

The lessons of behavioural economics

It makes good business sense to understand the shortcomings of traditional economic theory. **Debra Maynard** reports.

At the heart of classic economic theory is the assumption that people make decisions in the marketplace based on self-interest and rationality. However, if this is how people always behave then charitable organisations would not exist. People would not make anonymous donations or leave tips in highway restaurants where they are unlikely to return. Stock market bubbles would not occur as a result of investors' irrational exuberance. The dotcom overvaluation, for example, would not have come about because a rational calculation of the odds would have discouraged people from attaching higher decision weights to a low probability.

Clearly there are limitations to the way in which traditional economic theory views human behaviour – which has given rise to a large and growing body of scientific work called behavioural and experimental economics. This field is devoted to the empirical testing and modification of traditional economic theories.

EXPERIMENTAL PATHS

The work of two behavioural economists at the AGSM, Anna Gunthorsdottir and Daniel Lovallo*, not only calls into question the assumption of economic rationality, but also builds bridges between research in economics, psychology and business. Both are associated and work with the 2002 winners of the Nobel Prize in economic sciences, Vernon L. Smith and Daniel Kahneman.¹

According to Gunthorsdottir, who has studied under and worked with Vernon Smith: “All social science ultimately deals with human behaviour and, therefore, our ultimate goal should be the unification of all social sciences.

“The practical implication of unification is that we learn more about how people do business and how it could be done better,

rather than spending our time focusing on sectarian divisions between disciplines or getting hung up about research methodology,” says Gunthorsdottir.

The Royal Swedish Academy of Sciences' information on the Nobel Prize in economic sciences states: “If deviations from rationality and self-interest were small and purely idiosyncratic, they would on average cancel out and economic theory would not be too wide off the mark” when predicting human behaviour.

Yet, people trust and reciprocate when standard economic theory would consider it irrational and ill-advised to do so, says Gunthorsdottir. For example, in business, contracts are never complete and are sometimes non-existent, which means trust and reciprocity play an important part (in gaining acceptable outcomes).

Gunthorsdottir's latest research involves game theory experiments to test the influence of behaviour – such as trust, reciprocity and competitiveness on behalf of one's group, team or organisation – on collective outcomes.

“Since trust, reciprocity and joint cooperation in groups are part of who we are, and are therefore taken completely for granted, it comes as no surprise that economists have only recently turned their attention to these economically important interactions,” says Gunthorsdottir.

Traditional economists have studied how markets realise the gains of trade for more than 200 years. But it is only since the 1950s that economists have paid attention to how groups of two or more people reach joint gains through concerted effort (see the famous ‘prisoner's dilemma’ described below). And it is only in the last decade that economists have shown interest in sequential bilateral exchange relationships –

which refer to any business relationship where parties exchange goods or favours for mutual benefit.

COOPERATIVE GAINS

“When you think about it, joint effort and cooperation in groups and reciprocal relationships have been right under our noses every day of our lives since early childhood – so much so that we fail to notice their pervasiveness and importance,” continues Gunthorsdottir.

“Think of children playing in a group or a meeting of managers formulating business strategy.

“Think of children lending each other crayons or the intricacies of business relationships – the degree of trust that is often possible without contracts and the ease with which we navigate these complex exchanges.

“Without trust, reciprocity and joint cooperation, we would achieve very little; life as we know it, including business and organisations and, indeed, the economy as a whole, would break down.

“What interests me is that while aggregate behaviour in markets corresponds well to what economic theory predicts, behaviour in reciprocal relationships and teams does not.

“In such interactions, many people are more trusting, selfless and reciprocal than a purely self-interested participant should be. It is precisely these deviations from the so-called equilibrium behaviour as predicted by economic theory that often make possible these types of cooperation,” says Gunthorsdottir.

This is illustrated by the game theory model of cooperation known as the ‘prisoner's dilemma’. Invented in the 1950s, it shows how groups of two or more people need joint and simultaneous effort to reach

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**EXPERIMENTAL
APPROACH**
Daniel Lovallo and
Anna Gunnthorsdottir.

joint gains. In the prisoner's dilemma the outcomes are worse if all participants are rational and selfish than if they manage to trust and cooperate. The same is true for sequential exchange.

"Traditional economic theory predicts non-cooperation for both joint group effort and most sequential exchange, yet we often overcome our immediate self-interest and reciprocate; we also overcome our fear of being cheated and trust that others will reciprocate," she says.

"Markets would not exist without group trust, reciprocity and joint cooperation. There would be no trade (because it involves sequential exchange, such as handing over goods followed by payment); no business organisations (which often require group effort, as well as sequential exchange

between employer and employee given that labour and salary are not exchanged simultaneously); and no work teams (that require joint efforts)," says Gunnthorsdottir.

For managers, Gunnthorsdottir's game theory experiments have the potential to reveal which types of group joint effort encourage cooperation and efficiency and which hinder it; which incentive structures strengthen people's cooperative tendencies; and which, and to what extent, personality types influence individual differences in trust, reciprocity and joint cooperation.

"The literature and my own experiments show that individuals' degree of cooperativeness, reciprocity and trust varies, which raises the question of who tends to cooperate and who does not," says Gunnthorsdottir.

"For managers, an interesting question is: 'Are we able to identify those who tend not to cooperate and, if so, can we tailor incentives for cooperation to their type?'"

Her exploration of personality psychology and decision-making has lessons for a whole range of business activities – from forming and managing effective teams, and structuring incentives so that individuals conform to organisational goals, to identifying who is likely to be trustworthy and who is not.

"But the important question at the heart of my work is: 'How do we incorporate into economic theory the fact that people are not only interested in money but often have an inherent preference for cooperation?'" queries Gunnthorsdottir.

** Daniel Lovallo article – next page.*



IRRATIONAL EXPECTATIONS

The AGSM's Daniel Lovallo, who has recently completed a research project on managerial decision-making with Nobel Prize-winner Daniel Kahneman, says behavioural economics has many lessons to teach executives. Their research calls into question the assumptions of economic rationality by analysing how people's intrinsic optimism affects managerial decision-making.

"Most large capital investment projects come in late and over budget, never living up to expectations," wrote Lovallo and Kahneman in a recent *Harvard Business Review* article. "More than 70 per cent of new manufacturing plants in North America, for example, close within their first decade of operation. Approximately three-quarters of mergers and acquisitions never pay off ... and efforts to enter new markets fare no better."

To fix this apparently endemic deviation from the standard assumptions of economic rationality in complex decision-making, they prescribe what they call an "outside view" to inject more reality into business forecasting.

THE OUTSIDE VIEW

For most of us, the tendency toward optimism is unavoidable. And it's unlikely that companies can, or would even want to, remove the organisational pressures that promote optimism. Still, optimism can, and should, be tempered. Simply understanding the sources of over-optimism can help planners challenge assumptions, bring in alternative viewpoints, and in general take a balanced view of the future.

But there's also a more formal way to improve the reliability of forecasts. Companies can introduce into their planning processes an objective forecasting method that counteracts the personal and organisational sources of optimism. We'll begin our exploration of this approach with an anecdote that illustrates both the traditional mode of forecasting and the suggested alternative.

In 1976, one of us was involved in a project to develop a curriculum for a new subject area for high schools in Israel. When the [project] team had been operating for about a year, its discussions turned to the question of how long the project would take. Everyone on the team was asked to write on a slip of paper their best estimate of the number of months that would be needed to finish the project. The estimates ranged from 18 to 30 months.

One of the team members who had made a guess within that range – a distinguished expert in curriculum development – was

then posed a challenge by the rest of the group: "Surely, we're not the only team to have tried to develop a curriculum where none existed before. Try to recall as many such projects as you can. Think of them as they were in a stage comparable to ours at present. How long did it take them at that point to reach completion?"

After a long silence, the curriculum expert said, with some discomfort: "First, I should say that not all the teams that I can think of, who were at a comparable stage, ever did complete their task. About 40 per cent of them eventually gave up. Of the remaining, I cannot think of any that completed their task in less than seven years, nor of any that took more than 10."

He was then asked if he had reason to believe that the present team was more skilled in curriculum development than the earlier ones had been. "No," he replied, "I cannot think of any relevant factor that distinguishes us favourably from the teams that I have been thinking about. Indeed, my impression is that we are slightly below average in terms of resources and potential." The wise decision at this point would probably have been for the team to disband. Instead, the members ignored the pessimistic information and proceeded with the project. They finally completed the initiative eight years later, and their efforts went largely for naught – the resulting curriculum was rarely used.

In this example, the curriculum expert

made two forecasts for the same problem, and he arrived at very different answers. We call these two distinct modes of forecasting the inside view and the outside view.

The contrast between inside and outside views has been confirmed in systematic research. Recent studies have shown that when people are asked simple questions requiring them to take an outside view, their forecasts become significantly more objective and reliable. For example, a group of students enrolling at a college were asked to rate their future academic performance relative to their peers in their major. On average, these students expected to perform better than 84 per cent of their peers, which is logically impossible. Another group of incoming students from the same major were asked about their entrance scores and their peers' scores before being asked about their expected performance. This simple detour into pertinent outside-view information, which both groups of subjects were aware of, reduced the second group's average expected performance ratings by 20 per cent. That's still overconfident, but it's much more realistic than the forecast made by the first group.

Most individuals and organisations are inclined to adopt the inside view in planning major initiatives. It's not only the traditional approach, it's also the intuitive one. The natural way to think about a complex project is to focus on the project itself – to bring to bear all one knows about it, paying special attention to its unique or unusual features. The thought of going out and gathering statistics about related cases seldom enters a planner's mind. The curriculum expert, for example, did not take the outside view until prompted – even though he already had all the information he needed. Even when companies bring in independent consultants to assist in forecasting, they often remain stuck in the inside view. If the consultants provide comparative data on other companies or projects, they can spur useful outside-view thinking. But if they concentrate on the project itself, as is often the case, their analysis will also tend to be distorted by cognitive biases.

The outside view's advantage is most pronounced for initiatives that companies have never attempted before – like building a plant with a new manufacturing technology or entering an entirely new market. It is in the planning of such de novo efforts that the biases toward optimism are likely to be great. Ironically, however, such cases are precisely where the organisational and personal

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pressures to apply the inside view are most intense. Managers feel that if they don't fully account for the intricacies of the proposed project, they would be derelict in their duty. Indeed, the preference for the inside view over the outside view can almost feel like a moral imperative.

PUTTING OPTIMISM IN ITS PLACE

We are not suggesting that optimism is bad, or that managers should try to root it out of themselves or their organisations. Optimism generates much more enthusiasm than realism (not to mention pessimism), and it enables people to be resilient when confronting difficult situations or challenging goals. Companies have to promote optimism to keep employees motivated and focused. At the same time, though, they have to generate realistic forecasts, particularly when large sums of money are at stake. There needs to be a balance between optimism and realism – between goals and forecasts. Aggressive goals can motivate the troops and improve the chances of success, but outside-view forecasts should be used to decide whether or not to make a commitment in the first place.

HOW TO TAKE THE OUTSIDE VIEW

Making a forecast using the outside view requires planners to identify a reference class of analogous past initiatives, determine the distribution of outcomes for those initiatives, and place the project at hand at an appropriate point along that distribution. This effort is best organised into five steps:

1 Select a reference class. Identifying the right reference class involves both art and science. You usually have to weigh similarities and differences on many variables, and determine which are the most meaningful in judging how your own initiative will play out. Sometimes that's easy. If you're a studio executive trying to forecast sales of a new film, you'll probably use as your reference class a set of recent films in the same genre, starring similar actors, and with a comparable budget. In other cases, it's much trickier. If you're a manager at a chemical company that is considering building an olefin plant incorporating a new processing technology, you may instinctively think that your reference class would include previously constructed olefin plants. But you may actually get better results by looking at other chemical plants built with new processing technologies. The plant's outcome, in other words, may be

more influenced by the newness of its technology than by what it produces. In forecasting an outcome in a competitive situation, such as the market share for a new venture, you need to consider industrial structure and market factors in designing a reference class. The key is to choose a class that is broad enough to be statistically meaningful but narrow enough to be truly comparable to the project at hand.

2 Assess the distribution of outcomes. Once the reference class is chosen, you have to document the outcomes of the prior projects and arrange them as a distribution, showing the extremes, the median and any clusters. Sometimes you won't be able to precisely document the outcomes of every member of the class. In such cases, you can still arrive at a rough distribution by calculating the average outcome as well as a measure of variability. In the film example, for instance, you may find that the reference-class movies sold \$40 million worth of tickets on average, but that 10 per cent sold less than \$2 million dollars worth of tickets and 5 per cent sold more than \$120 million.

3 Make an intuitive prediction of your project's position in the distribution. Based on your own understanding of the project at hand and how it compares with the projects in the reference class, predict where it would fall along the distribution. Because your intuitive estimate will likely be biased, the final two steps are intended to adjust the estimate in order to arrive at a more accurate forecast.

4 Assess the reliability of your prediction. Some events are easier to foresee than others. A meteorologist's forecast of temperatures two days from now, for example, will be more reliable than a sportscaster's prediction of the score of next year's Super Bowl. This step is intended to gauge the reliability of the forecast you made in Step 3. The goal is to estimate the correlation between the forecast and the actual outcome, expressed as a coefficient between 0 and 1, where 0 indicates no correlation and 1 indicates complete correlation. In the best case, information will be available on how well your past predictions matched the actual outcomes. You can then estimate the

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correlation based on historical precedent. In the absence of such information, assessments of predictability become more subjective.

You may, for instance, be able to arrive at an

estimate of predictability based on how the situation at hand compares to other forecasting situations. To return to the movie example, say that you are fairly confident that your ability to predict the sales of films exceeds the ability of sportscasters to predict point spreads in football games but is not as good as the ability of weather forecasters to predict temperatures two days out. Through a diligent statistical analysis, you could construct a rough scale of predictability based on computed correlations between predictions and outcomes for football scores and temperatures. You can then estimate where your ability to predict film scores lies on this scale. When the calculations are complex, it may help to bring in a skilled statistician to assist with this step.

5 Correct the intuitive estimate. Due to bias, the intuitive estimate made in Step 3 will likely be optimistic – deviating too far from the average outcome of the reference class. In this final step, you adjust, or regress, the estimate towards the average based on your analysis of predictability in Step 4. The less reliable the prediction, the more the estimate needs to be regressed towards the mean. For example, suppose that your intuitive prediction of a film's sales is \$92 million and that, on average, films in the reference class do \$40 million worth of business. Suppose further that you have estimated the correlation coefficient to be 0.6. Then the regressed estimate of ticket sales would be: $\$92\text{m} + [0.6 \times (\$40\text{m} - \$92\text{m})] = \60.8m . As you see, the adjustment for optimism will often be substantial, particularly in highly uncertain situations where predictions of the future are unreliable. 🔄

FOOTNOTE

¹ Vernon L. Smith is professor of economics and law at George Mason University. He is a pioneer of laboratory experiments as a tool in empirical economic analysis. Daniel Kahneman is the Eugene Higgins professor of psychology at Princeton University. He is a pioneer for having integrated insights from psychological research into economic science.