Essay 2: Experimental Research Proposal

W241: Anchor Effects on 401k contributions

Avinash Chandrasekaran

Introduction

We are all susceptible to the cognitive bias known as anchoring, a tendency to unconsciously over rely on the first piece of information we see when making judgement. When people don't have the time or information they need to make a sound decision, they tend to be influenced by whatever information is in front of them and make an educated guess by adjusting away from that '*anchor*'. As a result, people end up with answers that are closer to the anchor than they would have been if no anchor existed at all.

Behavioral reactions may also be triggered by information about what peers do. When behavior of peers is made salient, individuals are driven to social conformity, to confirm to what others do, or what others approve or disapprove of doing. Interventions can be initiated to evoke changes in individuals by relying on peer information or nudging them towards a stated goal by framing a suitable anchor reference.

The research question explored in this paper is to verify whether 401k contributions made by individuals are affected by anchor and/or peer effects. Recent studies have shown that only 39 percent of the American working population is confident that they will be able to live comfortably after retirement. It is therefore an interesting experiment to verify if 401k contributions rates are impacted because knowledge of this information can be used by a corporation to improve contribution rates to aid employees save for the future retirement.

There are also other similar use cases where knowledge about such significant effects can be used to influence academic performance, financial decisions and social behaviors. The research question stated above can be answered by conducting experimental studies. In this paper, we propose two such experimental study. For these experiments, we will work with random subjects, provide them with information about peer's behavior or an irrelevant anchor, and subsequently ask them to choose a contribution rate to a retirement savings plan.

Research Design

The experiments can be carried out in the internet with Amazon's Mechanical Turk (MTurk) service. MTurk has a large user base of workers ("Turkers") that will be easy to tap into for performing the experiments. There are detailed descriptions available online that we can employ to help assign subjects randomly into multiple groups in the MTurk platform. For each set of experiments, we will likely recruit 300 workers to answer a questionnaire provided to them. We will filter and restrict the recruited subjects exclusively to United States as they will be more

familiar with the concept of retirement savings (401k) system. In addition we will restrict the experiment to workers who are at least 21 years old and at most 45 years old.

As part of the experiment setup, subjects will be asked to role play a hypothetical scenario where they will be asked to imagine being an employee in a technology company and elect a response for the outcome variable we are interested to capture i.e. the subject's contribution rate to the retirement plan. We will randomly assign 100 subjects into three different groups, namely control, peer-treatment and anchor-treatment. Each of these groups' subjects will be primed differently with specific information particular to the treatment as shown below in Table 1.

Table 1: Generic Control Group Template

Please assume you work for technology company ABC Inc. and earn $70,000. You are single and have no children and are therefore able to allocate this salary as you wish.
The 401(k) pension scheme that you are enrolled in allows you to define your own contribution rate for your pension. The contribution rate is the percentage of your annual salary that you invest into your pension. Assume that your company does not provide any contribution to your pension
What percentage of your salary would you contribute into your pension?

The subjects in the peer treatment group will be briefed with an additional piece of information such as "*Employees from similar technology companies contribute 10% of their salary to their pension fund*" while the anchor treatment subjects will be briefed with something irrelevant such as "*The year to date stock price increase of ABC Inc. is 10%*" before the final outcome measure question is posed. After the outcome question, we will ask subjects to re-confirm the contribution election to rule out any typological errors followed by confirmation of the subjects' gender and age. We pick 10% numeric value for this experiment as recent studies have shown this to be the average contribution in the general US population.

The second set of additional experiments will be carried out with different set of subjects where they will be primed with altered anchor points, depending on control vs. treatment, to measure extremities in peer/anchor effect values such as 5% (low) and 20% (high). For example, one set of peer-treatment subjects will be briefed with "*Employees from similar technology companies contribute 5% of their salary to their pension fund*" while another set of subjects will be briefed with "*Employees from similar technology companies contribute 20% of their salary to their pension fund*". By performing these different experiments we will be able to observe if the intervention of presenting different/extreme anchor/peer values have any substantial effect on the variance across different subject's behaviors.

The behavioral effects observed through these experiments will vary based on couple of key subject traits, namely gender and age. Males are known to be more risk-taking and likely show

less self-control than females. So we will block and compare the effects between male and female subjects. In addition, older subjects typically have different higher cap limits for 401k contributions, so we can factor in age into our evaluations and categorize the effects on young vs. older adults.

Outcome Measure

By running these different experiments we hope to observe the mean value of the contribution rates of subjects for the different treatments. Through intuition, we expect to observe larger variances in the control group because of the uncertainty involved with the random subjects. On the other hand, we expect to see reduced variances in the peer and anchor treatment groups. Moreover, if the anchor and peer effects have any true impact, we also expect to observe the contribution rates of these two groups to be pulled in closer to the advertised anchor value. To establish any significant difference between control vs. peer/anchor contribution rates, we will conduct a one-way ANOVA test. In addition, we will also take an independent-sample t-test to see significant differences in contribution rate for males vs. females and young vs. older adults to explain any significant differences between these two sub-groups.

Discussion and Conclusion

As with any experimental design, the findings from this study may not be representative of real-world interactions between firms and their employees to gauge 401k contribution rates. The answer quality obtained from conducting these experiments on Mturk is susceptible to 'lazy' or 'malicious' users who provide nonsense answers. Moreover, Mturk platform isn't necessarily an ideal means to measure behavior peer effects due to missing nature of organic interactions between subjects. Participant's own personal preferences, past experiences about their own 401k contributions also impact their responses that we can't measure.

Despite these limitations, there is certainly value in identifying the outcome of these experiments. The small cues (or nudges) can be used to influence savings behavior more efficiently than more costly interventions, such as financial education or higher company matches, both of which come at a higher cost for employers. However unintentional cues, even those buried in mundane communications, can also affect behavior. So organizations and policymakers should be prudent and wield them carefully.