Literature Review Assignment

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Wanlin Ji

Although motivations behind irrationality has been quite various, the biased belief has become one of the most influential factors behind irrational behaviors. Classic evidences in past literature found that people would think they are better drivers than they are (Svenson 1981), think less likely to fall sick than they are (Oster et al., 2013), think they will go to the gym more than they will (DellaVigna and Malmendier, 2004), and hold the belief that they will be hungry in the future if they are hungry now (Read and van Leeuwen, 1998). These bias can be across different decision situation and individuals , but one of the most common features they present is that people are easily to hold biased belief towards judgement about themselves, mostly to a positive direction. That leads our attention to research in overconfidence, explained as an optimistic paradigm shift in self-related beliefs.

0.1 Overconfidence: Classic evidence from psychology

The very first research provides evidence of examining the biased self-related belief mostly from the perspective of psychology. These empirical studies mostly focused on using laboratory experiments as a naive method to reveal the attitude behind risky decisions among adults. One of the most common and best known risky activity in modern society is obviously driving a car. According to previous summary from Naatanen and Summala (1975) of the earlier studies that can be hard to obtain, it has been long asserted that most drivers tend to believe that they are better drivers than average drivers. The naive methods used in these studies is basically directly asking the driver to rate how safely they drove in a one hundred percent ratio comparison of vaguely defined general drivers, and they found around 70-80% of drivers being surveyed put themselves to the safer half of distribution.

Based on that, Svenson (1981) performed a similar experiment that defined a better subgroup of comparison to reduce the effect of potential group stereotypes. They found 93 percent of subjects rated their driving skill as above the median, compared to a well-defined population whose characteristics are more known to the participants. The concept of comparing in this paper has laid the benchmark of measuring bias in a laboratory environment mostly by self-signaling their safely level.

Beyond the assumption that biased belief could leads to risky decisions, the biased belief also affects the judgement towards objective environment, causing underestimation of risk that lies over themselves. Weinstein (1980) carried our a lab experiment estimated how much their own chance of experiencing 42 events differed from the chances of their classmates, and found that most individuals underestimate the probability of negative events such as hospitalization that could happen in their future life.

Another finding in this experiment also reveals that the factors they thought could possibly influenced their own chances of experiencing 8 future events has the potential of influencing their belief. When being implemented such factors, the amount of unrealistic optimism shown by experiment group for the same 8 events decreased significantly. This has become one of the motivation of adding the incomplete information signaling as part of our experiment to examine how they would respond to negative signals.

0.2 Overconfidence: Evidence from economics

Biased belief can also be deemed as heterogeneity in economic studies. Overconfidence evidence in financial markets reveals what role biased belief plays in the risky activity of investing, both from organization levels and individual levels. Different from psychology, some economic studies uses observational data from financial market. Malmendier and Tate (2005; 2008) has found that most overconfident CEOs also engineer the most value-destroying mergers, measured by choosing late exercise of stock options. Using gender as a major explanatory variable, Barber and Odean (2001) set the hypothesis that men are significantly more overconfident than

women about financial decisions. Based on the trading data, they found men traded 45 percent more than women, as well as lost significantly more money. However, the correlational data coming from financial market has become a major drawback, based on the feature of observations. That caused Barber and Odean's study can not fully avoid the omitted variables.

To further reveal how people dynamically deal with their biased beliefs, other economic studies applied much more complex experiment settings like field experiments as a distinct methodology. Using priming of gender, DAcunto (2013) performed an on-line lab experiment about lottery choices resembling investment decisions on MTurk. Researchers let control group read a neutral text and let treated group read a text priming strong gender identity. They found priming gender, the implicit effect associated with gender and delivered in text information as a treatment, affect overconfidence in men, and leads to more risk-taking in lottery choices. Another field experiment carried out at gyms by DellaVigna and Malmendier (2004) focused on the effect of biased beliefs on self-control, and found that partial naivete is responsible for failure of commitment contracts for gym attendance. These field experiments have been benchmark for our study in measuring and explaining biased belief, which we will discuss later in the end of literature review.

0.3 Projecting belief bias: Betting IQ

The idea for mainly projecting biased beliefs to their future utility, has been a behavioral methodology in recent economic research. In such circumstances, beliefs are biased towards the current state for their internal utility. The mostly widely cited model is a simple bias model from Loewenstein et al. (2003), examining how individual is currently in state s and the utility u (c, s) would predict future utility in state s_n. The rational forecast would reported in parameter α. Gilbert et al. (2002) found that individuals under-appreciate adaptation to future circumstances would tend to produce projection bias about future reference point. Assistant professors would tend to hold over-predict effect of tenure on happiness, and also for people with over-predict effect from election that results on happiness in the current state.

Similarly, Busse et al. (2015) found that convertibles and homes with swimming pools sell for more than usual on hot days; SUVs sell for more than usual on snowy days. The major hypothesis in our paper, has been referring to the more complex version of Bayesian updating model from Eil and Rao (2011) that people would proceed self-confidence information in Bayesian pattern. Eil used feedback about IQ test score and physical attractiveness to elicit prior belief about rank between 1 and 10. They found a very asymmetric processing of objective information about yourself, and roughly Bayesian for the positive information.

To avoid the problem of omitted variable with observational data, we imply online experiments with monetary stakes(a small amount of money) to simulate the real financial market situation where people need to make an risky investment. Our experimental design is in line with the MTurk experiment from DAcunto (2013), except that our investment would be bet on their IQ scores to simplify the outside unnecessary outside signals people holds. In accordance with previous psychological studies, the measuring of belief as well as the bias is based on the IQ score, a mature system of examining intelligence levels. Our Bayesian model would collect the people's reaction after receiving four-stage of incomplete information(negative or positive, which could be true or false based on fixed probability) towards their real intelligent ability, and we estimate parameters for describing the pattern of belief modification.

0.4 References

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