Revisiting the participation of the uninsured in the GHE scheme using the granular interactive thinking mechanism

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This short paper is to contemplate the results from a 7-year-old paper, published in *Palgrave Communications* in early 2018 [1], in light of the emergence of the informational entropy-based notion of value, recently introduced in [2], specifically Chapter 5. This effort is made possible thanks to the clues provided in another seemingly unrelated but useful preprint concerning the notion of Boltzmann entropy [3].

The problem setting

The book [2] is to be read first because it is where the fundamental concept of value, coupled with its granular interactive thinking mechanism —which we want to use— emerges first. The concept and mechanism are developed from the granular worldview and main features of quantum mechanics, the discipline that studies the behaviors of nature at the fundamental level (i.e., at and below the scale of atoms).

Employing the main ingredients of the approach, we proceed to read the older article [1]. The article [1] is a study on the probabilities of insured and uninsured Vietnamese health consumers willing to pay for the periodical general health exam (GHE).

The idea of going against the time arrow comes from Rovelli [4], which stipulates that a reasonably well-crafted theory must effectively explain an established empirical result. In this case, article [1] provides reasonably plausible results to a large extent and still leaves some room for further examination.

After that, this paper will again explore if the research results from [1] help strengthen the logic presented in the mechanism [2].

Rebuilding the logic and reconsidering the relevance

In essence, the mechanism [2] starts with little assumptions on informational quanta, their probabilities for possible states, and the interactions for these quanta to enable new information. In fact, the theory does not strictly impose assumptions in their true sense. It uses a somewhat axiomatic approach in providing the necessary conditions for the consideration of interactions and emergent (new and value-carrying) information to form. In

other words, the mechanism suggests that values are outcomes generated through the interactions of information.

The rebuilding of the logic shows that the article [1] deals with the following relevant aspects, which the theory [2] can shed light on.

First, there is (un)certainty about the future health status of survey participants.

Second, the informational nature of GHE participation is "to obtain more information and certainty about one's health so as to minimise future risks."

Third, the observed shifts in behaviors and attitudes regarding different levels of cost required for attending GHE events between insured and uninsured health consumers.

The theory can help predict that uninsured respondents would seek to reduce their relative future health risks by spending the GHE costs, provided that these costs are not beyond their means. In fact, if insured participants refuse to take advantage of their cover for periodical GHE costs, they are subject to an information loss and solely rely on the benefits of being covered by the insurance when medical costs are incurred. The true meaning of insurance, concerning safeguarding future health risks, has been cut off by half.

The revisiting of the article's [1] results has totally agreed with the above theoretical prediction. To save space, we provide herewith an excerpt of its abstract, which already empirically verifies the stipulated theoretical propositions.

> "Decision-making regarding healthcare expenditure hinges heavily on an individual's health status and the certainty about the future. This study uses data on propensity of general health exam (GHE) spending to show that despite the debate on the necessity of GHE, its objective is clear—to obtain more information and certainty about one's health so as to minimise future risks. Most studies on this topic, however, focus only on factors associated with GHE uptake and overlook the shifts in behaviours and attitudes regarding different levels of cost. [...] Our study shows that uninsured, married and employed individuals are less sensitive to cost than their counterparts because they value the information in reducing future health uncertainty. The empirical results challenge the objections to periodic health screening by highlighting its utility."

Concerning the usefulness of health insurance, it is also ironic that the other half of benefits that insured people refuse to take up is information. Thus, their remaining half of (economic) value turns out to be the unwanted half, i.e., already sick and paid for by the cover! Although the study [1] could not conclude on the information entropy (or missing information) of future health conditions, there is no guarantee that the insured people will likely be better off, compared to their uninsured counterparts.

On the other hand, looking forth, the empirical results support the theory in two specific aspects as follows.

First, the notion of economic/monetary value, as mentioned in the article [1] results, shows their readiness to be converted to the informational entropy-based notion of value, aiming to exchange money for information to safeguard future uncertainties.

Second, informational interactions in this situation are at the heart of newly emerging insights driving their behavioral shifts, even though the GHE participating costs are not negligible. In a sense,

$$Information = informational\ interactions = value(s)$$

This is the evidence that helps validate the theoretical logic building of the granular interactive thinking mechanism.

A final remark

This exercise is worthwhile, and when undertaking it, it seems the two parts (the old article and the new book's theoretical stipulations) have been built with the same logic and followed an organized timeframe. But they are *NOT*. They represent two distinct events, separated by six (6) years in time and different research focuses.

Similar attempts can be made to further examine the validity of the new theory [2] without incurring too much a cost (time and energy) to us, with a hope for further evidence—in the form of valuable information and organized to reduce informational entropy—supporting the theory itself.

References

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