period of a stock on the NYSE is just 11 months, compared to 8 years in the mid-1950s. Such short holding spans have nothing to do with investment, they are pure speculation. Corporate managers have also been caught up in this ADHD epidemic. Loaded up as they are with stock options, and hence they too seem willing to sacrifice long-term value for short-term gain. All of which has led to a situation where, as Keynes put it, *"Investment based on genuine long-term expectation is so difficult to-day as to be scarcely practicable"*.
- ▶ To show how ridiculous this obsession with the short-term is, we created an artificial universe of 100 fund managers. Each had a true alpha of 3% and a tracking error of 6% (such performance would put them in the top quartile of investors). We then subjected them to random shocks. After 50 years, the 'best' fund manager had an alpha of 5%, the 'worst' 1%.
- ▶ In every year roughly one in three of our fund managers underperformed. Over a 50-year time span, such a skilled investor should expect to underperform in about 15 of them. Perhaps most revealing was the risk of back-to-back years of underperformance. Almost half our universe experienced a run of three years of back-to-back underperformance. Runs of four or five years were not uncommon! 70% of our make-believe managers suffered 3 or more years of underperformance. They would most likely have been fired many times over, despite their underlying true (by construction) value added.
- ▶ We need to extend time horizons. That means being honest with clients about the risk of underperformance, and admitting limited skill when it comes to picking investments for the short-term. Of course, this will come as an anathema to most investors.

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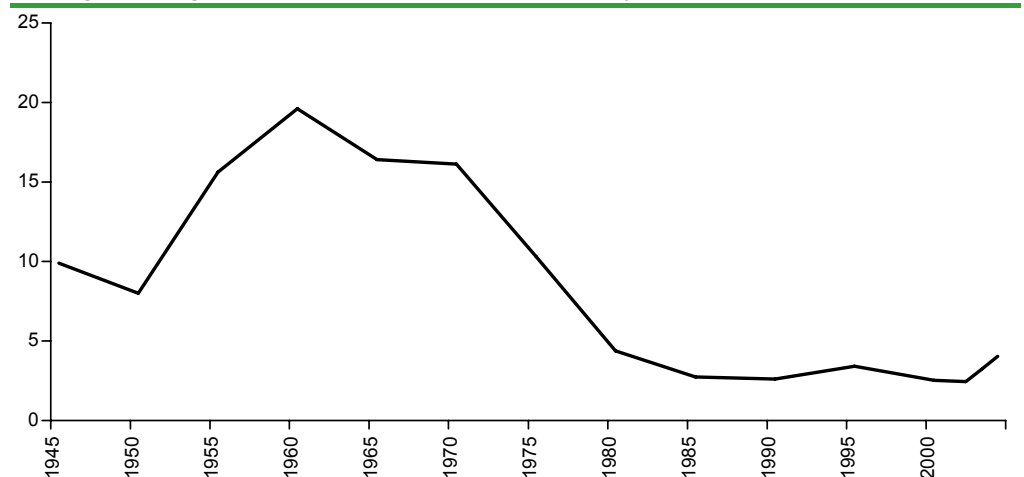
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ADHD, time horizons and underperformance

Our industry seems bedevilled by myopic time horizons. Almost everywhere you look you seem to encounter an obsession with the short-term. Trustees, consultants and internal managers seem to want to evaluate fund managers as frequently as possible. Not only do people want to measure performance on increasingly short time horizons, they also seem to wish to act more often as well. Indeed John Bogle⁴⁵ (of Vanguard legend) has recently noted that the average holding period for mutual fund investors has fallen from over 10+ years in the 1950s to around 4 years currently.

Average holding period of US mutual fund investors (years)



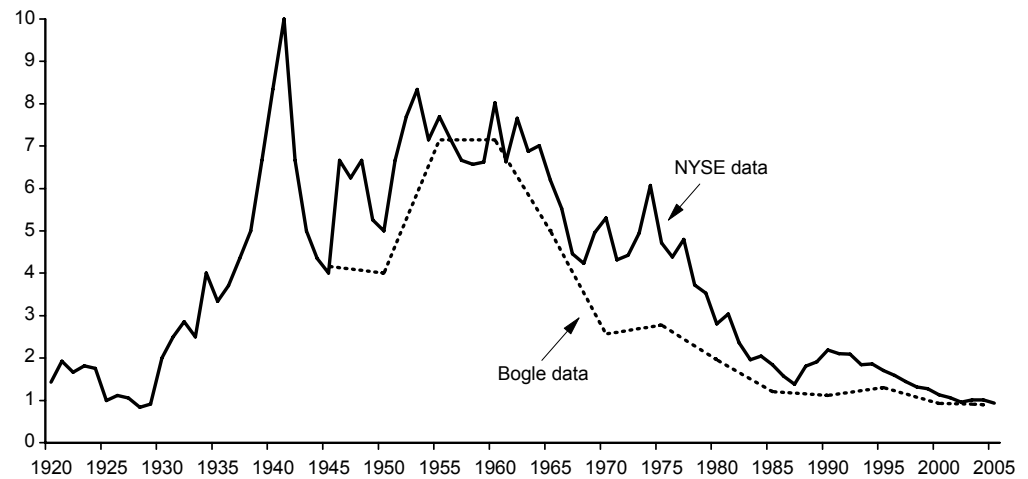
Source: Bogle (2005)

These increasingly short time horizons used to evaluate fund managers are likely to push them into closet index tracking behaviour. In a world in which fund managers are motivated by being paid a fixed percentage of assets under management, they will, of course, aim to maximise assets under management rather than the returns from the assets. The easiest way of losing funds under management is to underperform. The easiest way of avoiding underperforming is to track your benchmark and thus we arrive at closet indexing.

The contraction of the ultimate investors' time horizons has driven/coincided with a collapse in the time horizon of institutional fund managers. The chart overleaf shows the average holding period of stocks on the NYSE. In the mid-1950s, investors used to hold stocks for 7-8 years. The average holding period today is just 11 months! Nor is this decline merely the result of the rise of hedge funds. Bogle (op cit) presents findings on the average holding period of professional investors from an entirely different source. Yet his data maps closely to the general trends of the NYSE series we use (see the top chart overleaf).

⁴⁵ See Bogle (2005) The Mutual Fund Industry 60 Years Later: For Better or Worse? Financial Analysts Journal, 2005

The average holding period of NYSE listed stocks (years)

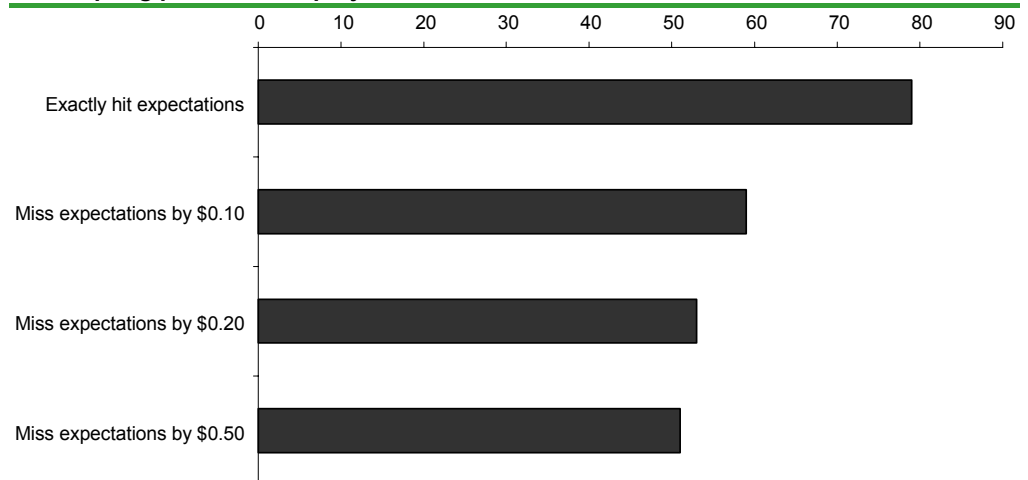


Source: DrKW Macro research and Bogle (2005)

Of course, corporate managers feel the pressure too. They have become obsessed with short-term earnings announcements motivated by their overload of stock options. Indeed a recent survey from Campbell Harvey, John Graham and Shiva Rajgopal⁴⁶ found that nearly half of the CFOs they interviewed would be willing to sacrifice a long-term valuable investment project if it meant missing earnings by \$0.20!

The chart below highlights the results they found. The question the CFOs were asked was “Your company’s cost of capital is 12%. Near the end of the quarter, a new opportunity arises that offers a 16% internal rate of return and the same risk as the firm. What is the probability that your company will pursue this project in each of the following scenarios: If you take the project you will (i) exactly hit consensus earnings, (ii) miss consensus by \$0.10, (iii) miss consensus by \$0.20 and (iv) miss consensus by \$0.50”.

% accepting positive NPV project



Source: Harvey, Graham and Rajgopal (2005)

The Harvey et al study also uncovered why so many CFOs aimed to meet expectations. The two most popular reasons given were “to build credibility with the capital market” and “to maintain or increase our stock price”. When asked why they preferred smooth earnings paths, the two top answers were “It is perceived as less risky by investors” and “It makes it easier for analysts/investors to predict future earnings”!

All of which has lead to a situation where as Keynes put it

⁴⁶ The Economic Implications of Corporate Financial Reporting (2005) Graham, Harvey and Rajgopal

Investment based on genuine long-term expectation is so difficult to-day as to be scarcely practicable. He who attempts it must surely lead much more laborious days and run greater risks than he who tries to guess better than the crowd how the crowd will behave; and, given equal intelligence, he may make more disastrous mistakes... It needs more intelligence to defeat the forces of time and our ignorance of the future than to beat the gun. Moreover, life is not long enough; — human nature desires quick results, there is a peculiar zest in making money quickly, and remoter gains are discounted by the average man at a very high rate. The game of professional investment is intolerably boring and over-exacting to anyone who is entirely exempt from the gambling instinct; whilst he who has it must pay to this propensity the appropriate toll. Furthermore, an investor who proposes to ignore near-term market fluctuations needs greater resources for safety and must not operate on so large a scale, if at all, with borrowed money — a further reason for the higher return from the pastime to a given stock of intelligence and resources. Finally it is the long-term investor, he who most promotes the public interest, who will in practice come in for most criticism, wherever investment funds are managed by committees or boards or banks. For it is in the essence of his behaviour that he should be eccentric, unconventional and rash in the eyes of average opinion. If he is successful, that will only confirm the general belief in his rashness; and if in the short run he is unsuccessful, which is very likely, he will not receive much mercy. Worldly wisdom teaches that it is better for reputation to fail conventionally than to succeed unconventionally. (Chapter 12, General Theory of Employment, Interest and Money, 1936)

If we are ever to hope of actually meeting the aims of the ultimate investors we will need to rethink incentives and investment approaches. I will postpone the discussion of changing the incentive structure of our industry for another time. Here I want to concentrate on just how ridiculous the obsession with the short-term actually is. In order to illustrate the problem I decided to imagine a universe of 100 fund managers each with a 3% alpha and 6% tracking error or a population of 0.5 information ratio investors if you prefer. An information ratio of 0.5 is pretty good. According to Grinold and Kahn⁴⁷ an information ratio of 0.5 would put these investors in or close to the top quartile.

US active equity information ratios

| Percentile | Mutual Funds | | Institutional Portfolios | |
|------------|--------------|------------|--------------------------|------------|
| | Before Fees | After Fees | Before Fees | After Fees |
| 90 | 1.33 | 1.08 | 1.25 | 1.01 |
| 75 | 0.78 | 0.58 | 0.63 | 0.48 |
| 50 | 0.32 | 0.12 | -0.01 | -0.15 |
| 25 | -0.08 | -0.33 | -0.56 | -0.72 |
| 10 | -0.47 | -0.72 | -1.03 | -1.25 |

Source: Grinold and Kahn (2000)

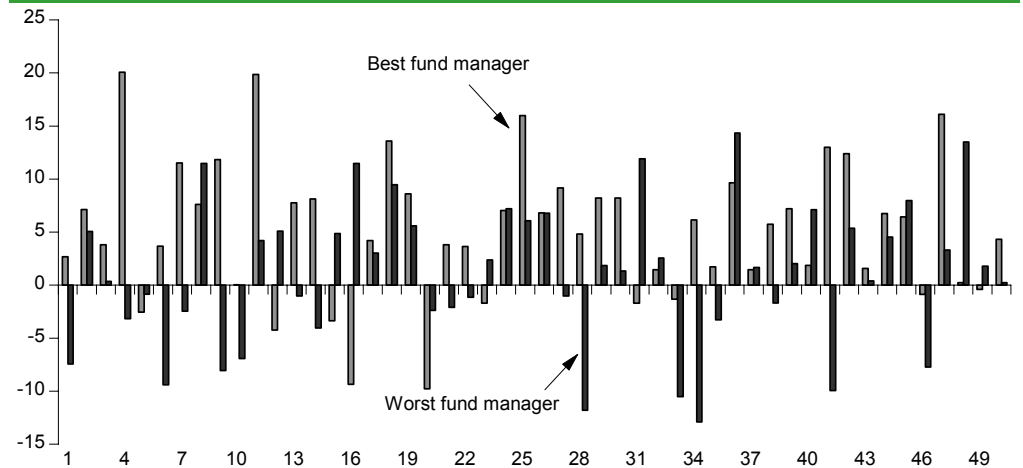
I set up this little universe of pretty good investors and then hit them with random shocks. Remember by set up each of these fund managers has a true alpha of 3%. In my little artificial universe I let these managers run money for 50 years and tracked their performance over time. The results were telling.

In terms of the range of returns the best fund manager displayed an alpha of 5.2%, whilst the worst showed an alpha of 1%. The top chart overleaf demonstrates just how hard it is

⁴⁷ Active Portfolio Management (2000) Grinold and Kahn

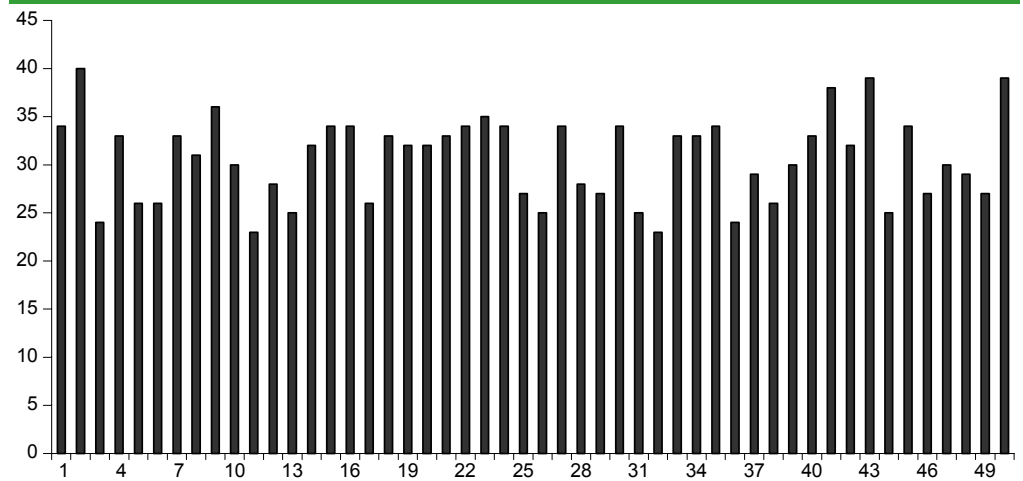
to tell the 'good' from the 'bad' on the basis of annual returns. However, of more interest to me was the various statistics we collected on underperformance.

The best and worst fund managers in our universe (% return)



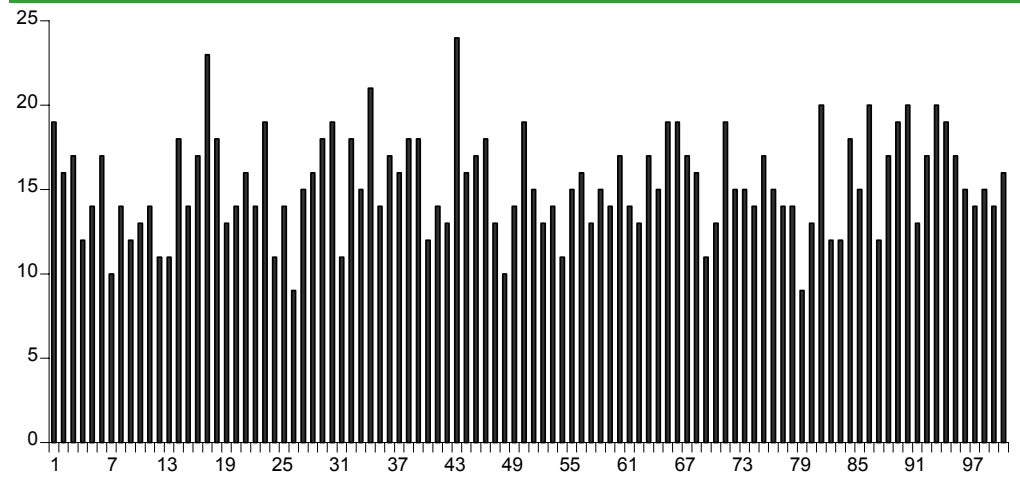
For instance, when looking at the cross section, pretty much one in three of our fund managers underperformed the benchmark each and every year.

% of our 100 fund managers underperforming each year



An alternative perspective is given in the chart below. This shows the total number of years in which each of our fund managers encountered a negative return, that is they underperformed their benchmark. On average, each of our managers spent about 15 years out of our 50-year sample underperforming, the minimum was 9 years, and the maximum was 24 years!

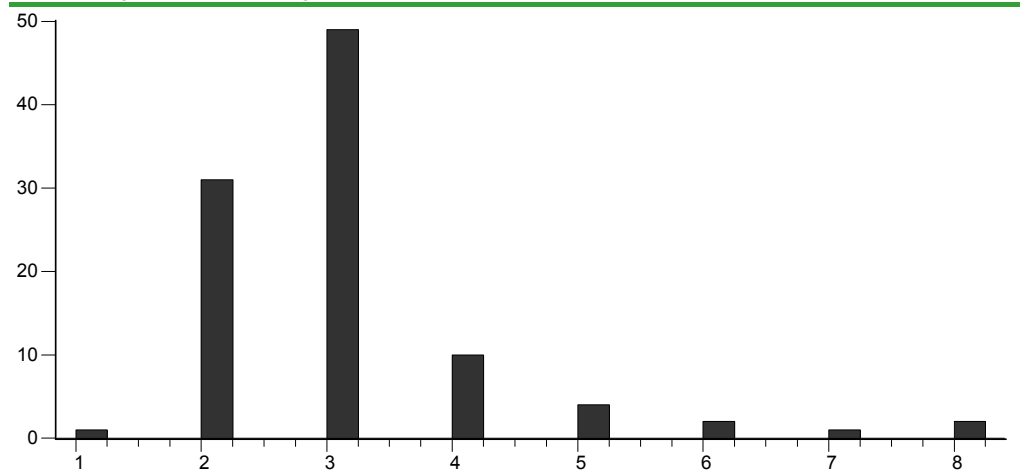
Number of years of underperformance per manager



Source: DrKW Macro research

The chart below shows the histogram of consecutive years of underperformance. On average, even with an information ratio of 0.5, runs of three years of back-to-back underperformance were very normal. Indeed four or five years of continuous underperformance are far from unheard of.

Frequency of cumulative years of underperformance



Source: DrKW Macro research

Remember each of these managers has 3% alpha by design, yet that doesn't stop them encountering bouts of up to eight years of back-to-back underperformance. Despite the fund managers having a high alpha and a high information ratio, it wouldn't have been enough to prevent pretty much every one of the fund managers having been fired by their clients at some point over the fifty years of our data run.

Of course, when investors are myopic they tend to check their performance frequently. The more frequently they examine their portfolio performance the more likely they are to encounter a loss. Such myopic behaviour almost becomes self-fulfilling.

We need to extend investors time horizons. That means being honest with the ultimate investors about the risk of loss in the short-term (very high). It means encouraging longer holding periods and better-structured contracts between the ultimate investors and their chosen agents. It also requires dispelling the illusion of control and the illusion of knowledge such that fund managers admit to the truth that they can't pick stocks or markets over the short-run.

It also requires that investors try to stop 'beating the gun': instead of focusing on *speculation* (Keynes' term for the activity of forecasting the psychology of the market), we need to refocus our industry on *enterprise* (Keynes' term for the activity of forecasting the

prospective yield of assets over their whole life). This in turn means analysts need to stop obsessing about the next quarterly set of results, and corporate managers can get back to running their business for the benefit of shareholders, rather than pampering to the investment equivalent of those suffering attention deficit hyperactivity disorder (ADHD).

Keynes too was exasperated by the obsession with short-term performance. He opined *"The spectacle of modern investment markets has sometimes moved me towards the conclusion that to make the purchase of an investment permanent and indissoluble, like marriage, except by reason of death or other grave cause, might be a useful remedy for our contemporary evils. For this would force the investor to direct his mind to the long-term prospects and to those only."* If only!

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Believing everything you read

Sin 6

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Global Equity Strategy

The story is the thing, or the allure of growth

Shakespeare wrote “The play’s the thing”. For investors it appears that the story is the thing. In a rational world, we gather evidence, weight it and then decide. However, people rely on stories instead. We gather the evidence (in a biased fashion), construct a story to explain the evidence, and then match the story to a decision. This reliance on stories helps to drive investors into the growth trap.

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- ▶ A former colleague of mine once wrote that ‘stockbrokers exist to sell dreams’, I have long held that the corollary to this statement should be ‘but they deliver nightmares’. Despite my skepticism, investors seem to love to listen to the siren songs of stockbrokers. Why?
- ▶ In a rational world, we would all go around gathering the evidence, and then evaluating it and weighing it before reaching our decision. However, real world behaviour is a long way from the rational viewpoint. We collect evidence (usually in a biased fashion), then we construct a story to explain the evidence. This story (not the original evidence) is then used to reach a decision. Psychologists call this explanation-based decision-making.
- ▶ Experiments have shown that stories can have a massive impact upon decision-making. For instance, in a mock trial situation when the prosecution presented the evidence in a story order, but the defence presented evidence in witness order, 78% of jurors found the suspect guilty. However, when the formats were reversed only 31% of jurors found the suspect guilty!
- ▶ Other experiments have found that in simulation markets, participants trade on rumours (and lose money) but keep saying that they don’t believe the rumour and that it didn’t impact their decision-making. The researchers found that to persuade participants to trade, the rumour merely needed to ‘explain’ current share price moves!
- ▶ New research shows that investors behave just like jurors. They map information into a story, and then use the story as a basis for making decisions. All too often investors are sucked into plausible sounding stories. For instance, the story that the internet would alter the way the world did business was probably true, but it doesn’t necessarily translate into profits for investors.
- ▶ The current market obsession with China is another potential example of investors being sucked into a growth story. Those piling into commodities on the back of the fact that China is the largest consumer of just about everything are likely to end up ruining their decision.
- ▶ Indeed, trying to invest in the fastest growing emerging equity markets has been a very poor strategy in the past. Those economies with the highest GDP growth have delivered the lowest returns. Whilst those economies with the lowest GDP growth have delivered the highest returns. Why? Because investors end up overpaying for the hope of growth. Beware the growth trap.

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The story is the thing, or the allure of growth

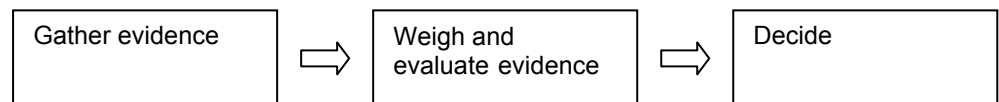
Way back in the dim and distant past, I studied English Literature (not that any of the literary genius I studied rubbed off on me!). However, one of the few things I remember from those long ago studies was a quote from Shakespeare which could be wheeled out whenever one was discussing his plays. In order to stress the importance of seeing a play in production rather than simply reading it, a quotation from Hamlet was most useful: “The play’s the thing wherein I’ll catch the conscience of the king”.

With profound apologies to the bard, the investment equivalent would seem to be ‘the story’s the thing wherein I’ll capture the conscience of the investor’. A former colleague of mine once wrote that ‘stockbrokers exist to sell dreams’, I have long held that the corollary to this statement should be ‘but they deliver nightmares’. The only snag is that people love to listen to the siren songs of the stockbrokers. Why?

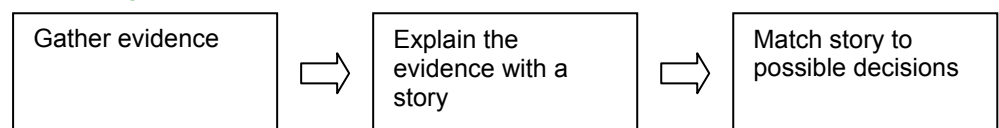
We appear to use stories to help us reach decisions. In the ‘rational’ view of the world we observe the evidence, we then weigh the evidence, and finally we come to our decision. Of course, in the rational view we all collect the evidence in a well-behaved unbiased fashion. Regular readers will know that this isn’t a good description of the way in which most evidence is gathered. Usually we are prone to only look for the information that happens to agree with us (confirmatory bias) etc.

However, the real world of behaviour is a long way from the rational viewpoint, and not just in the realm of information gathering. The second stage of the rational decision is a weighing of the evidence. However, as the diagram below shows, a more commonly encountered approach is to construct a narrative to explain the evidence that has been gathered (the story model of thinking).

The rational view



The story view



Hastie and Pennington are the leading advocates of the story view (also known as explanation-based decision making)⁴⁸. The central hypothesis of the explanation-based view is that the decision maker constructs a summary story of the evidence and then uses this story, rather than the original raw evidence, to make their final decision.

Hastie and Pennington note “*This intermediate mental model of the decision facilitates evidence comprehension, directs inferencing, enables the decision maker to reach a decision, and determines the confidence assigned to the accuracy or expected success of the decision*”.

⁴⁸ See Hastie and Pennington (2000) Explanation-Based Decision Making in Connolly, Arkes and Hammond (2000) Judgement and decision making: An interdisciplinary reader (Cambridge University Press) for an up to date summary of the field.

Much of the original work on the importance of stories has been investigated in the realm of jurors. However, the same mental processes are likely to be at work when it comes to investment decisions.

Consider Hastie and Pennington’s description of the juror’s decisions task:

First, a massive ‘database’ of evidence is presented at trial, frequently comprising of several days of testimony, exhibits, and arguments. Second, the evidence comes in a scrambled sequence, usually many witnesses and exhibits convey pieces of the historical puzzle in a jumbled temporal sequence. Third, the evidence is piecemeal and gappy in its depiction of the historical events that are the focus of reconstruction: event descriptions are incomplete, usually some critical events were not observed by the available witnesses, and information about personal reactions and motivations is not presented... Finally, subparts of the evidence are interdependent in their probative implications for the verdict. The meaning of one statement cannot be assessed in isolation because it depends on the meanings of several other related statements.

In several empirical tests, Pennington and Hastie⁴⁹ have investigated the decision making process of jurors. They uncovered that jurors who had reached different verdicts had constructed different stories with distinctly different configurations of events. They also found that people found it easier to construct a story when the evidence was ordered in a temporal and causal sequence that matched the original events.

The table below shows the results of a mock juror test in which participants were asked to listen to a 100 sentence summary of a trial, with 50 prosecution and 50 defence statements, and a judge’s charge to choose between a First degree murder verdict and a not guilty verdict. Exactly the same material was presented in each case, only the format of the statements was changed. Sometimes the information was presented in story order, and on other occasions it was presented in witness order.

The impact the format had was staggering. When the prosecution presented evidence in the story order, and the defence used witness order, 78% of jurors returned a guilty verdict. Conversely, when the roles were reversed only 31% of jurors returned a guilty verdict!

% of jurors returning a guilty verdict

| | | Defence | |
|-------------|---------------|-------------|---------------|
| Prosecution | Story order | Story order | Witness order |
| | Witness order | 31% | 63% |
| | | 59% | 78% |

Source: Pennington and Hastie (1988)

Hastie et al⁵⁰ also investigated explanation-based decision making in civil cases. They asked people to “think aloud as you make your decisions about the verdict”. They noted that the first step was again the construction of a story to explain the evidence. This summary “included the major events from evidence that the juror believed occurred, ordered in a temporal sequence. This narrative included causal linkages, many of them inferred, that serve as “glue” holding the story... together”.

⁴⁹ See Pennington and Hastie (1986) Evidence evaluation in complex decision making, Journal of Personality and Social Psychology, 51, and (1988) Explanation-based decision making: the effects of memory structure on judgement, Journal of Experimental Psychology: Learning, Memory and Cognition, Vol 14

⁵⁰ See Hastie, Schkade and Payne (1997) Juror judgements in civil cases: Assessing punitive damages, Center for Research on Judgement and Policy

If you are anything like me then the parallels between the juror and the investor are likely to leap out to you. Before giving you an example of one instance of explanation-based decision making in real world financial markets, I want to talk about two other studies.

The first is by DiFonzo and Bordia⁵¹. They tested the impact of rumours on financial markets. Having set up two experimental stock markets, they subjected one to news and the other to rumours. They found that when they introduced rumours, investors started to trade on them (but didn't make any money out of them!). Participants claimed the rumour sources weren't credible, and didn't impact upon their decision to trade. However, in a world in which actions speak louder than words, the participants were found to trade as if the rumours were news! In order to persuade participants to trade, the rumour merely needed to 'explain' current share price moves. This fits with the importance of the explanation-based view of the world.

The other study is a new paper by Mulligan and Hastie⁵². They aim to test if "qualitative information in the financial investment arena is mentally organized in a story structure, analogous to the stories jurors rely on to 'find the facts'".

Participants were given stories about firms working in the medical sector. Each story contained five elements (listed out in the table below). The aim of the task was to pick investments over the next 2-5 years. After each line of text was revealed participants were asked whether or not they would purchase the stock for a long time horizon, and how confident they were (on a scale of one to five).

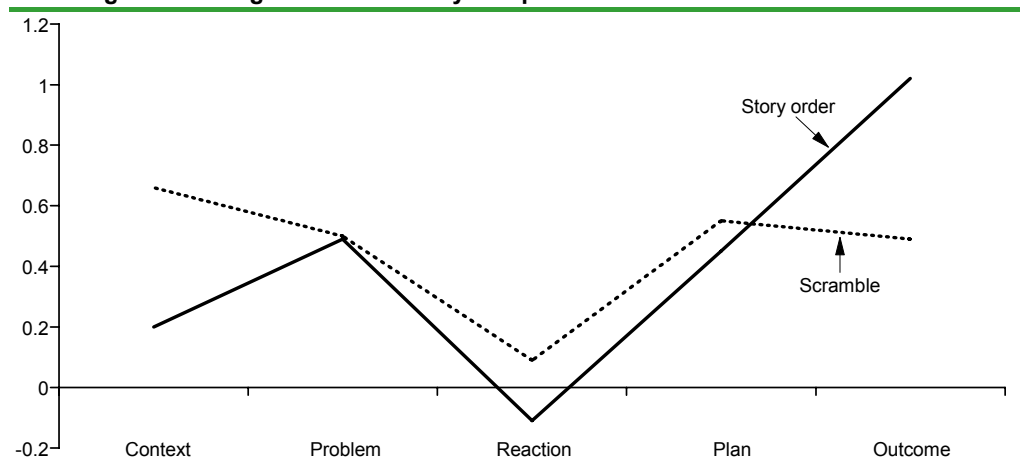
The elements of the story

| Stage | Type of information |
|----------|---|
| Context | Company's past success |
| Problem | Criticism or praise recently received |
| Reaction | Company's intention to work harder or continue as usual |
| Plan | Hiring or firing of employees |
| Outcome | Stated whether the new product was successful or not |

Source: Mulligan and Hastie (2005)

In one format the story was given in order, in the other the elements of the story were scrambled. The chart below shows the mean regression weights for each story component as a function of the presentation format. Note the spike upwards in the regression weight assigned to the outcome when the story is told in the correct order.

Mean regression weights for each story component



Source: Mulligan and Hastie (2005)

⁵¹ DiFonzo and Bordia (1997) Rumour and prediction: making sense (but losing dollars) in the stock market, *Organizational Behaviour and Human Decision Processes*, Vol 71

⁵² Mulligan and Hastie (2005) Explanations determine the impact of information on financial investment judgements, *Journal of Behavioural Decision Making*, Vol 18

Mulligan and Hastie conclude *“participants in the story order condition still relied primarily on the outcome piece when making decisions... Once a coherent mental representation of a story has been constructed, people do not break down the story into its component pieces and use them independently, even when it might be sensible, even rational, to do so... These order-of-information effects make sense in the context of an explanation-based theory of judgement, but they are patently irrational in the context of traditional theories of investment finance.”*

Just like jurors, investors seem to frame their worlds in terms of stories rather than facts. **It is exactly this trait that makes stories so dangerous.** All too often investors are sucked into plausible sounding stories. Indeed, underlying some of the most noted bubbles in history are kernels of truth. For instance, the story that the internet would alter the way the world did business is probably true, but it doesn't necessarily translate into profits for investors.

Indeed we recently wrote on the dangers of growth investing based around the risks involved in listening to the stories at the stock level (see *Global Equity Strategy*, 16 March 2005). However, investors' love affair with China stands out as another great example of the seemingly insatiable thirst for growth.

Investors seem to be able to effortlessly trot out amazing facts and figures on Chinese demand for raw materials. One of my favourite examples is a well known fund management house quoted in the FT as saying “Chinese demand for commodities is revolutionising global commodity markets. China has already overtaken the USA as the largest consumer of iron ore, steel and copper”. The FT concludes “The China effect seems unstoppable⁵³.” All of these may well be true, but does it make sense to base an investment decision on such stories?

Indeed, in the realm of emerging markets investors seem to be addicted to growth. The three charts overleaf tell an interesting story. The first relates average GDP growth rates to average dollar stock returns. The relationship is the opposite of the one many investors believe exists. Those economies with the *lowest* growth rates seem to deliver the highest returns, whilst those with the highest growth rates deliver the lowest returns! Why? The most logical explanation is that investors end up overpaying for growth (much like they do at the stock level).

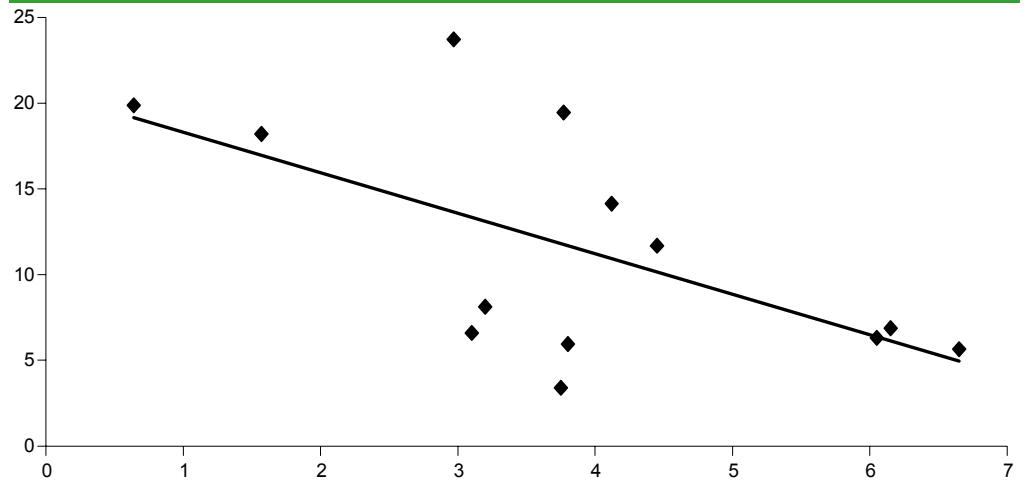
The middle chart overleaf suggests that investors would be better off buying cheap emerging markets rather than being sucked into investing in fast growing economies. The chart shows the relationship between PEs and subsequent returns over the next ten years. The cheapest emerging markets have the highest returns, whilst the most expensive tend to have the lowest returns. This is the long-run counterpart of work we have previously done showing that cheap emerging markets outperform expensive ones (even in the relatively short term, see *Global Equity Strategy*, 12 January 2005, for details).

The final chart is aimed at seeing if it is indeed fast growth that tempts investors to overpay. It shows the relationship between the GDP growth rates from 1990-1995 and the PEs at the end of 1995. Whilst there is not a very strong relationship, there is nonetheless a relationship which suggests that investors do indeed end up paying too much for growth.

Investors enamoured with China, and its growth potential, would perhaps be well advised to study history and understand that growth is often not the panacea that it seems to be. Dependency upon stories for decision-making is one reason why investors keep stumbling into the growth trap year after year.

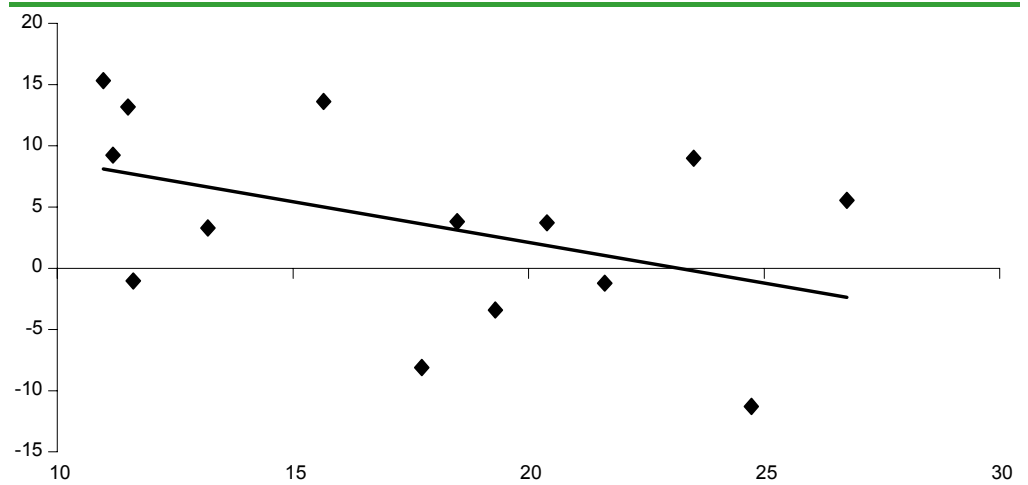
⁵³ China effect convulses commodity markets, Financial Times, 15 November 2003

Average GDP growth vs average dollar stock returns (1988-2004)



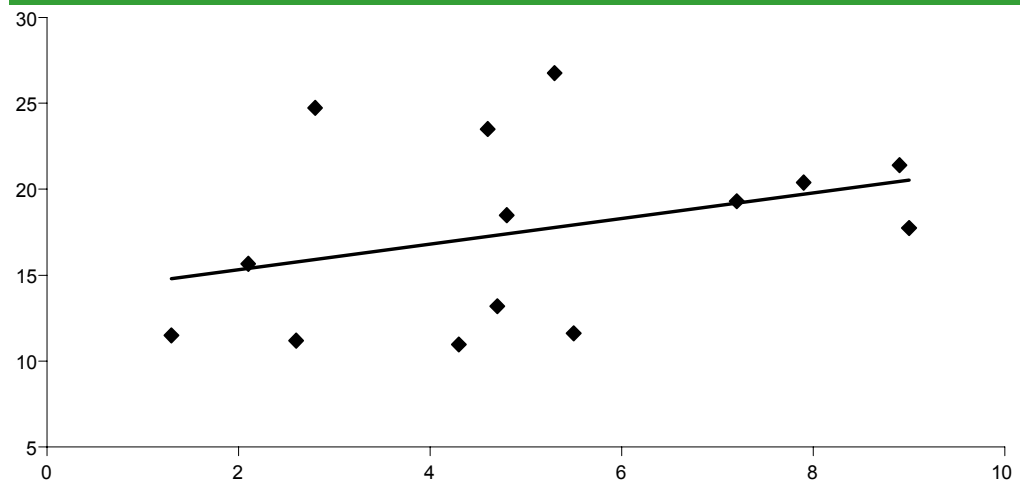
Source: MSCI, DrKW Macro research

1995 PEs vs. ten year dollar stock market returns



Source: MSCI, DrKW Macro research

GDP growth rates 1990-1995 and 1995 PEs



Source: MSCI, DrKW Macro research

Global Equity Strategy

Scepticism is rare, or, Descartes vs. Spinoza

In the blue corner, Descartes. In the red corner, Spinoza. Two great C17th philosophers, two very different views on the human mind. Descartes thought that understanding and belief were separate acts. Spinoza argued they were one and the same. The evidence supports Spinoza. In order to understand something we seem to need to believe it. We seem to be hardwired to 'believe'!

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- ▶ Why is it that we end up believing such strange ideas? For instance, supposedly smart people buy into myths such as stocks for the long run and ideas such as dividends don't matter. In order to investigate why we end up holding such beliefs we need to understand how we handle ideas in our minds.
- ▶ Daniel Gilbert, a Harvard psychologist, has explored this issue in depth. He suggests that there are two visions of the way our minds work when presented with new ideas. According to the work of Descartes, we hold the idea in a sort of mental limbo, proceed to evaluate it, and then reach a conclusion as to its veracity. This sits well with folk psychology in as much as it sounds like the way we would like to think we work.
- ▶ However, Spinoza had an alternative take on the process. He believed that our minds had to hold an idea as true in order to actually understand it. Then, if we are lucky, we might engage in an evaluative process. Once this is completed we then form a corrected belief.
- ▶ Gilbert and his co-authors have run many ingenious experiments designed to show which of these processes is the closest description of the way in which our minds work. The evidence they have uncovered strongly supports the Spinozan view of the world. For instance, people asked to read statements on a crime. They were told some of the sentences they would read were false and written in red ink. However, when people were distracted from this task (by asking them to hunt for numbers at the same time as reading) they ended up believing the false statements to be true. This had a very material impact on the recommended jail term for the crime. When the false statements exacerbated the crime and the readers were distracted, they recommended a jail time that was 60% longer than when they weren't distracted!
- ▶ The thought that we seem to believe everything in order to understand it is more than a little disconcerting. It would seem to render us powerless to control our beliefs. However, don't despair just yet, two potential strategies are available to us. Firstly, what Gilbert calls 'unbelieving'. This effectively requires us to analytically assess our beliefs and confront them with reality. However, cognitive load, pressure and time constraints all sap our ability to follow this path. Secondly, we can follow an exclusion strategy, simply avoiding the generators of false beliefs, just as dieters may choose to avoid doughnut shops.
- ▶ A combination of these strategies is likely to be optimal. When you are really trying to assess the validity of an argument do your best to avoid distraction. Turn off your screens and blackberries, put your phones on call forward, ignore your colleagues!

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Scepticism is rare, or, Descartes vs. Spinoza

Sometime ago a client asked us to compile a list of myths that the markets seemed to hold dear. We came up with twelve potential myths ranging from stocks for the long run to dividends don't matter via such topics as commodities for the future and bond supply matters. However, this exercise also made me wonder why it was that supposedly smart people ended up believing such strange things.

This pondering sent me (as is usually the case) to the annals of psychology. To some extent these errant beliefs seem to stem from bounded awareness/inattentional blindness and framing. We have explored such elements before (see *Global Equity Strategy*, 16 September 2004, What you see isn't what you get). However, there may well be another factor at work. We seem to be hard wired to 'believe'.

Daniel Gilbert, a professor of psychology at Harvard, has explored how we go about believing and understanding information. In a series of truly insightful papers⁵⁴ Gilbert and co-authors have explored the belief process using two alternative philosophical viewpoints.

Cartesian systems

The first view is associated with the work of Rene Descartes. When it came to belief, Descartes suggested the mind performs two separate mental acts. First it understands the idea. Secondly, the mind assesses the validity of the idea that has been presented. This two stage process seems intuitively correct. After all, we can all imagine being presented with some novel idea, holding it in our minds and then pondering the truth or otherwise associated with the idea. The Cartesian approach fits well with folk psychology.

Descartes was educated by Jesuits and like many 17th century philosophers generally deployed psychology and philosophy in the aid of theology. Like anyone of any sense Descartes was well aware that people were capable of believing things that weren't true. In order to protect the Church, Descartes argued that God had given man the power to assess ideas. So it clearly wasn't God's fault when people believed things that weren't true.

As Gilbert (1993, op cit) notes, Descartes approach consisted of two axioms. Firstly, the mental separation and sequencing of understanding and believing and secondly, that people have no control over how or what they understand, but are totally free to believe or disbelieve ideas as they please.

Spinozan systems

Spinoza's background and thinking could not be much more different than Descartes. Born a Jew, Baruch de Espinoza (later to become Benedict Spinoza) outraged his community and synagogue. The tensions finally resulted in Spinoza being excommunicated, accused of abominable heresies and monstrous deeds. The order of excommunication prohibited other members of the synagogue from having any contact with Spinoza.

⁵⁴ Gilbert, Krull, Malone (1990) Unbelieving the unbelievable: Some problems in the rejection of false information, *Journal of Personality and Social Psychology*, 59.
Gilbert (1991) How mental systems believe, *American Psychologist*, 46
Gilbert, Tatarodi, Malone (1993) You can't believe everything you read, *Journal of Personality and Social Psychology*, 65
Gilbert (1993) The Assent of Man: mental representation and the control of belief in Wegner and Pennebaker (eds) *The Handbook of Mental Control*

Freed of the need to conform to his past, Spinoza was able to explore anything he chose. One of the areas he turned his considerable mental prowess to was the faults contained in the Cartesian approach. Spinoza argued that all ideas were first represented as true and only later (with effort) evaluated for veracity. Effectively Spinoza denied the parsing that Descartes put at the heart of his two step approach. Spinoza argued that comprehension and belief were a single step. That is to say, in order for somebody to understand something, belief is a necessary precondition. Effectively all information or ideas are first accepted as true, and then only sometimes evaluated as to their truth, once this process is completed a 'corrected belief' is constructed if necessary.

Libraries

Gilbert et al (1990, op cit) use the example of a library to draw out the differences between these two approaches. Imagine a library with several million volumes, of which only a few are works of fiction. The Cartesian approach to filing books would be to put a red tag on each volume of fiction and blue tag on each volume of non-fiction. Any new book that appeared in the library would be read, and then tagged as either fiction or non-fiction. Any book that is unread is simply present in the library until it is read.

In contrast, a Spinozan library would work in a very different fashion. Under this approach a tag would be added to each volume of fiction but the non-fiction would be left unmarked. The ease of this system should be clear; it requires a lot less effort to run this system than the Cartesian approach. However, the risk is that if a new book arrives it will be seen as non-fiction.

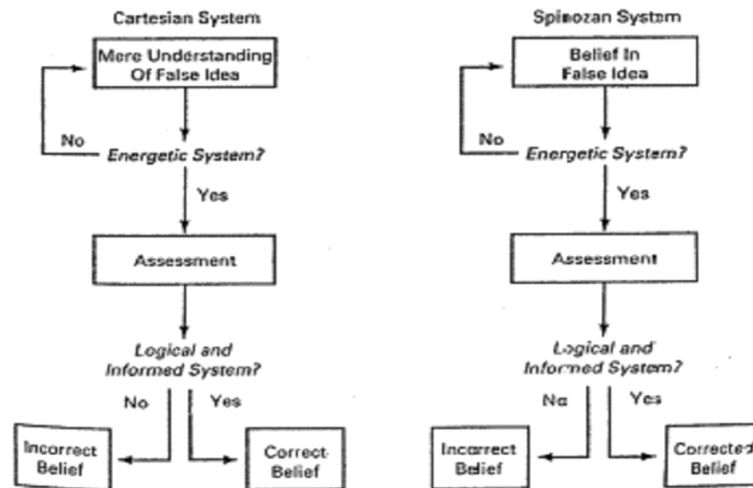
Gilbert et al note that under ideal conditions both systems produce the same outcome if allowed to run to conclusion. So if you pick up a copy of Darwin's 'The expression of emotions in man and animals' and asked the Cartesian librarian what he knew about the book, he would glance at the tag and say non-fiction. The Spinozan librarian would do pretty much the same thing, concluding the book was non-fiction because of the absence of a tag.

However, imagine sneaking a new book into the library, say the latest Patricia Cornwell thriller. If you took the book to the librarian and asked them what they knew about the book, their response would reveal a lot about the underlying process governing the library's approach to filing. For instance, the Cartesian librarian would say "I don't know what sort of book that is. Come back later when it has been read and tagged appropriately". The Spinozan librarian would glance up and see the absence of a tag and say "it doesn't have a tag so it must be non-fiction" – an obviously incorrect assessment.

A testing structure

The picture below taken from Gilbert (1993) shows the essential differences between the two approaches, and also suggests a clever way of testing which of the two approaches has more empirical support.

Descartes vs. Spinoza: a question of belief



Source: Gilbert (1993)

Say an idea is presented to the brain⁵⁵, and then the person considering the idea is interrupted in some fashion. Under a Cartesian system, the person is left merely with an understanding of a false idea, but no belief in it. However, if people are better described by a Spinozan approach then interrupting the process should lead to a belief in the false idea. So giving people ideas or propositions and then interrupting them with another task should help to reveal whether people are Cartesian or Spinozan systems when it comes to beliefs.

The empirical evidence

It has long been known that distracting people can impact the belief they attach to arguments. For instance, in their 1994 review Petty et al⁵⁶ report an experiment from 1976 which clearly demonstrated the impact of distraction techniques⁵⁷.

To test the impact of distraction, students were exposed to a message arguing that tuition at their university should be cut in half. Students listened to the ideas which were presented over headphones. Some heard strong arguments, others heard relatively weak arguments. At the same time, the students were subjected to a distraction task which consisted of tracking the positions of Xs that were flashed on a screen in front of them. In the high distraction version of the task, the Xs flashed up at a fast pace, in the low distraction task the rate was reduced heavily.

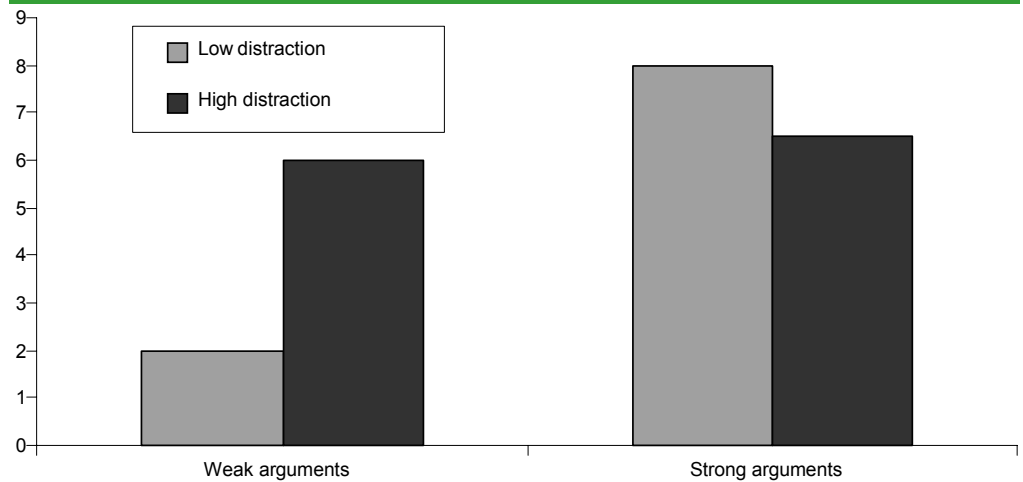
The results Petty et al found are shown in the chart below. When the message was weak, people who were highly distracted showed much more agreement with the message than did the people who only suffered mild distraction. When the message was strong and distraction was high, the students showed less agreement than when the message was strong and the distraction was low. Distraction did exactly what it was meant to do... prevented people from concentrating on the important issue.

⁵⁵ This hints that we support a Spinozan view of the human mind. Descartes was famous for arguing the difference between the brain and the mind, Spinoza in contrast saw the two as impossible to separate, they are two sides of the same coin from a Spinozan viewpoint. For more on this see Antonio Damasio's first and third books, *Descartes' Error* and *Looking for Spinoza* respectively.

⁵⁶ Petty, Cacioppo, Strathman and Priester (1994) To think or not to think, in Brock and Shavitt *The Psychology of Persuasion*

⁵⁷ Petty, Wells and Brock (1976) Distraction can enhance or reduce yielding to propaganda, *Journal of Personality and Social Psychology*, 34

Post message attitudes as a function of distraction and argument quality



Source: Petty, Wells and Brock (1976)

Petty et al conclude "Distraction, then, is an especially useful technique when a person's arguments are poor because even though people might be aware that some arguments were presented, they might be unaware that the arguments were not very compelling."

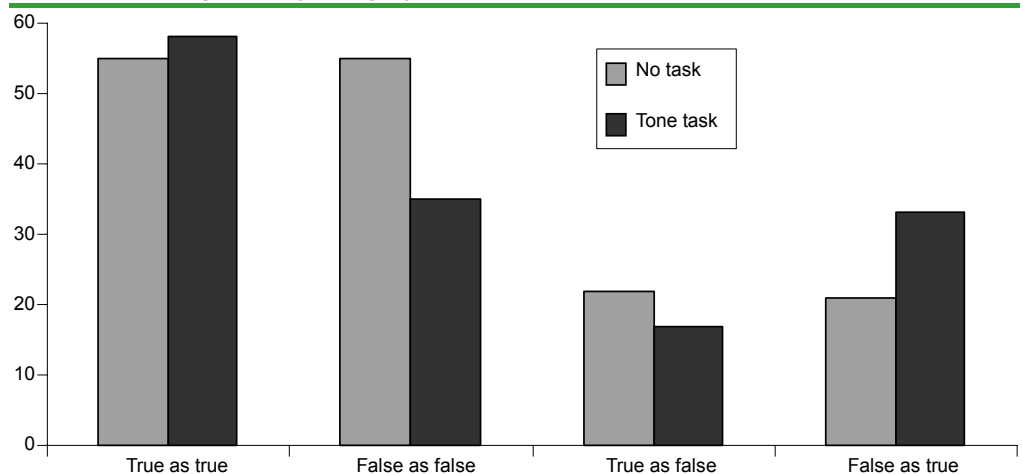
Something to bear in mind at your next meeting with brokers perhaps? The next time an analyst comes around and starts showing you pictures of the next generation of mobile phones, just stop and think about the quality of their investment arguments.

Is there more direct evidence of our minds housing a Spinozan system when it comes to belief? Gilbert et al (1990, op cit) decided to investigate. They asked people to help them with an experiment concerning language acquisition in a natural environment. Participants were shown ostensibly Hopi words with an explanation (such as a monishna is a bat). They had to wait until the experimenter told them whether the word they had been given was actually the correct word in Hopi or whether it was a false statement.

Subjects also had to listen out for a specific sound which if they heard required them to press a button. The tone sounded very shortly after the participant had been told whether the statement was true or false. This was aimed at interrupting the natural processing of information. Once they responded to the tone, the next Hopi word appeared preventing them from going back and reconsidering the previous item.

When subjects were later asked about their beliefs, if they worked in a Spinozan way then people should recall false propositions as true more often after an interrupt than the rest of the time. As the chart below shows, this is exactly what Gilbert et al uncovered.

% of words recognised by category



Source: Gilbert et al (1990)

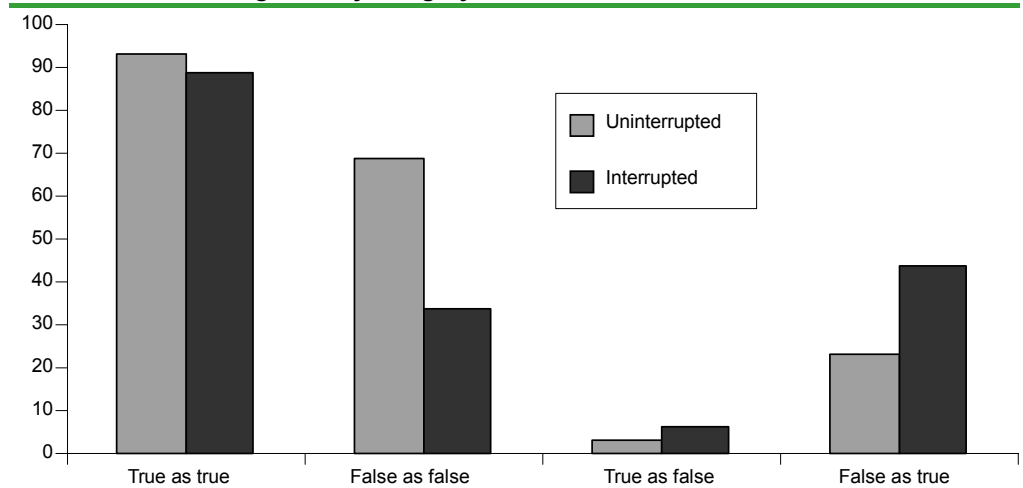
Interruption had no effect on the correct identification of a true proposition (55% when uninterrupted vs. 58% when interrupted). However, interruption did significantly reduce the correct identification of false propositions (55% when uninterrupted vs. 35% when interrupted). Similarly one could look at the number of true-false reversals (the right side of the chart above) When false propositions were uninterrupted, they were misidentified as true 21% of the time, which was roughly the same rate as true propositions were identified as false. However, when interrupted the situation changes, false propositions were identified as true some 33%, significantly higher than the number of true propositions were identified as false (17%).

In another test Gilbert et al (1993, op cit) showed that this habit of needing to believe in order to understand could have some disturbing consequences. They set up a study in which participants read crime reports with the goal of sentencing the perpetrators to prison. The subjects were told some of the statements they would read would be false and would appear on screen as red text, the true statements would be in black text.

By design, the false statements in one case happened to exacerbate the crime in question; in the other case they attenuated the crimes. The statements were also shown crawling across the screen – much like the tickers and prices on bubble vision. Below the text was a second row of crawling numbers. Some of the subjects were asked to scan the second row for the number (5) and when they saw it, they were asked to press a button.

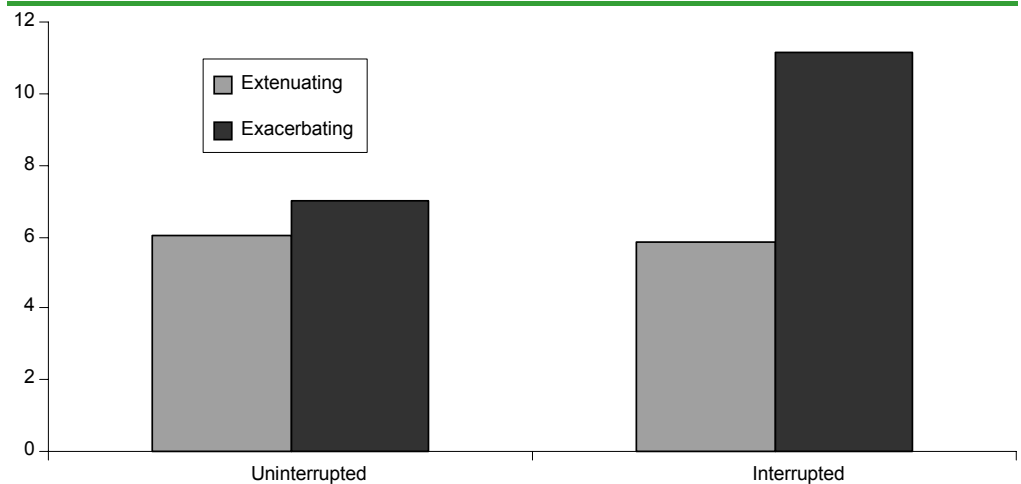
At the end of experiment, subjects were asked to state what they thought represented a fair sentence for the crimes they had read about. The chart below shows that just like the previous example, interruption significantly reduced the recognition of false statements (69% vs. 34%), and increased the recognition of false statements as being true (23% vs. 44%).

% of statements recognised by category



Source: Gilbert et al (1993)

The chart below shows the average recommended sentence depending on the degree of interruption. When the false statements were attenuating and processing was interrupted there wasn't a huge difference in the recommended jail term. The interrupted sentences were around 4% lower than the uninterrupted ones. However, when the false statements were exacerbating and interruption occurred the recommended jail term was on average nearly 60% higher than in the uninterrupted case!

Recommended jail terms (years)

Source: Gilbert et al (1993)

Strategies to counteract naïve belief

The thought that we seem to believe everything in order to understand it, is a more than a little disconcerting. It would seem to render us powerless to control our beliefs. However, the absence of direct control over our beliefs doesn't necessarily imply we are at their mercy.

Two potential strategies for countering our innate tendency to believe can be imagined. The first is what Gilbert (1993, op cit) calls 'unbelieving'. That is, we can try to carry out the required analytic work to truly assess the veracity of an idea. This certainly appeals to the empiricist in me. My own personal viewpoint is that we should accept very little at face value and use evidence to assess how likely the proposition actually is.

For example, we are often told that stock markets earnings can grow faster than nominal GDP over extended periods. Of course, in year to year terms there isn't a close linkage between the two. However, in the long run earnings (and dividends) have grown substantially below the rate of nominal GDP growth (on average earnings have grown 1-2% below the rate of nominal GDP; see *Global Equity Strategy*, 16 August 2002 Return of the Robber Barrons for more on this).

Growth investing is another example. I don't doubt that some growth investors are very successful. However, the empirical evidence shows that picking winners in terms of growth is exceptionally difficult and fraught with danger (in that buying expensive stocks with high embodied expectations obviously opens up considerable downside risk if reality falls short of expectations). In contrast, buying cheap stocks offers a margin of safety against disappointment. (See *Global Equity Strategy*, 16 March 2005, Bargain Hunter for more details).

So regularly confronting beliefs with empirical reality is one way of trying to beat the Spinozan system. However, 'unbelieving' is a risky strategy since it relies on you having the cognitive wherewithal to be on your guard. Gilbert et al have shown that **cognitive load, pressure and time constraints all undermine our ability to reject false beliefs.**

The second potential belief control mechanism is called 'exposure control'. This is a far more draconian approach than 'unbelieving'. **False beliefs can be avoided by avoiding all beliefs, just as a dieter who loves doughnuts may choose to avoid shops that sell doughnuts, we can try to avoid sources of information that lead us to hold false beliefs.** This is a conservative strategy that errs on the side of exclusion, it excludes false beliefs, but it may also exclude some true beliefs. However, it doesn't

suffer from the problems of overload, pressure or time constraints unlike the 'unbelieving' strategy.

All of this suggests that a **combination of these strategies is likely to be optimal**. When you are **really trying to assess the validity of an argument do your best to avoid distraction. Turn off your screens, put your phone on call forward, and try to cut yourself off from all the sources of noise**. Of course, management and colleagues may well think you have taken leave of your sense as you sit there with your screens off, but try to ignore them too. If you are likely to be distracted then either wait until later, when you can give the assessment the time and effort it requires or simply follow an exclusion strategy.

Group decisions

Sin 7

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Global Equity Strategy

Are two heads better than one?

Do you set your asset allocation by committee? Or perhaps sit on a stock selection team? If so, then read on. Psychologists have documented that group decisions are often amongst the worst decisions made. We explore why groups are prone to make mistakes, and offer some solutions for mitigating these errors.

- ▶ The eternal hope is that groups come together, exchange ideas, and reach sensible conclusions. The reality of group behaviour is frequently very different. Psychologists have documented that on average groups are more likely to amplify rather than alleviate decision-making biases.
- ▶ Groups tend to reduce the variance of opinions, and lead members to have more confidence in their decisions after group discussions (without improving accuracy). They also tend to be very bad at uncovering hidden information. Indeed, members of groups frequently enjoy enhanced competency and credibility in the eyes of their peers if they provide information that agrees with the group view!
- ▶ Groups also have a tendency to suffer cascades. Under cascades members abandon their individual information, choosing to agree with others, because they think they know more.
- ▶ Groups are also at risk of suffering polarization and possibly groupthink. Polarization occurs when members of a group end up in a more extreme position in line with their original beliefs after discussion with the group. Groupthink is an extreme version of polarization leading to all sorts of problems.
- ▶ Beating the biases of group behaviour is every bit as difficult as overcoming individual biases. However, secret ballots may help reduce social pressures to conform. The use of devil's advocates may help (but they must believe the case they are arguing, and run the risk of being ostracized). Having respect for the other group members can help, but we all know how difficult that can be!

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Are two heads better than one?

Do you conduct your asset allocation via committee? Or perhaps you sit on a stock selection committee? If so perhaps you should read on. Psychologists have spent many years documenting the fact that group decisions are amongst the worst decisions ever made. Effectively endorsing the view that committees are groups of people who keep minutes but waste hours! The key reason for this appears to be that when we come together as a group we have to deal not only with our own biases, but also to cope with everyone else's biases as well.

The well-informed reader might point out that James Surowiecki has recently published a book entitled *The Wisdom of Crowds*⁵⁸. The book purports to show that "the many are smarter than the few". The basic idea of the book is that groups outperform individuals in decision-making. Surely this is in direct contradiction of my opening paragraph?

However, Surowiecki is correct that groups outperform individuals but only under a very strict set of circumstances. Psychologists have shown that statistical groups can outperform individuals and deliberative groups. A statistical group effectively involves asking a large number of people what they think the answer is and taking the mean. Such groups have a good track record when it comes to forecasting.

For instance, when judging the number of beans in a jar, the group average is almost always better than the vast majority of the individual members. In one such experiment, a group of 56 students was asked about a jar containing 850 beans; the group estimate was 871, a better guess than all but one of the students⁵⁹.

In another experiment, a group was asked to rank ten piles of buckshot, which were only minimally different in size from each other. The group's guess was 94.5% accurate, far more so than that of almost all the group members⁶⁰.

However, for a statistical group to be a useful device three conditions must be met:-

- 1) People must be unaffected by others' decisions (effectively their errors must be uncorrelated)
- 2) The probability of being correct must be independent of the probability of everyone else being correct
- 3) The participants must be unaffected by their own vote possibly being decisive.

If these conditions are broken the group's advantage is quickly lost. This is a particular cause for concern from a behavioural point of view. Critics of behavioural finance argue that if one person is overoptimistic and one is pessimistic then their mistakes cancel out. One of the foundations of behavioural finance is that people, generally, err in a similar fashion. Hence, the mistakes they make are highly unlikely to be uncorrelated.

In addition, groups can be subject to anchors just like individuals (see *Global Equity Strategy*, 27 August). An anecdotal story may help illustrate this point. Recently, my colleagues and I went to the Oval to watch England vs. the West Indies. At about 5pm, we decided to run a book on the total score for England's first innings. The run total was around 250 at that point. I went first and chose 350; the subsequent bets were surprisingly tightly clustered around the initial estimate. The group was at risk of anchoring. The eventual outturn was an England first innings of 470!

⁵⁸ A client and friend sent me a signed copy of this book. Thank you Rob.

⁵⁹ Surowiecki (2004) *The wisdom of crowd*

⁶⁰ Bruce (1935) Group judgements in the field of lifted weights and visual discrimination, *Journal of Psychology*

The other weak spot of statistical groups appears to be when the members have no idea of the answer to the question. For instance, Professor Sunstein⁶¹ asked his fellow faculty the weight, in pounds, of the fuel cell that powers the space shuttle. The actual answer is 4 million pounds. The median response was 200,000; the mean was 55,790,555 (driven by a single outlier). Both answers are wildly inaccurate.

However statistical groups are not a good description of the way in which the average asset allocation committee reaches decisions. Instead, the stereotypical asset allocation committee is formed of the regional heads of equity (i.e. Europe, US, Japan and perhaps Global), the head of fixed income, the CIO and an economist/strategist. This group then sits down and debates the issues before arriving at a conclusion. This is the prototypical set up for what psychologists call deliberative groups.

The eternal hope is that such groups will come together, exchange ideas, each bringing something different to the discussion. The aim is of course to uncover all the information the group has. If one member has an irrelevant anchor, then the hope is that the group will expose this anchor, hence beating the bias.

However, the reality of group behaviour is very different. As MacCoun⁶² notes "Groups generally can be expected to amplify rather than correcting individual bias" (sic). For instance, psychologists have shown that, in general, deliberation tends to reduce variance. After talking together, the members of a group will tend to reach a consensus; hence the variance of views is diminished.

Additionally, group discussion tends to lead to group members having more confidence in their decisions after the group deliberations⁶³. However, sadly, this increased confidence is not matched by increased accuracy. People simply become more sure about the views they hold rather than enjoying an improvement in performance.

This confidence seems to be driven by the simple repetition of the view. The more you hear a view, the more you tend to have confidence that the view is correct!

Sunstein (op cit) notes "Groups have been found to amplify, rather than to attenuate, reliance on the representativeness heuristic; to reflect even larger framing effects; to show more confidence than individuals; ... In addition, groups demonstrate essentially the same level of reliance on the availability heuristic"⁶⁴.

Deliberative groups also show an alarming inability to uncover information that isn't common knowledge, and instead end up centred on the knowledge that is easily available to all the group members.

Sunstein cites a wonderful example from Hightower and Sayeed⁶⁵:

The purpose of the study was to see how groups might collaborate to make a personnel decision. Resumes for three candidates, applying for a marketing manager position, were placed before group members. The attributes of the candidates were rigged by the experimenters so that one applicant was clearly the best for the job described. Packets of information

⁶¹ Sunstein (2004) Group judgements: deliberation, statistical means and information markets, Chicago Law School working paper

⁶² MacCoun (2002) Comparing micro and macro rationality, in Judgements, decisions and public policy (ed) Gowda and Fox (also available from <http://ist-socrates.berkeley.edu/~maccoun/index.html#B>)

⁶³ Heath and Gonzalez (1995) Interaction with others increases decision confidence but not decision quality, *Organisation behaviour and human decision process* 305

⁶⁴ References include Stasson et (1988) Group consensus approaches to cognitive bias task, *Japanese Psychological Research* 68; Sniezek and Henry (1989) Accuracy and confidence in group judgement, *Organisational behaviour and human decision processes*;

⁶⁵ Hightower and Sayeed (1995) The impact of computer-mediated communication systems on biased group discussion, *Computers in Human Behaviour*

were given to subjects, each containing a subset of information from the resumes, so that each group member had only part of the relevant information. The groups consisted of three people, some operating face-to-face, some operating on-line. Almost none of the deliberating groups made what was conspicuously the right choice. The reason is simple: They failed to share information in a way that would permit the group to make that choice. Members tended to share positive information about the winning candidate and negative information about the losers. They suppressed negative information about the winner and positive information about the losers. Hence their statements served to “reinforce the market toward group consensus rather than add complications and fuel debate.”

The general finding from a wide variety of such experiments is that unshared information is highly likely to be omitted from the discussion. Instead, members of the group will tend to concentrate on shared information leading to a hardening of view, creating an anchor for the subsequent discussions.

Why are groups so bad at uncovering unshared information? In part it is a function of the statistical fact that shared information is more likely to be discussed and repeated. Of course, this will tend to influence the individuals in the group, and hence influence the group’s eventual outcome.

The other factor that helps explain why groups are so bad at sharing information concerns social pressure. Those who perceive themselves to be of a relatively low status (admittedly not a major problem for many in our industry!) are particularly likely to refrain from sharing unique information⁶⁶. They are scared of looking stupid in front of their colleagues. The reputational risk is simply too high for low status members to chance sharing information if it doesn’t conform to the group⁶⁷.

Wittenbaum et al⁶⁸ have also shown those who share information which confirms the group’s views are seen as competent and more credible by their peers and by themselves! A situation Wittenbaum et al call mutual enhancement.

The chart below shows the result of one of Wittenbaum et al’s experiments. Once again information over candidates for a job was the topic. After hearing from the various members of the group, people were asked to rate the other members and themselves using a 0-9 scale (strongly disagree to strongly agree) on the following two questions (i) I feel competent at determining the better job candidate, (ii) the others are competent at determining the better job candidate.

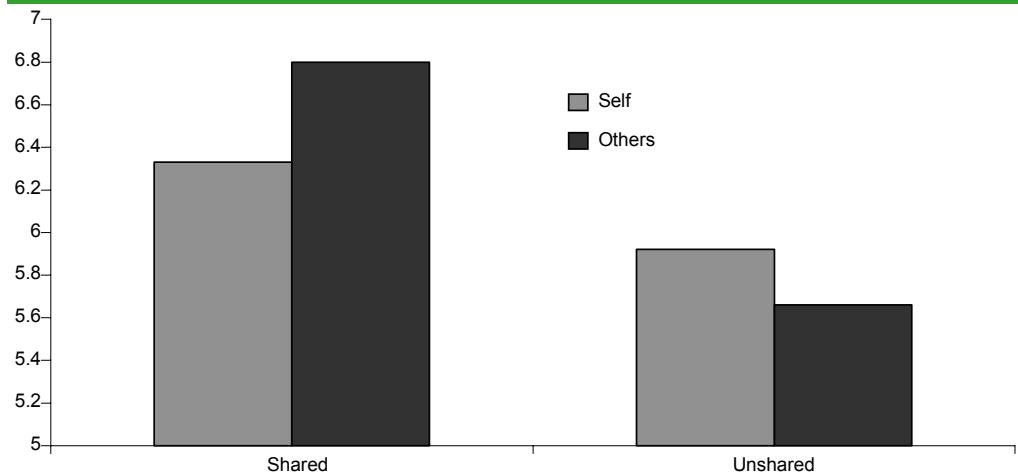
Evidence of mutual enhancement would arise if participants evaluated themselves and the others more favourably when the information was common/shared by the group (i.e they don’t reveal unique information). And, when people relied on unique information, they rate themselves lower and the group would also rate them lower rather than on unique information. That was exactly what was uncovered.

⁶⁶ Wittenbaum and Park (2001) The collective preference for shared information, *Current directions in psychological science*, 10 and Stasser and Titus (2003) Hidden profiles: a brief history, *Psychological Inquiry*, 14

⁶⁷ We will explore a related issue on obedience to authority in a future weekly.

⁶⁸ Wittenbaum, Hubbell and Zuckerman (1999) Mutual Enhancement: Toward an understanding of the collective preference for shared information, *Journal of Personality and Social Psychology*

Communication bias: Evaluation ratings as a function of the type of information



Source: Wittenbaum et al (1999)

The third major problem that groups encounter is the tendency to suffer cascades. We have discussed cascades in the context of markets before (see *Global Equity Strategy*, 13 January 2004 and 19 May 2004). However, cascades can also affect group decision processes.

A cascade is a situation whereby an individual's action is potentially independent of their private information, and totally dependent upon the observation of other's actions and/or words.

One of the key features of cascades is their tendency to exhibit idiosyncrasy. That is to say the behaviour resulting from signals of just the first few individuals drastically affects behaviour of numerous followers. Effectively, cascades are highly path dependent.

Within the context of group discussions, once an opinion has been voiced then it becomes increasingly unlikely that others will argue against it. Not only for the social reasons outlined above, but because they might assume that the person voicing the belief has more information than they do.

Cascades have proven easy to create in laboratory environments⁶⁹. Players are told that one of two pots containing three balls is being used. One pot contains two red and one white ball (pot A), the other two white and one red ball (pot B). Players are selected in a random order to announce which pot is being used after having received a private signal in the form of a draw from the pot.

The results from one of their experiments are shown below. The pot used was B. However, players 3 onwards decided that the other players knew more than they did and hence ignored their private signal, despite the fact that going with the private signal would be correct on 2/3rds of occasions!

Cascade creation: Actual pot used B

| Player | 1 | 2 | 3 | 4 | 5 | 6 |
|----------------|---|---|---|---|---|---|
| Private signal | a | a | b | b | b | b |
| Decision | A | A | A | A | A | A |

Source: Anderson and Holt (2004)

The fourth hurdle that deliberative groups must attempt to overcome is the risk of group polarization and possibly groupthink. Group polarization is the tendency for members of a group to end up in a more extreme position in line with their original beliefs after talking to one another. The increased confidence in view mentioned earlier, begins to create

⁶⁹ For a very up to date survey see Anderson and Holt (2004) Information Cascade Experiments, forthcoming in The handbook of results in experimental economics, Smith and Plott (Ed.)

feedback into the extremity of view, generally creating a loop of increased confidence in more and more extreme views.

Even more extreme than group polarization is groupthink. The term was coined by Irving Janis in 1972. In his original work Janis cited the Vietnam War and the Bay of Pigs invasion as prime examples of the groupthink mentality. However modern examples are all too prevalent. The recent Senate report on the intelligence gathering by the CIA over the war in Iraq explicitly accused the CIA of displaying many of the elements of groupthink.

Groupthink is often characterised by:

- ▶ A tendency to examine too few alternatives
- ▶ A lack of critical assessment of each other's ideas
- ▶ A high degree of selectivity in information gathering
- ▶ A lack of contingency plans
- ▶ Poor decisions are often rationalized
- ▶ The group has an illusion of invulnerability and shared morality
- ▶ True feelings and beliefs are suppressed
- ▶ An illusion of unanimity is maintained
- ▶ Mind guards (essentially information sentinels) may be appointed to protect the group from negative information

Beating the biases

Can these various problems be overcome? As with all biases the solutions are never easy to implement. However, three possible routes to reducing group biases are:

Secret ballots

The use of secret ballots obviously reduces the risk of group members coming under social pressure. So perhaps before the meeting starts members should write down their views and their preference for asset allocation, then count the votes, and debate the outcome if it is really necessary - bearing in mind the dangers inherent in this process.

Devil's advocates

Appointing a devil's advocate⁷⁰ may help. However, all too often the person selected may not truly believe the role they are asked to play, and hence not really try too hard to prevent the group reaching its consensus decision. Selecting prickly disagreeable individuals with a strong contrarian view and the ability and desire to argue on almost anything would be perfect. But such individuals are hard to find, and don't fit easily into most corporate cultures.

Respect for other group members

The other factor that can help reduce the dangers of group decisions is when the group members are acknowledged to be experts in their field, and hence disparate viewpoints are easier to deal with and unshared information may be easier to uncover. However, all too often people tend to believe that they know best on almost every subject and hence tend not to display respect for the views of others.

⁷⁰ The term comes from the process of canonization. When the Pope considers conferring sainthood, a devil's advocate is appointed unofficially to argue against the decision.

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