Pre-Analysis Plan:

Trading-off Equity and Efficiency: The role of Information[*]

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1 Introduction

1.1 Abstract

The experiment poses the question: Are people willing to provide additional information in situations where some will make better and some will make worse decisions based on the information? The results add to the literature on inequality acceptance.

1.2 Motivation

Past literature has investigated people's preferences over the trade-off of equality and efficiency. While some of the literature has shown an aversion to inequality (e.g. (Fehr and Schmidt, 1999) (Bolton and Ockenfels, 2000), this is strongly driven by the underlying causes of inequality (Cappelen et al., 2007)(Cappelen et al., 2013) (Almås et al., 2019). This paper investigates a novel mechanism.

I investigate the perception of an information intervention that leads to an efficiency gain and inequality. The heterogeneous effect is driven by differences in the ability to process complex information. This situation is contrasted with an intervention in which different abilities also lead to gains and losses of participants.

This project adds to the literature in two major ways. First, it broadens our understanding of the acceptance of inequality. Second, it adds to the debate surrounding policies that involve the provision of information (Sunstein, 2019). Recently, growing evidence has emerged that these interventions produce heterogeneous effects and can have negative consequences for some recipients (e.g.) (Ketcham et al., 2019) (Persson, 2018) (Allcott and Kessler, 2019) (Houde, 2018)). This literature has identified several underlying reasons for this effect.

This project is closely related to another project that investigated a similar research question. In the first project, information led to inequality due to different priors that participants had. In this experiment, information leads to inequality due to different abilities to process information.

1.3 Research Questions

Are participants willing to provide information in a situation where this information will lead to inequality?

Are they more willing to do so compared to an equivalent situation in which information is not the cause of inequality?

2 Research Strategy

2.1 Sampling

In this experiment, I will select two groups of participants. One group will be impartial spectators/third parties whose earnings are not influenced by their decision. Their decision will influence participants that will be recruited over mTurk. The pre-analysis plan will be submitted to the AEA RCT Registry before I have access to the data.

2.1.1 Sample selection

Data for the third-parties is collected on a general population sample of the United States. To get access to that sample, I recruit participants with the help of the survey company Norstat. In total I plan to recruit 1000 participants.

Data for the workers will be collected on Amazon mechanical Turk (mTurk), an international online labor market. I plan to recruit 100 workers in that way.

Spectators and workers will not be matched in a 1:1 matching but the spectator decisions that will be implemented will be randomly selected from the sample. This will be made salient to the spectators.

The workers will have to fulfill certain qualifications to be eligible for participation. The qualifications are: Location United States, more than 1000 HITs accepted and acceptance rate above 95%.

2.2 Data Collection

The data collection for spectators will be conducted in November 2019. After the data for spectators is available, the mTurk part will be run. Spectators will be asked to answer survey questions, one of which will have real consequences for workers on mTurk. The workers will have to finish a real-effort task.

3 Research Design

In the experiment, spectators make a decision that will affect a pair of workers on mTurk. They do not directly distribute money between the workers but either choose the amount of information to allocate or the difficulty of a task that the workers have to solve. They are provided with information on the effect of their decision. Their decision will be presented in the next section.

3.1 Treatments

Spectators are randomized into two treatments. I will call those baseline and information treatment. The main variable of interest is the spectator decision. Spectators make a choice between two possible alternatives. One of the alternatives will in expectation lead to an equal distribution while the second alternative is unequal but more efficient in expectation.

Spectator Treatments			
Baseline Choice between		Treatment Choice between	
Simple Task- Both Workers earn 3.30$	Complicated Task - One Worker earns 5$, the other 2.5$	No additional information - Both workers earn 3.30$ in expectation	Additional Information - One worker earns 5$ and the other worker earns 2.50$ in expectation

Spectators receive the following instructions for their decision:

Baseline:

We now ask you to make a choice that might have consequences for a real life situation. We have recruited two individuals, let us call them individual A and individual B, to take part in a study in which they have to solve math problems.

They will both be paid a fixed amount for participating, but they can earn additional money depending on how well they did in the math task.

Previously, we have tested their math abilities and we want you to decide which math task they have to solve. They can either do a simple math task or a more complicated task. If you give them the first task then based on the result from the previous test, individual A and individual B will be able complete the task and both will earn $3.30. If you give them the second task then individual A, but not individual B, will be able to complete the task. Individual A will then earn $5.00, $1.50 more than in the first task and individual B will earn $2.50, $0.80 less than in the first task.

Please indicate your decision now:

Treatment

We now ask you to make a choice that might have consequences for a real life situation. We have recruited two individuals, let us call them individual A and individual B, to take part in a study in which they have to assess the likelihood that a certain event happens based on the information given to them.

They will both be paid a fixed amount for participating, but they can earn additional money depending on how well they did in the task.

Previously, we have tested their abilities and we want you to decide how much information to present to the participants. They can either be given basic information or basic and additional information. If you provide basic information on the likelihood of the event then based on the result from the previous test, individual A and individual B will make equally good predictions and both will earn $3.30. If you provide them with basic and additional information on the likelihood, individual A will be able to use this information to make a better prediction, but individual B will be unable to use the additional information and make a worse prediction. Individual A will then earn $5.00, $1.50 more than with basic information and individual B will earn $2.50, $0.80 less than with basic information.

Please indicate your decision now:

3.2   Balancing Checks

I will test for balanced treatment assignment based on observable demographics. These include: Age, Sex, Education and Income. I furthermore have information regarding their voting preferences in the upcoming Presidential election. I aim for N=500 in both treatment groups.
Participants are asked to submit a choice when they are randomized into treatments. This should alleviate concerns with regards to selective attrition.

4   Empirical Strategy

4.1   Research Question

In this project, I will investigate if the information mechanism changes preferences of consumers with regards to the equality-efficiency trade-off. For that purpose, I will contrast their preferences in the two conditions that were outlined above. Spectator-decisions will have real life consequences.

4.2   Hypothesis

H1: A significantly higher share of participants will be willing to implement the more efficient but unequal distribution in the information treatment when compared to the baseline treatment.

This hypothesis is rooted in the popularity of information interventions that has been shown empirically. Moreover, it reflects an intrinsic value of information.

4.3 Heterogeneity

I will check for heterogeneity of preferences with regards to the observed demographics. For this purpose, I define the demographic variables in that way:

- **Age:** Below and above median age in the United States (age 18+)

- **Sex**

- **Income:** Below and above median income in the United States

- **Education:** No college degree and college degree

The statistical method to test for that is outlined below. I will also include corrections for multiple hypothesis testing.

5 Statistical Analysis

5.1 Main Result

The main variable that is collected in the survey is a binary choice variable. For that reason, I will analyze the data using a χ^2-test for the main hypothesis.
The test will be run on the proportions of participants choosing the different options in the treatment and the baseline.
My sample size gives me sufficient power to capture a small effect of approx. 0.085 SD at 80% power at a significance level of 0.05.

5.2 Heterogeneity

As discussed above, I will also check for heterogeneous treatment effects along the dimensions discussed above. For that purpose, I will run an OLS-regression:

$$Y_i = \beta_0 + \beta_1 D_j + \beta_2 T + \beta_3 T D_j \tag{1}$$

where Y_i is the share of participants choosing the less equal but more efficient allocation, D_j is a dummy variable that takes the value 1 for the variables that are outlined in the Section 4.3 and T is

a variable that takes the value 1 if individuals are in the treatment condition. I will run corrections for multiple hypothesis testing here. Moreover, I will compare inequality acceptance in the two treatments based on the political preferences of spectators.

5.3 External Validity Measure

I am furthermore testing, if the measure I introduced for preferences for more information is correlated with an external validity measure. For this purpose, I will ask participants the following question:

Producers of electronic devices, such as refrigerators and air conditioners, have to present information about the energy efficiency of their products to consumers. Such information can help consumers select the product that is best for them. However, additional information might also result in some consumers getting confused.

Consider a situation in which a producer is deciding whether to provide more detailed information to its costumers. This additional information will help the majority of consumers when they decide which product to purchase, but it will make this choice more difficult for a minority of consumers. In such a situation, do you think the producer should provide more detailed information?

Yes

No

I will test, if participants who are more likely to support the basic and complex option in the treatment are also more likely to express support here. To test this assumption, I will run a χ^2-test.

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