

Why better models do not always lead to better decisions

[Georgios Samakovitis](#) | 26/01/2015 9:00 am

Executives who live with uncertainty should resist the fallacy of arithmetic precision when making investment decisions, says Georgios Samakovitis of the University of Greenwich.

It was the environmental academic Jerome Ravetz who said: “We believe in numbers, just because they are numbers.” Other science historians, including Theodore Porter, have long held the same view. This statement could not be more relevant as the global economy recovers from the biggest financial crisis since 1929. Many in management privately agree that we use numerical decision models with near religiousness, to convince that our decisions are scientifically robust, as few will doubt a well-founded, widely accepted mathematical model: we call on the legitimacy of arithmetic to persuade rather than prove.

This is visible in both private and public sectors. Consider the response of the European Central Bank to the 2008 credit crunch: what used to be well-grounded sovereign debt and deficit ratios for EU countries were suddenly re-tagged as alarmingly unsustainable, and the countries in need of economic rescue, even though many still featured strong industrial production and healthy economic outlook. The same fundamentals, subjected to different numerical assumptions, gave distinctively different results, and that was deemed sufficient to realign markets and lower sovereign credit ratings. No questions were asked as to whether the assumptions were realistic or not; the ‘new numbers’ legitimised the ‘new reality’ by coming from the unchallengeable central bank’s rigorous models.

Enter the corporate world and the same is most visible in, of all places, investment decisions. Especially in banking, evidence shows that decision-makers adjust numbers to make models deliver the outcome they desire. Research on technological investment decisions for internet banking in major UK banks between 1999 and 2006 demonstrated that mathematical models are systematically used to advocate for a particular investment, instead of being employed to evaluate and compare candidate projects. Top executives acknowledge that people do play with the numbers to make them tell the story they want. Decisions are made on strategic grounds and then supported by a story told by numbers.

Living with uncertainty

Ever since the golden era of quantitative finance in the 1970s, conventional wisdom has it that more accurate models will drive more informed, and hence better, decisions. Yet the same practitioner wisdom says that most executive decisions, particularly ones on financial investment, are made, just because they have to, in the presence of uncertainty, if not ignorance. So good models abound, but decisions are made despite them. I call this the ‘paradox of practice’.

The paradox becomes especially interesting when we consider the finance, accounting and economics background of decision-making individuals. A partial explanation is

that the human brain is not an optimisation engine: decisions are taken in light of information available at the time, seeking good enough but not optimal solutions (Herbert Simon termed this 'satisficing'). Satisficing does not, however, explain why even the simplest and most well-established valuation techniques (such as, say, the net present value) are merely used to justify, rather than appraise, an investment.

More light is shed when we consider who develops financial models, and who uses them. They are developed primarily by professional researchers as outcomes of applied research. They are used by professional managers in everyday decision-making practice.

The two groups have totally different professional interests. Academics seek recognition from the academic community through publication and dissemination of their work. Managers are not concerned with the model itself or its credibility, but with reaching a timely, effective and defensible investment decision in the presence of uncertainty. They cannot afford the luxury of time and rigour to select the right model, run it over investment options, prioritise them and hence make an optimal decision. They will rather go by intuition and experience, and then seek to legitimise their choice through the valuation models their firm has already adopted – in other words, follow the 'corporate handbook'.

Not adding up

Improving precision is therefore irrelevant to better decision quality. Existing valuation techniques are accurate enough. Instead, decision models must account for the fact that financial valuation methodologies are indeed used as political tools for justification. What we need, I propose, is to actively surface the political advocacy by giving voice to the actors who directly and indirectly influence decision making. That will motivate consensus, but no longer through the 'numbers proxy'. Articulating those interests will help negotiate pragmatic decisions, recognising decision making is not a numerical exercise but a social process and aiming for more informed as opposed to more accurate decisions.

The view that better arithmetic precision is a mark of high quality is a weakness of the prevailing risk-based paradigm for investment decision making. Numerical models can do a lot to help us compare alternative solutions, if only along quantifiable parameters. Opportunity, ambiguity and uncertainty present us with a far richer quality of decision parameters than risk assessment models can, no matter how sophisticated.

Georgios Samakovitis is principal lecturer in information systems at the University of Greenwich, specialising in banking technology.