A Nobel Memorial Prize Laureate in Economics who has inspired me

Amidst the possessors of profoundly insightful notions, the one who has irrevocably stood out and inspired me is the Nobel Prize laureate of 2002, Daniel Kahneman, a psychologist who has prodigiously contributed to economics, preponderantly behavioural economics.

Economics is demonstrably a "social science concerned chiefly with the descriptions and analysis of the production, distribution, and consumption of goods and services." Correspondingly, it focuses on the behaviour and interactions of economic agents and how economies function. An economic agent can be construed as the buyers and sellers of an economy; while fallible humans are what comprise the economic agents – the fundamental units that constitute and propel an economy. Hence, human behaviour, dominatingly and inadvertently, affects the economy.

Nevertheless, is human behaviour logical enough to make rational decisions to achieve maximum utility? Daniel Kahneman apparently doubted the rationality and acknowledges the cognitive bias[1] pervasive in human behaviour, promulgated the "prospect theory"-- a theory that inspired me to integrate cognitive psychology into the field of economics to explain human choice-making behaviour and how such seemingly individual and negligible act has an impact on the economy when viewed as a whole.

Explanations and extrapolations of humans' choices, in economics, often adhere pedantically to people's rationality. Based on the School of Neoclassical Economics, people's choices are impelled essentially by extrinsic incentives [2], and the economic decisions are governed primarily by rationality and self-interest. In Economics, rationality pertains to the decision-makers' ability to employ available information logically and systematically, in order to make optimal choices given the alternatives at hand and reach the goal. Thus, neoclassical economics has unrealistically begotten the 'economic man' (*homo economicus*): a concept of a human being endowed with logical consistency, rationality, and narrow self-interest; often portrayed as an economic agent who pursues his subjectively-defined ends optimally. It inanely assumes that every human is a living lightning calculator who makes prudent decisions to maximise his personal utility, abiding the laws germane to the expected-utility maximization founded in the rational choice theory. Sardonically, there is a startling scarcity of such humans, and everyone is susceptible to the contagion of cognitive biases which indubitably question the idea of perfect rationality in real life. Quoting Daniel Kahneman, "The ideal of logical consistency […] is not achievable by our limited mind."[3]

It is not until the findings of Daniel Kahneman and Amos Tversky [4] on judgement and decision making that the limitations of rationality are elucidated cogently along with empirical observations and examples based on real life. Their brainchild, the prospect theory, has eminently

---

[1] Cognitive bias refers to the systematic pattern of deviation from norm or rationality in judgment, whereby inferences about other people and situations may be drawn in an illogical fashion.
[2] Extrinsic incentives refer to rewards and punishments from the social environment, e.g. monetary incentives.
[3] Quoting Daniel Kahneman in his book, Thinking, Fast and Slow (2011), page 335.
[4] Amos Nathan Tversky (March 16, 1937 – June 2, 1996) was a cognitive and mathematical psychologist, a student of cognitive science, a collaborator of Daniel Kahneman, and a figure in the discovery of systematic human cognitive bias and handling of risk. He also worked with Kahneman on the Prospect Theory.

penetrated the field of economics and further enhanced our understanding paramount to behavioural economics.

From the perspectives of cognitive psychology, a human being is generally regarded as a system which codes and interprets available information consciously and rationally. However, human behaviour is also galvanised by less conscious factors. Notably, intrinsic incentives – the antithesis of extrinsic incentives. Contrary to the ideals of the Economic Man, Kahneman suggests that several factors may influence a decision significantly. These elements entail human perception, which is iconoclastic varying from people to people based on their beliefs or mental models for assessing conundrums as they arise. Intrinsic motives, such as emotions and attitudes, may also manipulate a decision. Moreover, past experiences also precipitate an influence over current decision-making. Thus, human behaviour is malleable and sometimes irrational; it relies on the context and transitory perceptual conditions.

Kahneman states that judgement under uncertainty systematically digresses from the ideal rationality postulated in traditional economic theory. Consequently, humans are frequently incapable of analysing situations that involve economic and probabilistic judgements. Instead of adopting an Economic Man stance, humans are more prone to use shortcuts or heuristics, which are sometimes systematically biased. For instance, people including sagacious board directors and intelligent scientists, are often vulnerable to the law of small numbers. Imagine this: A newspaper headline exclaims that '*Rural schools nurture higher IQs students than urban schools*'. Meanwhile, a statistical report depicts that students from rural schools have IQs lower than the average of the nation. Strange? That is a putative example of the law of small numbers! Now, consider the urban school consists of one thousand students, whilst the small school only fifty. The average IQ in urban school corresponds roughly to the average IQ of the population, say 105. Regardless of who is gifted or academically-challenged, it will not change much. On the other hand, due to its small number, the average IQs in rural school will fluctuate much more than those of larger urban school, giving rural schools the highest and lowest scores. A quarter of the rural school students, being intellectually gifted or academically-challenged will affect the average IQ tremendously. Ergo, what counts is the size.

Similarly, 'representativeness', a heuristic related to the law of small numbers, is discovered by Kahneman and Tversky to be a crucial ingredient to human judgement. It is elegantly proven in several experiments. Subjects were given descriptions and asked to categorise persons into two professions, one with a significantly higher population. When confronted with a random description, subjects have the propensity to select the stereotypical profession which fits the description -- albeit its population being smaller – negating the higher proportion of the other profession in the demography has a higher probability.

Such evidences on flawed human judgement unravel the people's systematic violation of basic laws of probability, thus impugning the empirical validity of one of the rudiments of neoclassical economic theory. Kahneman's discovery is undeniably inspiring because he inoculates the flaws of human rationality in judgement into the concept of Economic Man, subsequently bridging the gap of idealistic economic axioms and reality.

The most noteworthy contribution of Daniel Kahneman is undoubtedly the prospect theory, which was brought to light together with his late friend, Amos Tversky. Accordingly, decision-

making under uncertainty also deviates from the predictions of expected-utility theory rather systematically. In classical economics, expected-utility theory [5] may not accurately model the psychological mechanisms of decision-making, but it can correctly predict people's choices in some transparent and simple situations. Still, most real-life decision problems are complex and require behaviourally richer models. Henceforth, this inevitably calls for the prospect theory to descriptively model real-life choices, rather than optimal decisions, which is important as real-life choices are what occur in everyday economics.

Prospect theory states that humans are more sensitive to changes than to the outcome. In addition, people are more averse to losses, relative to their reference point [6], than attracted by the gains of the same value. Furthermore, Kahneman asserts that a decision processes have two stages:

(1) "Editing" phase, which enjoins the conception of acts, outcomes, and contingencies associated with a particular choice. Decision-maker discerns which outcomes they consider equivalent, sets a reference point and concludes lesser outcomes as losses and greater ones as gains. This phase mitigates framing effects. [7] The editing process mainly composes of coding, combination, segregation, cancellation, simplification, and detection of dominance.

(2) "Evaluation" stage, where the decision-maker makes a choice with a higher utility, based on the potential outcomes and their respective probabilities. Generally, the choice revolves around the deviation in wealth from the reference point.

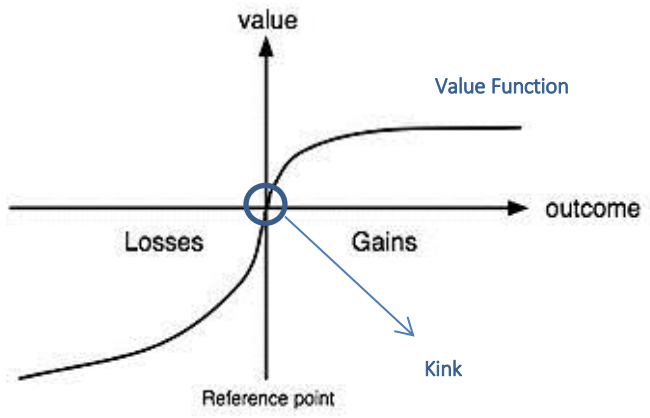

Fig 1: Prospect Theory

[5] Expected utility theory is an account of how to choose rationally when you are not sure which outcome will result from your acts. The expected utility of an entity is derived from the expected utility hypothesis. This hypothesis states that under uncertainty, the weighted average of all possible levels of utility will best represent the utility at any given point in time.

[6] Reference point is often the decision-maker's current point of wealth, so the gains and losses are delineated relative to the status quo, or it can be a wealth level the decision-maker aspires to acquire.

[7] Framing Effect is an example of cognitive bias, in which people react to a particular choice in different ways depending on how it is presented; e.g. as a loss or as a gain.

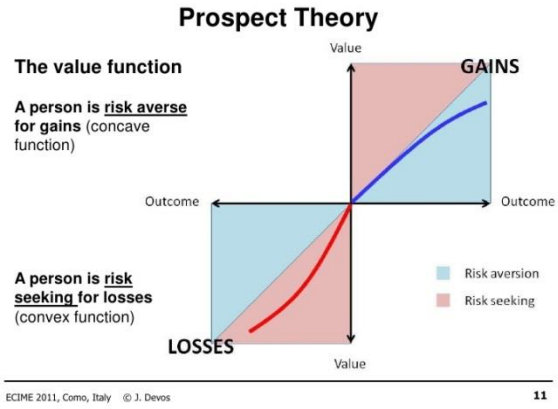

Fig 2: Prospect Theory illustrating risk aversion during gains and risk-loving during losses.

Besides, Kahneman also advocates that decision-makers become risk-averse towards gains and risk-loving towards losses. As people evaluate risky prospects on the basis of deviations in wealth relative to some reference level, appropriate presumptions on the editing phase would engender a model commensurate with the common observation that varies from people depending on how the problem is framed. Based on Fig.1, the kink on the value function at the reference point – engendering a steeper function for small losses than for small gains—implies that the choices reflect loss aversion. Due to the diminishing marginal sensitivity, which people become gradually inured to larger gains and losses, they incline towards risk aversion for gains as they value large gains less than proportionally; and revert to a risk-loving proclivity towards losses for they value large losses less than proportionally.

A classic experiment conducted to substantiate Kahneman's findings is illustrated below, with the percentage of the option selected being indicated in the bracket.

Decision (1): The pattern of risk aversion in choices involving gains; a riskless prospect is preferred to a risky prospect of equal or greater expected value.

Choose between:

A. a sure gain of $240 [84%]
B. 25% chance to obtain $1,000, and 75% chance to gain nothing [16%]

Decision (2): The pattern of risk seeking in choices involving losses; a risky prospect is preferred to a riskless prospect of equal or greater anticipated value.

Choose between:

A. a sure loss of $750 [13%]
B. 75% chance to lose $1,000, and 25% chance to lose nothing [87%]

Thereupon, humans may evidently make illogical judgement and poor decisions; catalysed by cognitive biases which can be explained by prospect theory. Likewise, prospect theory may also pinpoint several regularities considered as anomalies by traditional economic theory; a milestone achieved by a more accurate description of actual individual behaviour under risk than expected-utility theory. Conversely, it is not sensible to repudiate completely the expected-utility theory to characterise rational behaviour because it is the epitome of rational decision-making.

Humans are guided principally by logic and emotions. Alternatively, neoclassical economic theory is adamant that in an economy, men are perpetually logical enough to make rational decisions to maximize utility. Veritably, it is erroneous to neglect other factors, e.g. emotional, environmental, social, etc. because they are indispensable to human decision-making behaviour and are influential factors behind a range of market outcomes. Clearly, an economy revolves around economic agents played by humans, thus humans' decision-making behaviour profusely impacts the economy. Ranging from consumer behaviour, to industrial organization, to international trade, decision-making plays a pivotal role. Therefore, it is imperative we expand our understanding in behavioural economics to comprehend data with models based on psychologically more realistic assumptions. By the same token, Daniel Kahneman has assimilated insights from cognitive psychology on the mental processes of answering questions, forming judgements, and making choices, to help us understand how people make economic decisions. He has become a tremendous source of inspiration to behavioural economics; emancipating us from the restricted traditional economic framework to view psychological insights as integral ingredients in modern economics.

Succinctly, Daniel Kanehman and his path-breaking researches on the psychology of judgement and decision-making have inspired me immensely and enlightened me with the knowledge on cognitive bias and the field of behavioural economics. In the meridian of economics, behavioural economics will certainly promise another acme for the future generations.

(1,982 words)

Bibliography

Daniel Kahneman – https://en.wikipedia.org/wiki/Daniel_Kahneman

The Framing of Decisions and the Psychology of Choice (1981) - http://shookrun.com/documents/framingtvkahn.pdf

Nobel Prize Lecture: Maps Of Bounded Rationality: A Perspective on Intuitive Judgment and Choice (2002) - http://www.nobelprize.org/nobel_prizes/economic-sciences/laureates/2002/kahnemann-lecture.pdf

Thirty Years of Prospect Theory in Economics: A Review and Assessment (2013) - *http://faculty.som.yale.edu/nicholasbarberis/jep_2013.pdf*

Prospect Theory: An Analysis of Decision under Risk (1979) Econometrica - *http://people.hss.caltech.edu/~camerer/Ec101/ProspectTheory.pdf*

Economics -- https://en.wikipedia.org/wiki/Economics

Prospect Theory -- https://en.wikipedia.org/wiki/Prospect_theory