Occasional paper no. 9

And yet it moves. The enduring relevance of rationality for economics and public policy

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Published: April 2010

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Introduction

"And yet it moves".

According to legend, Galileo uttered these words in 1633 after recanting his views about the earth and sun. Under the menacing weight of the Inquisition, the elderly Galileo accepted that the earth lies motionless and immovable at centre of the heavens. Despite having to publicly "abjure, curse and detest" his previous teachings, legend has Galileo quietly defiant.

Another time. Another place. Another abjuration. This time it is Alan Greenspan who is summoned to appear. The once revered central banker seems elderly and shaken. Seated before his Congressional inquisitors, Greenspan confesses his "distress" and accepts that his "ideology" of self-regulating financial markets may have contributed to the global financial crisis. The news spreads around the world in moments. The oracle of free markets had recanted.

Countless obituaries are written. The pundits cite Greenspan's testimony as evidence for the demise of the anything and everything, be it Adam Smith's invisible hand, neo-liberalism or the entire field of economics[1]. But look closely at Greenspan's testimony. He may have renounced particular personal ideologies, but there is no recanting of economics or its assumptions about the rational pursuit of self-interest.[2] Like his predecessor in recantation, Greenspan allows his inquisitors to hear one message while other messages require more careful listening. The eulogists would have us believe otherwise; that rationality is a spent and lifeless force in economics. A dead assumption.

And yet it moves.

Rationality: The enduring assumption

The global financial crisis will be studied for decades to come. There are already many accessible accounts available in bookstores and academic journals will soon be over-run with new economic theories. But this essay is not one of them.

The last two years have not been easy for economists and economics in general. The thundering of edifices collapsing in the wake of the crisis startled those who should have known better and energised those who believe they knew better all along — particularly those who reject economics as a major determinant in the formulation of public policy.

Some of the economic tenets that have been subjected to the most vituperative attention include: utility maximisation, market efficiency, competitive equilibrium and diminishing marginal utility. But the denunciation of economic fundamentals turns feverish when it comes to the assumed rationality of decision making by individuals.

Mainstream economics holds that individuals are rational in their decision making. Individuals are assumed to maximise their well-being as determined by their individual preferences. They do so by maximising their present and future consumption of goods and services within a set of constraints including their desire for leisure and their budgets.[3] Typically, individuals are assumed to know everything they need to know in order to make their decisions.

[1] See Stiglitz (2009) (or better yet see Stiglitz (2002)), Rudd (2009) and Kaletsky (2009), respectively.

[2] Appearing before the House Oversight Committee on 24 October 2008, the former head of the US Federal Reserve states, "I made a mistake in presuming that the self-interest of organisations, specifically banks and others, were such that they were best capable of protecting their own shareholders and their equity in the firms." That is, he does not question the rational pursuit of self-interest. He only accepts flaws in his personal belief that self-interest was a sufficiently strong, self-regulating factor.

[3] Preference need not be limited to the consumption of physical goods and services. Individuals may also derive utility from possessing intangible 'things' or undertaking non-possessive activities. For example, personal reputation or caring for endangered tree frogs, respectively.

However, there is one important clarification that is often forgotten. Although individuals are assumed to all be rational, rationality does not imply that all individuals are identical. Admittedly, many economic theories and models assume uniform preferences and constraints. This is done merely for convenience. Unlike rationality, uniformity is not based on first principles.

The attempted overthrow of rationality as a core assumption of economics is not new. It has made bedfellows of economics and psychology for decades. There is more than one love child that owes its lineage to this consummation. Behavioural economics, psychoeconomics, neuroeconomics, cognitive economics and bioeconomics — all contend that their empirical findings refute the notion of rational decision making.

An experiment delightfully known as the Ultimatum Game and first devised in the early 1980s is cited ubiquitously as proof that rationality is bunkum.

In this experimental game, two players interact anonymously. The first player is given, say, $100, and proposes how he intends to divide this money between himself and the other player. The second player can either reject or accept the proposal. If the second player rejects the proposal then both players walk away empty handed. If the second player accepts the proposal, the money is split according to the proposal. The rational outcome seems obvious. The first player should offer the second player the smallest amount possible, say $1, on the basis that the second player would accept the offer. After all, $1 is better than nothing. Right? Wrong.

Data collected across many experiments shows that the first player is most likely to offer the second player up to $40. Huh!? What happened to rational self-interest? Why do players consistently and unnecessarily hand over so much to an anonymous third party?[4]

Many equally intriguing experiments have been devised to highlight the daunting array of irrationalities that afflict humanity. The list of ailments so discovered is extensive. Apparently our poor species suffers from: loss aversion, confirmatory bias, habit formation, anchoring, hindsight bias, overconfidence, reciprocal altruism, framing, status quo bias, bounded rationality, present bias, ambiguity aversion, mental accounting, heuristic decision making and irrational exuberance.[5] It would seem that that only one conclusion is possible in the face of this bewildering array of ailments. Rationality is dead. We are helpless victims of systemic irrationality.

But surely something is wrong with an analytical framework that ends with an oxymoron such as “systemic irrationality”. Systemic biases do not exist in properly identified systems — suggesting that these behavioural experiments may be neither tests of rationality nor tests of economics’ *assumption* of rationality.[6], [7]

The following discussion therefore adopts an alternative framework that is deductive in nature. Six very different starting points are applied. The first two approaches apply *reason* and *wisdom* to the subject, while the third approach applies *ignorance* to the observer. The remaining three approaches of *irony*, *cynicism* and *tractability* are applied to the implications

[4] Note, that since the game is played only once and anonymously, reciprocation is not an issue.

[5] Indeed, it was none other than Alan Greenspan who coined the term “irrational exuberance” during a speech on 5 December 1996, to highlight that individuals (and markets) occasionally behaved in ways that were difficult to understand. The term was popularised following its use as a book title by Robert Schiller in 2000.

[6] In other words, rationality applies to all decisions made in all circumstances whereas these tests only shed light on particular decisions made under particular circumstances. What may appear to be “irrational” (or biased) in a particular set circumstances (defined by the observer), may actually be completely rational (unbiased) when viewed in light of a less constrained set of circumstances.

[7] These tests do not serve as tests of economics’ *assumption* of rationality because they offer no alternative hypothesis for decision making.

of accepting or rejecting the assumption of rationality. No matter the starting point, each approach confirms the plausibility of assumed rationality.

The first starting point relies on the subject's ability to reason. If we accept that it is this attribute that sets us apart from all other forms of life of which we know, then we must wonder how humans and *drosophila* differ when it comes to decision-making.

The application of reason is not an exercise in pure objectivity. It is not a mechanical calculation that simply lies beyond the minimal computing power of a tiny *drosophila* brain. Rather, the Oxford Dictionary inter alia defines reason as involving*: the intellectual faculty by which conclusions are drawn from premises, sense, sensible conduct, what is right or practical or practicable*.[8]

The capacity to reason suggests that individuals will make an assessment based on known 'facts' when facing an economic decision. Facts will be gathered, filtered, sorted and prioritised according to a set of 'sensible' criteria. It also means that in many instances, we will accept that decisions must be made even though our knowledge may be limited. We will assess whether it is worthwhile gathering additional information or whether this effort is too costly or too time consuming. In any case, as reasonable beings we will be aware that some degree of uncertainty usually remains and so we will develop a range of strategies for dealing with these unknowns. Such strategies might include:

- delay a decision to allow new information to come to light ("Darling, can this wait till later?")
- delegate the decision to others with greater insight ("Honey, which shoes should I wear?")
- develop rules of thumb to moderate our decisions ("Sweetheart, it won't matter if I eat just one")

It is the ability to reason that urges us to process rationally all available information when making decisions (unless it is considered unprofitable to do so) and to develop strategies for dealing with uncertainty. This analytical process may take months, minutes or microseconds. But it must take place if we accept that to reason is to be human.

A second approach for thinking about whether rational decision making is the appropriate economic assumption, is to query how wisdom born of personal experience might influence individual behaviours.

If in later life we were given the opportunity of going back in time to alter the course of our lives, how might we use that power to influence decisions we had made in our more youthful years? Would we buy that house we couldn't afford at the time? Enrol in the course that seemed too difficult? Ask that cutie out on a date?

In changing the course of our lives, what considerations would we take into account? Surely, it would be to improve the quality of our lives — each according to his or her own definition. Some might seek greater wealth. Others might seek greater success, love or health. Others might tinker with history to ensure they leave a greater legacy. And some may choose to leave their pasts unchanged if they were sufficiently content with their circumstances or fearful of the alternatives.

The only outcome of which we can be certain in undertaking this thought exercise, is that our time travellers are highly unlikely to do anything that knowingly makes their futures worse-off.

[8] The Australian Pocket Oxford Dictionary (1976), Oxford University Press.

Rational self-interest can be expected to dominate independently and irrespectively of how each time-traveller defines “self-interest”.

The third approach to assessing the plausibility of assumed rationality takes ignorance as its starting point. In this thought exercise the observer knows nothing about the observed subject. How might this imposed ignorance influence our assumptions about rational decision making?

The thought experiment involves selecting an individual at random out of the population. The individual is instantly covered by a “veil of ignorance” such that we cannot observe any of the subject’s characteristics — old or young, rich or poor, educated or illiterate, urban or rural, machine operator or merchant banker, complete stranger or loved one. What might we assume about the person below the veil? If given an option between a petrol powered chainsaw or vibrating foot massager, which would our unobservable subject choose? Alternatively, if our subject were offered some money or even more money, which offer do we expect will be preferred?

We have no way of answering the first question. We can only conclude that before making a choice, they will evaluate the pros and cons of each option to the best of their ability and within the time available. The second choice is less ambiguous. If we know nothing about the person beneath the veil, we must conclude that more money will be strongly preferred to less. This is not because we believe the hidden subject to be selfish but because more money self-evidently equates with greater choice, including the choice to keep an amount commensurate with the smaller amount offered. For the observer to conclude otherwise would be to restrict exogenously the choices available to the veiled individual. Such restrictions equate to an imposition of the observer’s values on the subject, without any capacity to know whether those values were consistent with those of the subject. Any non-alignment between the two sets of values will leave the subject worse-off.

As observers, economists cannot observe the preference of each and every individual in the population. It is therefore incumbent upon economists to not impose assumptions that pre-empt the values of their subjects. This can only be achieved by assuming that individuals will rationally pursue their own self-interests.

The fourth and fifth approaches are based on irony and cynicism. They are not applied directly to the subject or the observer. Rather, these approaches address the broader implications of denying rationality.

Ironic and disturbing implications arise if we accept that a laboratory experiment can ever ‘prove’ the irrationality of humanity. It is disturbing and ironic to contend that an observer can ever conclude that a randomly selected sample of subjects lacks rationality. To do so has one of two implications. Either it implies that the observer possesses qualities that the observed hopelessly lacks; or it implies that the observer is drawn from a different population.

The first implication derives from what is surely a necessary condition for any experiment, namely, that it is constructed logically and verifiably. In other words, the observer must be rational in order to create the conditions required to observe the irrationality of others. Despite its unpleasant and elitist overtones, it is also somewhat incongruous given that the observer and the observed are all drawn from the same population. The second implication is also disturbing insofar as it may suggest cultural or social differences with respect to rationality. More critically, it is also suffers from incongruity given the large number of experiments that have been performed by a diverse group of observers on many different samples drawn from many different populations.

There is a further, more cynical, consequence of accepting irrationality as a basic feature of the human condition. In a world where it is accepted that individuals are irrational, it must also be accepted that an independent observer who is able to uncover the nature of the systemic bias, would be able to exploit that information. It is hard to believe that the astounding successes of the Big Mac and iPhone derive from McDonald's and Apple cynically playing to individuals' cognitive biases rather than satisfying consumers' needs and wants (even if consumer preferences can be manipulated by clever marketing).

In terms of public policy, if irrationality were to move to the mainstream of thinking, it would imply that in order to make good public policy, policy makers must be in possession of higher order capacities than those over whom they govern.[9] History shows that policy makers of all persuasions who cynically assume the irrationality of their subjects (that is, voters), do so at their own peril.

Finally, there is tractability. If the *a priori* reliance on rationality is displaced from the field of economics, what takes its place?

After all, there is only one way to be rational but an unlimited number of ways to be irrational. So which manifestation of irrationality should we choose?

The empiricist's solution to this problem consists of constructing experiments to reveal the nature of our systemic irrationality. However, the nature of experiments in the social science and the truths they reveal, differ from those revealed in the physical sciences. The same degree of objectivity can not exist. The observations from such experiments cannot be separated from the motives of the experimenter and the experimentee.[10] Even the much vaunted Ultimatum Game mentioned above, has been shown to suffer from this problem. Tiny tweaks in the construction of the experiment can radically alter behavioural outcomes.[11]

The precarious and intractable relationship between experimental design and subsequent findings does not discredit the Ultimatum Game or any other experiment for that matter. It does, however, serve as a caution. These results are simply too arbitrary to seriously challenge economists' prior assumptions regarding rational decision making.

Here we must remember the difference between assumption and assertion. When economists assume rationality in decision making, they are not suggesting that every individual operates in direct accordance with these assumptions. Nor are economists prescribing how they believe individuals ought to behave. The economic literature is hardly replete with articles advocating for the establishment of gulags to re-educate citizens in order to strip them of their passions; their spontaneity; their foibles; their humanity. It is simply ludicrous to represent economics' use of rationality as a normative assertion of human values.[12]

Rationality is an assumption *about* reality. It is not a description of reality or a prescription *for* reality. Rationality is an assumption, not a law.

The great value provided by the assumed rational behaviour of individuals lies in its ability to provide an anchor point for the entire discipline of economics. Without this assumption, economics would become infinitely relative. It would lack cause and lose direction.

[9] After a while this starts to play games with one's head — after all, at least in a democracy, it would imply that irrational voters would need to be able to consistently identify candidates who were rational; unless, of course, we take the view that only rational candidates will ever manage to garner popular support and that this is achieved by appealing to the irrational cognitive biases of voters.

[10] These motives may be revealed or concealed, real or anticipatory. The motives of both the observer and the subject matter.

[11] Levitt and Dubner (2009) provide a very readable account of the experiments of John List.

[12] See Edwards (2002, 2009) for such a trivial and self-indulgent exposition of economics.

Behavioural economics enthusiastically endorses the concept of bounded rationality. A truer description of its legacy would be *un*bounded *ir*rationality; a view about individuals' behaviour that has no beginning or end.[13] In any event, rationality does not derive from experiment and it cannot be displaced by experiment.

Rationality, economics and public policy

Economics has come to be known as the 'dismal science'.[14] Dismal it may be, but a science it is not (although, at times, it applies scientific methods).

It is far more useful to think of economics as a discipline such as philosophy, rather than a science such as physiology. As a discipline, it provides its adherents a framework for thinking about phenomena they observe in the world around them. To assist this analytical endeavour, economics seeks to create an "image" of the actual economy. This may be done in descriptive terms, as in the works of the great theorists of the 19th and early 20th centuries; or by adopting the language of mathematics as has been popular since the 1930s. The pursuit of an increasingly robust image lies at the core of economics.

But in the end, an image is only a representation of reality. It cannot claim to be reality itself. But in massively complex systems, creating and manipulating an image is our best hope for acquiring insight. Just as the universe is the only 'computer' big enough to predict what will happen in the universe, so too the actual economy is the only 'calculator' big enough to predict perfectly what will happen in the economy. All the rest is imagery.

All other representations of the economy are images of reality created for the purpose of overcoming our ignorance — whether the image is comprised of incomprehensible algebraic formulations replete with in Greek symbols; computational models crunching millions of equations at speeds that defy our comprehension; or conceptual frameworks built from first principles such as assumptions regarding the rationality of individuals.

Unlike the actual economy, an image can be manipulated with little risk and at low cost in order to test new ideas and to acquire new insights. When new ideas are found to align the image more closely with features of the observed economy, those ideas move to the mainstream of economic thought. Even so, the image becomes no more real than it was prior to the 'mainstreaming' of the new idea.

While tests of alignment may be qualitative, much of modern applied economics is based on the use of quantitative methods. Even so, and no matter how rigorous economists are in their scientific method, the effect is not the same as the tests conducted in the natural sciences. In the natural sciences, empirical analysis is used to confirm (at least statistically) an objective truth *in* the observed world. In economics, quantitative analysis can only serve to refine an image *about* the observed world. An economist's abstract image becomes no more real by virtue of favourable empirical findings.

To put it another way, a natural scientist's experiment will confirm or refute a hypothesis about cause and effect in the observed world. An economist's analysis can only confirm or refute a hypothesis about cause and effect in a constructed image of the world.

[13] In behavioural economics literature, bounded rationality refers to the limited capacity of individuals to process information and hence their reliance on heuristics (rules of thumb). The reference herein to "unbounded irrationality" refers to the indefinable nature of irrationality. It is therefore not the opposite of bounded rationality.
[14] The term was first used by historian Thomas Carlyle in the 19th century in response to the writings of Thomas Robert Malthus, who predicted starvation would result from the growth in global population exceeding the rate of increase in food production. These days, the term is used much more generically.

Can an image ever become so perfect that it converges with reality? This question may best be left to the philosophers. It is doubtful that economics will be confronted with having to answer this question any time soon.

In the meantime, two apparent contradictions must be reconciled to understand how and why economics should continue to inform the formulation of public policy. First, that despite powerful priors in support of assuming rational behaviour, an array of experiments suggests that individuals do not make their decisions in accordance with economists' definitions of rationally. The second contradiction relates to the positive and normative merits of economics when, as a discipline, it is more interested in developing an image of the economy rather than unlocking objectives truths about the actual economy.

These seeming contradictions may best be reconciled by way of an analogy likening economic analysis based on assumptions of rational behaviour, to navigation based on locating the North Star.

For centuries, mariners and explorers navigated their way about the globe by reference to the North Star. It would tell them the direction in which they were heading as well as their latitude. A single point in the heavens generated information in two dimensions on the earth's surface. But knowing the position of the North Star did not mean that all voyages were northward bound.

Whether the navigators of yore wished to travel north or south, east or west, depended on a range of considerations — most notably, their desired destination and the prevailing (and expected) conditions. Just as a desired destination cannot be determined by a North Star, neither can the direction for policy be determined by particular economic assumptions. The desired destination for policy makers will depend on many factors including attitudes towards: fairness and justice; cohesion and compassion; pride and aesthetics; security and leadership; environmental stewardship and cultural heritage. These trade-offs are often complex and contradictory, imprecise and dynamic. If this were not true, then we would have long ago dispensed with parliamentary governance and handed executive control to a dictatorship of benign economists.

For the erstwhile mariners, successful arrival at the desired destination required not only knowledge of their position and direction (as provided by the North Star), but also consideration of prevailing conditions such as the winds and currents, food supplies and crew morale. Policy makers must similarly account for the prevailing conditions within which their policies must operate. A lack of attention to these prevailing conditions can result in policy failure. Modern policy makers, like their mariner forebears, can influence some of prevailing conditions, but not all. Behavioural economics, psychology, sociology, anthropology, market research and marketing can assist policy makers in this regard. At a minimum, these analytical devices can shed light on the prevailing conditions. In some cases, they may even provide tools for altering the prevailing conditions in favour of the policy maker's objectives.

But prevailing conditions are not static. They shift about, often whimsically and sometimes turbulently. It is for good reason that Bedouins do not rely on sand dunes to navigate their way through the desert. Likewise, policy makers cannot assess the merits of their policy objectives by relying on studies of the prevailing conditions. Critical assessment of policy options requires a dependable point of reference.

Economic analysis based on the assumed rationality of individuals (and markets) provides policy makers with just such a point of reference. It is against this point of reference that alternative policies can be reliably developed, assessed and refined.

Conclusion

Thankfully, there are innumerable economic ideologies ‘in play’ at any point in time — each vying for relevance and ascendancy. But an ideology is not a theory and a theory is not an assumption.

Concepts such as so-called ‘neo-liberalism’ or ‘economic rationalism’ are ideologies about the organisation of society. As such, they are subjective and reflect personal values. Market efficiency and competitive equilibrium are theories about the workings of the economy. By and large, they are objective insofar as they can be tested. Rational decision making is neither an ideology nor a theory. It is an assumption. It is a device of convenience, deployed in order to create an ‘image’ of the economy. It is this image that allows theories to be established and policies to be tested.

Perhaps the growing resentment (and rejection) of economists and their assumptions regarding the rational behaviour of individuals, arises from the blurring of differences between ideology, theory and assumption; image and reality; destination and prevailing condition. To the extent that policy makers, regulators and others forgot or ignored these differences, then economics may have contributed to the global financial crisis.

But neither the global financial crisis nor the revelations of behavioural economics do anything to diminish the assumption of rationality. It is a commanding assumption and it will endure faddish distractions. Reports of its demise by apologists and eulogists, are greatly exaggerated. Despite the many obituaries announcing that rationality is a spent and lifeless force in economics, we can confidently evoke the words that legend attributes to Galileo.

And yet it moves.

Postscript

The Galilean metaphor used for dramatic effect to bookend this essay, is somewhat tortured. First, Galileo’s utterance was about motion, while this essay advocates the importance of a fixed point. The author would have much preferred legend to record the utterance as, “And yet it endures” which is the effective meaning of Galileo’s alleged statement. Second, Galileo relied on empirical analysis to support his arguments, whereas this essay relies on deductive reasoning. Third, Galileo recanted views born of scientific method, while Greenspan recanted views born of ideology.

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