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Context-Driven Decisions: The Impact of Framed Information on Financial Choices

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ABSTRACT

This paper examines how contextual framing influences financial decision-making under uncertainty. Poor decision-making is pervasive in financial behavior, and one proposed remedy is choice architecture, which seeks to improve decisions by altering the framing of information or decision tasks. In this context, we investigate how contextual information about a firm's prospects affects investment choices, even when the distribution of outcomes is explicitly provided. In an online experiment, participants were randomly assigned to a control or treatment group and presented with decision-making tasks. Qualitative details about a firm's prospects significantly altered choices. Positive contextual framing increased the likelihood of retaining a stock, while negative framing reduced it, despite unchanged objective probabilities. In contrast, alternative exercises without specific contextual details showed no significant effects. These findings highlight how the design and contextual relevance of framing influence decision-making under uncertainty, offering insights into the role of qualitative information in financial behavior and choice architecture.

Keywords: Contextual Framing; Financial Decision-Making; Uncertainty; Randomized Experiment.

JEL codes: C91, D81, D83, G41

INTRODUCTION

Poor decision-making in pervasive in financial behavior (Ambuehl et al. [1]). One of the main policies to correct this problem is choice architecture (Thaler and Sunstein [8]), which aims at nudging people towards better decisions through changes in the framing of information or decision tasks, given the fact that financial illiteracy is widespread (Hastings et al. [5]; Lusardi and Mitchell [7]).

In this paper, we evaluate how people react to qualitative information about the prospects of a firm when the distribution of outcomes is given. In principle, it should not change decisions, which should be based on the given distribution of outcomes – in other words, this distribution summarizes the relevant information for the decision-maker, and a description of underlying factors is unessential. However, contextual information needs to be processed, even if it is irrelevant, and this may lead to cognitive strain, distraction, and errors in reasoning. Understanding how contextual information affects decision-making is relevant for financial behavior, particularly in contexts where choices involve uncertainty or risk.

We investigate the impact of contextual information on individual decision-making through an online experiment. Experimental methods, both in the lab and in the field, are often applied in the analysis of decision making: the environment is controlled and data measurement is not subject to relevant errors (see Bernheim and Taubinsky [2] and Beshears et al. [3] for reviews). In our experiment, participants were randomly assigned to either a control group or a treatment group. Both groups were presented with decision-making scenarios, but only the treatment group received contextual information related to the context of the decisions. This design allows for a clear identification of the causal effect of contextual information on decision outcomes.

Our analysis focuses on two questions about financial decisions. In the first question, participants had to decide whether to keep or sell a stock that had previously experienced a 10% gain, with the treatment group being informed that the company was a major producer of agricultural vehicles and that record food crop yields were expected. In the second question, participants were asked to choose whether to keep or sell a stock that had experienced a 10% loss, with the treatment group receiving information about internal management issues and the company's reluctance to digitalize its media operations. In both cases, the additional context influenced participants' choices, suggesting that specific, qualitative information can shift decision-making under uncertainty even if the distribution of outcomes is given.

In these two exercises, participants in both groups were presented with information about a specific type of investment (a stock) with both a history (recent outcomes) and an expectation for near-future outcomes. Moreover, participants chose between keeping or selling the stock. We also tested traditional variations, in which participants chose between lotteries, without information about recent outcomes. In these variations, the treatment had no significant effect on decisions, suggesting that the specific design of our main exercises is relevant to shape decisions.

This study contributes to the literature on decision-making under uncertainty by demonstrating that the influence of information depends on the context and structure of the decision at hand. By identifying when and how information affects decisions, we aim to help design interventions to improve decision quality in information-rich environments.

METHODOLOGY AND DATA

This section describes the experimental design, sample characteristics, and procedures used to investigate the impact of information on decision-making.

Experimental Design

The experiment was designed to identify whether the presentation of contextual information in decision-making settings could influence participants' choices. To achieve this, we implemented a randomized, between-subjects design in which participants were assigned to either a control group or a treatment group.

Participants in both groups were presented with a questionnaire with the same set of decision-making questions – two in the main exercise, three in alternative specifications. Specifically, participants were asked whether to keep or sell a given stock based on information about recent performance, and the distribution of near-future outcomes. Only the treatment group received contextual information before responding to each question. This information provided context and details related to the decision, but did not affect the distribution of future outcomes. By comparing the responses between the control and treatment groups, we identify the causal impact of contextual information on decision outcomes. This design ensures that any differences observed can be attributed to the information provided, as random assignment guarantees that other factors influencing the decision are balanced between the two groups.

Sample

Participants were recruited using the Amazon Mechanical Turk (MTurk) platform, a platform widely used platform for online experimental research. Following best practices for recruitment, we restricted participation to individuals located in the United States to reduce heterogeneity in participant characteristics. A total of 200 participants were initially recruited, with equal allocation to the control and treatment groups. Each participant was paid $0.30 for their participation. The following message was presented to potential participants at Mturk:

> *"This survey takes about 3 to 4 minutes. We will ask questions on three general subjects. Please read them carefully. This survey is completely anonymous, with no collection of personal data. The results will be used only for academic research."*

Data were collected using the Qualtrics platform, which allows for customizable surveys and effective randomization. Participants accessed the survey through a single link, but random assignment determined whether they received the control or treatment version of the questionnaire.

Online experiments are more cost-effective than traditional physical lab experiments due to the ease of accessing a large and diverse participant pool. This allows for larger sample sizes, leading to more precise estimates, and helps address concerns about external validity. Participants in online experiments do not interact or communicate with one another and remain unaware of other subjects' identities or actions. Our experimental design, described below, requires no specialized environment, behavior, or tools beyond the device (computer, phone, or tablet) used to access the experiment link. Horton et al. [6] demonstrated that online experiments are as reliable as other experimental methods while offering significant cost savings. Additionally, Buhrmester et al. [4] found that MTurk participants are substantially more diverse than the standard subject pool typically drawn from American colleges for lab-based experiments.

To ensure data quality, two verification questions were included, with obvious answers. Responses from 32 participants who failed these checks were excluded. The final sample included 168 valid responses, with 85 participants assigned to the control group and 83 to the treatment group.

The demographic characteristics of the sample were as follows: the majority of participants were aged between 30 and 49 years old, and the gender distribution was approximately balanced, with 50.6% identifying as female and 48.2% identifying as male. Table 1 presents the descriptive statistics.

Table 1: Descriptive Statistics and Balance Check

Variable	Category	Control Group (%)	Treatment Group (%)	Overall (%)
Age	Age 29 or less	15.3	20.5	17.9
	Age 30 to 39	40	30.1	35.1
	Age 40 to 49	31.8	32.5	32.1
	Age 50 or plus	12.9	16.9	14.9
Gender	Female	54.1	47	50.6
	Male	43.5	53	48.2
	Other / Prefer Not to Say	2.4	0	1.2
Valid observations (n): 85 (Control Group), 83 (Treatment Group), 168 (Overall).				

Note: The p-values for the Chi-Squared tests of Gender and Age balance between treatment and control groups are respectively 0.206 and 0.524, indicating the validity of the randomization.

To ensure that randomization was successful, we conducted a balance analysis to check for differences in observable characteristics between the control and treatment groups. Specifically, we compared participants' age, gender, and attentiveness (as measured by their ability to pass the verification questions). The results indicate that age and gender are similarly distributed across the two groups, with no statistically significant differences. The share of participants who failed verification questions was also similar across groups, reflecting the effectiveness of the randomization process. This balance ensures that any observed differences in responses can be attributed to the treatment rather than pre-existing differences in participant characteristics.

Questionnaire

The questionnaire was structured into two main blocks. The first block contained questions used to categorize participants by age and gender. The second block consisted of two decision-making questions related to financial and probabilistic choices, plus three questions with alternative specifications. For the control group, each decision-making question was presented in its most basic form, requiring participants to make a choice between two options. In contrast, the treatment group received additional contextual information before each question. The questions were designed to elicit responses on financial decisions involving risk. The appendix presents the complete questionnaire.

Question 1:

Control Group:

You bought a stock that gained 10% last month. It now has a 75% chance to increase by 12% and a 25% chance to decrease by 30%. What would you do?

Options: (a) Keep the stock, (b) Sell the stock

Treatment Group:
You bought a stock that gained 10% last month. It now has a 75% chance to increase by 12% and a 25% chance to decrease by 30%. The company is a major producer of agricultural vehicles, and the next food crop is expected to have record yields. What would you do?

Options: (a) Keep the stock, (b) Sell the stock

This question was designed to evaluate the participant's reasoning about future market conditions. In the control group, participants were presented with a purely numerical assessment of risk, while the treatment group was given additional contextual information suggesting favorable future conditions (record yields in food crops) that could increase the perceived likelihood of future gains, but without changing the actual distribution of gains.

Question 2:
Control Group:
You bought a stock that lost 10% last month. It now has an 80% chance to increase by 15% and a 20% chance to decrease by 10%. What would you do?

Options: (a) Keep the stock, (b) Sell the stock

Treatment Group:
You bought a stock that lost 10% last month. It now has an 80% chance to increase by 15% and a 20% chance to decrease by 10%. The company is a large newspaper conglomerate, which is experiencing internal problems regarding the board's unwillingness to digitalize its media. What would you do?

Options: (a) Keep the stock, (b) Sell the stock

This question presents potential risk due to internal company issues. For the control group, the question is framed as a straightforward financial decision with stated probabilities. For the treatment group, the additional context about management resistance to digitalization introduces a qualitative element that may reduce participants' confidence in the firm's future performance. Again, the additional context leaves the distribution of future outcomes unchanged.

Method
To quantify the effect of objective information on decision-making, we estimate the following regression separately for each question:

$$Y_i = \beta_0 + \beta_1 \cdot Treatment_i + u_i$$

Where:

- Y_i is a binary variable indicating the response of participant i (equal to 1 if the participant selects option b and 0 if they select option a), for each question.

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- β_0 is the intercept, capturing the mean response for the control group.
- β_1 is the coefficient of interest, representing the causal effect of being in the treatment group (i.e., receiving the additional information).
- $Treatment_i$ is a binary variable equal to 1 if participant i is in the treatment group and 0 if in the control group.
- u_i is the error term.

This simple regression model allows for the estimation of the treatment effect β_1 for each question separately. Since randomization ensures balance across observable and unobservable characteristics, β_1 can be interpreted as the causal impact of objective information on participant responses. While the basic model assumes homoskedasticity, results are unchanged under heteroskedasticity-robust standard errors.

RESULTS

This section presents the results of the experimental analysis, focusing on the impact of additional information on decision-making.

Main Results

We estimate this model separately for each of the two main questions. Table 2 reports the results.

Table 2: Regression Results: Main Specifications

	Dependent variable:	
	Q1	Q2
Treatment	−0.137**	0.404***
	(0.067)	(0.070)
Constant	0.329***	0.271***
	(0.051)	(0.048)
Observations	168	168
R^2	0.024	0.164
Adjusted R^2	0.018	0.159
Residual Std. Error (df = 166)	0.437	0.159
F Statistic (df = 1; 166)	4.107**	32.459***

Note: *p < 0.1; **p < 0.05; ***p < 0.01.

For the first question, the estimated coefficient for the treatment is $\hat{\beta}_1 = -0.13664$, significant at 5%, indicating that participants in the treatment group were less likely to choose option (b) ("Sell the stock") compared to participants in the control group. This result suggests that contextual information highlighting potential market gains can significantly change decision-making, even when numerical probabilities remain constant.

For the second question, the regression results show that the estimated coefficient for the treatment is $\hat{\beta}_1 = 0.404$, significant at 1%, indicating that participants in the treatment group were more likely to select option (b) ("Sell the stock") compared to participants in the control group. In this case, contextual informational is negative, and once again affects the results even if the distribution of outcomes is unchanged.

Overall, our results indicate that context matters: participants were more likely to choose to keep the stock of a company after reading positive contextual information, and less likely to do so after receiving negative information, even if objective probabilities are unchanged in both cases. In short, the specific framing of information we used was relevant for decisions: while the control group faced a quantitative problem, the treatment group's additional information may have triggered qualitative reasoning linked to future expectations for market conditions.

Alternative Specifications

In this section, we analyze the impact of different forms of framing. To do so, we present for three alternative specifications of decision-making questions: Questions 3, 4, and 5, described below. While these questions were designed to test the same core idea — whether contextual information affects decision-making — they differ in structure compared to Questions 1 and 2.

Question 3:

Control Group:

You are making your first steps in the financial market. Which option do you prefer?

Options:

- Win $5,000 for sure
- Win $10,000 with a 50% chance and $0 with a 50% chance

Treatment Group:

You are making your first steps in the financial market. However, markets are known to be very volatile due to COVID-19 and the war in Ukraine. Which option do you prefer?

Options:

- Win $5,000 for sure
- Win $10,000 with a 50% chance and $0 with a 50% chance

The objective of this question was to examine whether contextual information about macroeconomic uncertainty would affect risk preferences. Unlike Questions 1 and 2, this question maintains a simple probability-based structure with no qualitative elements linked to the nature of the options.

Question 4:

Control Group:

Choose between the following options:

Options:

- 20% chance of winning $16,000
- 25% chance of winning $12,000

Treatment Group:

You are trading corn and have large amounts of it stored in your sheds. The market is in a downturn, and you must choose the option that best reflects your expectation for possible sales.

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Options:

- 20% chance of winning $16,000
- 25% chance of winning $12,000

This question introduces a market-related context for the treatment group but maintains a simple probabilistic choice structure. Unlike Questions 1 and 2, which explicitly reference stocks and companies, this question uses a more abstract framing related to agricultural commodities.

Question 5:

Control Group:

Choose between the following options:

Options:

- 80% chance of losing $8,000 and a 20% chance of losing $0
- Lose $6,000 for sure

Treatment Group:

You own 1,000 shares of a company that, according to the media, is expected to file for bankruptcy. Choose between the following options:

Options:

80% chance of losing $8,000 and a 20% chance of losing $0
Lose $6,000 for sure

This question is framed in the context of a company's financial distress for the treatment group, introducing a narrative linked to corporate bankruptcy. However, similar to Questions 1 and 2, the structure remains a probabilistic decision, with options based on clearly stated probabilities.

Despite using a similar treatment design, we observe that the treatment effect for these three questions is not statistically significant, as reported in table 3. In every case, the estimated coefficient is much lower than in the main exercise. Standard errors are similar, suggesting that the loss of significance is not due to lower precision, but to an actually smaller impact. This highlights the importance of question structure in determining the impact of objective information on decision-making.

Table 3: Regression Results: Alternative Specifications

	Dependent variable:		
	Q3	Q4	Q5
Treatment	-0.020	0.026	0.068
	(0.054)	(0.076)	(0.074)
Constant	0.153***	0.576***	0.329***
	(0.039)	(0.054)	(0.051)
Observations	168	168	168
R^2	0.001	0.001	0.005
Adjusted R^2	-0.005	-0.005	-0.001

Residual Std. Error (df = 166)	0.352	0.495	0.483
F Statistic (df = 1; 166)	0.141	0.115	0.838

Note: *p < 0.1; **p < 0.05; ***p < 0.01.

Discussion of Alternative Specifications

The results for Questions 3, 4, and 5 stand in contrast to those of Questions 1 and 2. This difference suggests that the specific structure of Questions 1 and 2 drive the effect, and not simply contextual informational, which was presented in all cases. This specific structure conveys:

1. A history of recent outcomes ("You bought a stock that gained/lost 10% last month").
2. A distribution of near-future outcomes (e.g., "It now has a 75% chance to increase by 12% and a 25% chance to decrease by 30%")
3. A specific form of investment (a stock) directly related to the contextual information presented in the treatment (e.g., sell or keep a stock of a newspaper company with internal problems).
4. A choice whether to keep or sell the stock, as opposed to a choice between lotteries.

It is important to highlight that these are only framing differences. The history of recent outcomes, as well as the specific form of investment, is not relevant if the distribution of future outcomes is given, as is the case in all five questions. The choice between keeping or selling a stock is also in fact a choice of lotteries, since any choice leads to a lottery – whether degenerate in case of selling, or non-degenerate in case of keeping. Taken together, our five exercises suggest that context matters, as long as it is presented in specific formats.

FINAL REMARKS

This paper demonstrates that contextual framing can significantly influence financial decision-making, even when objective probabilities remain constant. Through an online experiment, we showed that participants' choices were altered by qualitative information about a firm's prospects, emphasizing the role of decision structure and context. Positive framing increased the likelihood of retaining a stock, while negative framing led participants to sell. In contrast, alternative exercises lacking specific contextual details showed no significant effects, highlighting that the impact of framing depends on its relevance and alignment with the decision task.

These findings contribute to the understanding of how framing shapes behavior under uncertainty and offer practical insights for designing interventions to improve decision quality in information-rich environments. Future research could explore how varying levels of financial literacy or emotional responses to framing further influence decision-making processes.

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Appendix

This appendix presents the complete questionnaire, as presented to participants. Parts in bold were seen only by participants in the treatment group.

What's your age?
Options:

29 or less
30 – 39
40 – 49
50+

What's your gender?

(a) Male
(b) Female
(c) Other/Prefer not to say

Verification question: In a condition where there is only the possibility of winning a certain amount, what is the best for me?

(a) Have a 40% chance of winning; or
(b) Have a 42% chance of winning.

You bought a stock that, throughout the last month, has gained 10%. It now, has a 75% chance to value another 12% and a 25% chance to devalue 30%. ***The company in question is a major producer of agricultural vehicles, and the next food crop is expected to have record rates.*** *What would you do?*

(a) keep the stock; or
(b) sell it.

You bought a stock that, throughout the last month, lost 10%. Now there is an 80% chance that it will value 15% and a 20% chance that it will depreciate another 10%. ***The company in question is a large newspaper conglomerate, which is experiencing internal problems regarding the board's unwillingness to digitalize its media.*** *What would you do?*

(a) keep the stock; or
(b) sell it.

Verification question: How much is 3+3?

(a) 4
(b) 5
(c) 6

You are making your first steps in the financial market and you are at the following situation. ***However, markets are known to be very volatile, in terms of the consequences of the COVID-19 pandemic and the war in Ukraine. As a result, what was once safe can no longer be considered as such.*** *What do you prefer?*

(a) win 5.000 USD for sure; or
(b) win 10.000 USD with a 50% chance and win 0 USD with a 50% chance.

Choose from the following options. ***However, consider that you trade corn, and that you have large amounts of this input in your sheds. The market is in a downturn and you should choose the option that best describes your estimate of earnings from possible sales.***

(a) 20% chance of winning 16.000 USD; or
(b) 25% chance of winning 12.000 USD.

Choose from the following options. ***However, consider that you own 1000 shares of a large company which, according to the media, will file for bankrupcty, causing considerable losses to its shareholders.***

(a) 80% chance of losing 8.000 USD and a 20% chance of losing nothing; or
(b) lose 6.000 USD for sure.