



The Influence of Behavioral Biases in Economics on Residents' Decisions

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Abstract. This article studies the influence of behavioral biases in behavioral economics on residents' decisions through questionnaire surveys and data analysis. The study finds that consumers prefer benefit-oriented promotion methods such as discount ratios and prominent digital forms of benefits in shopping decisions. Investors show dependence on historical profit and loss data in stock trading and tend to buy profitable products and sell loss-making products, reflecting the behavioral characteristic of loss aversion. In terms of risk choice, most consumers show risk aversion, while a small number show risk preference. The research results indicate that residents' consumption and investment decisions are influenced by various behavioral biases, providing empirical evidence for the optimization of enterprise marketing and investment strategies.

Keywords: Behavioral bias ; decision preference ; consumption behavior ; investment decision ; risk preference

1 Introduction

In traditional economic theories, it is often assumed that residents are fully rational in their decision-making and can weigh the balance between costs and benefits to maximize benefits. However, many real-life phenomena show that residents' decision-making often deviates from the rational track, such as consumers will always tend to exaggerate the description when facing the same amount of discounts, and

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investors will often be influenced by the majority decision when investing, so as to make irrational decisions, and one of the key factors behind these is the behavioral bias.

This paper uses a questionnaire to explore the different tendencies and sensitivities to cost-benefit that consumers exhibit when faced with a discount percentage or the absolute value of a discount for the same discount amount offered. It also explores consumers' preferences under different risks. As for investors, this paper explores the relationship between investor decision-making and historical data profit/loss and market expectation disturbance, in order to deeply explore the impact of behavioral bias on residents' decision-making, to understand the micro-decision-making of consumers, and to assist enterprises and investors in formulating scientific sales activities and investment strategies.

2 Literature Review

Since scholars proposed in 1979 the use of prospect theory and utility functions to evaluate the perception of investment decision-makers regarding gains and losses, many researchers have begun to explore the relationship between irrational preferences and expected returns. Hu Zhihao and Liu Qian[1] characterize the investor decision-making process based on prospect theory and find that the systematic market environment and investors' psychological factors are key variables influencing asset price volatility. In contrast, Baele and Driessen[2] discover that the skewness of an asset's return should theoretically be negatively correlated with its average return; that is, investors tend to expect higher average returns when considering assets with less skewness.

Since some scholars conducted experiments in 1998 to confirm that prospect theory could explain the disposition effect, many researchers have since utilized prospect theory to explore the disposition effect in greater depth. Based on prospect theory, Li Xuefeng et al.[3] identified changes in the market environment as key factors influencing shifts in disposition behavior. Wu Jiawei et al.[4] demonstrated that investor sentiment is negatively correlated with disposition behavior through the lens of prospect theory. Additionally, some scholars have concentrated on examining the disposition effect within the stock market and have uncovered various related phenomena. Ingersoll and Jin [5] found that investors tend to sell stocks with significant losses, while Hartzmark[6] illustrated a sorting effect in investor selling

behavior, indicating that investors are more inclined to sell stocks with either the highest or lowest profitability. Furthermore, An confirmed the presence of a V-shaped asymmetric disposition effect in the U.S. stock market using empirical data [7].

With the rapid development of both online and offline retail industries, pricing strategies and consumer decision-making psychology have emerged as key factors influencing product sales and enhancing competitiveness[8]. This has attracted considerable attention from scholars, many of whom have chosen to study the anchoring effect. Wang et al.[9] utilized platform subsidies and coupons as variables, discovering that both platform subsidies and consumer-issued coupons significantly impact final pricing strategies. Chen et al.[10] analyzed a consumer decision-making model influenced by the anchoring effect to achieve profit maximization. Nasiry and Popescu[11] argued that, under the influence of the anchoring effect, consumers' preferences gradually shift toward the anchor point. Some researchers have applied the anchoring effect to explain phenomena in the financial market. Zhang Yatao and Liu Yilian [12] used the anchoring effect to elucidate the redemption phenomenon in the fund market. He Dexu et al.[13]concluded that the stock valuations of listed companies exhibit an inverse relationship with mergers and acquisitions, based on long-term price anchoring. Ding et al.[14]found that anchoring bias affects both insider trading behavior and corporate investment decisions.

Disposition effect and risk aversion are mainly from the prospect theory, and most of these scholars' research direction is mainly focused on the macro aspects of the financial market, resulting in the difficulty of observing the more microscopic effects and data, so the micro-individuals on the representation is not strong. The research on the anchoring effect primarily examines its influence on investors in the financial and stock markets. While some scholars have investigated the effect of anchoring on merchants' pricing levels by gathering information and constructing macro-level models, there is a notable lack of analysis regarding consumer behavior in real decision-making contexts based on microdata.

3 Questionnaire Design

This questionnaire consists of a total of 14 questions, which include 4 basic information questions regarding gender, age, occupation, and region, as well as 10 questions focused on behavioral biases in decision-making among the population. The 10 questions address consumer characteristics and consumption tendencies in various

situations with differing cost-benefit analyses, behavioral finance theories related to investor decision-making, and consumers' risk preferences in their decision-making processes. A total of 97 questionnaires were distributed and 87 valid questionnaires were received. 76% of the questionnaires came from Shandong Province, and the occupations mainly included students, business people, technical developers, retirees, etc. The ages of the survey were generally between 16 and 50 years old, and the proportion of females was 59.77%, while the proportion of males was 40.23%.

4 Analysis of Results

4.1 Consumer Characteristics

Consumers are often presented with discounts and offers when making shopping decisions, primarily in the form of discount percentages and fixed discount amounts. The key distinction between the two lies in the difference between relative and absolute values that consumers perceive. As illustrated in Figure 1, this paper addresses two related questions and finds that consumers prefer discounts expressed as a percentage (i.e., relative value) when the actual discount amount remains constant. This indicates that, compared to absolute values, relative values allow consumers to perceive the difference between the price of the goods and the original price, rather than merely focusing on the reduced monetary amount. This perception enhances their sense of acquisition and utility value.



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g. 1. The choice between absolute and relative values

Merchants frequently employ various techniques in their marketing strategies to highlight the advantages of their products over competitors. One common approach is to present the actual discount amount in a way that makes it seem more substantial by altering the expression used. This paper addresses the issue of creating different relative value numerical discount schemes that maintain the same actual discount amount, as illustrated in Figure 2. The study found that consumers preferred the larger figure (i.e., “80% of the duty reduction”). This suggests that even when the level of benefit is the same, a larger number enhances the impact of the offer, making consumers more aware of the benefit amount and increasing their preference.

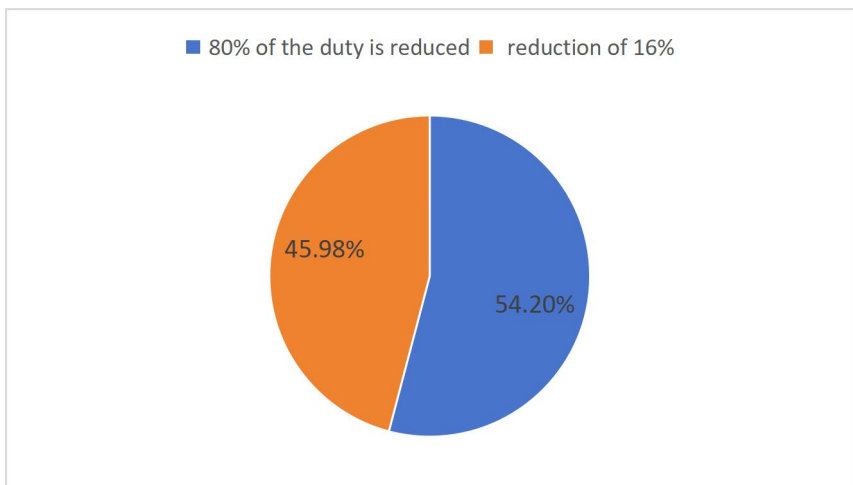


Fig. 2. Adjustment of the baseline exhibits different values of preferences.

4.2 Cost-Benefit Analysis

Customers frequently perform cost-benefit analyses when making decisions. Cost reductions and benefit increases have a similar effect on the overall value to the customer for the same expenditure. However, actual choices are often influenced by cognitive biases, which can result in varying preferences. Therefore, we designed problems to assess the direction and degree of deviation of this phenomenon based on various promotional activities employed by real-life merchants. Merchants frequently utilize vouchers and price reductions in their promotions to attract customers, and the fundamental difference between these two methods lies in the impact on revenue or costs. It was found, as illustrated in Figure 3, that consumers exhibit greater satisfaction with the preferential method of obtaining vouchers compared to receiving

an equivalent amount of goods free of charge. This suggests that when faced with costs and benefits, consumers tend to prefer an increase in benefits, which may provide them with a heightened sense of utility and acquisition.

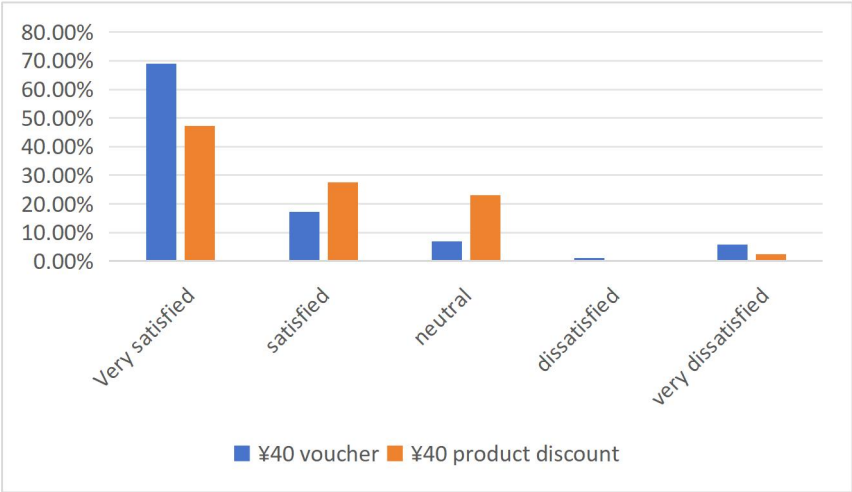


Fig. 3. Satisfaction level of two types of discounts: equivalent vouchers and product price reductions.

When an e-commerce platform conducts a promotional activity, users often develop a cost preference influenced by the expenses associated with the activity, which affects their decision to participate. This paper examines this phenomenon by designing a problem based on typical activities of real merchants, aiming to explore consumers' preferences regarding time costs when presented with identical discount amounts. It was found that consumers are more inclined to spend money on time costs when presented with the same offer amount; however, they are more sensitive to the specific time cost associated with payment, as illustrated in Figure 4. This is more strongly related to everyone's intuition. The majority of the population generally earns their income through time investment, while a small number of investors earn their income through the “money-for-money” method. Consumers therefore perceive the time cost of money to be much lower than the actual cost of time paid and are naturally more sensitive to the actual cost of time paid.

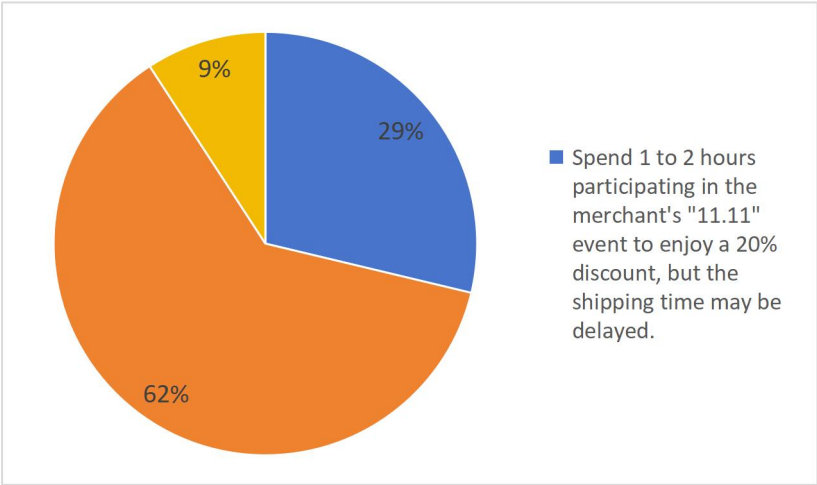


Fig. 4. Consumers' time cost propensity

4.3 Investor Characteristics

According to anchoring theory, investors will often refer to the profit and loss level of previous products when facing investment decisions and will prefer products that have already made profits in order to reduce the possibility of loss. Therefore, this paper is designed to explore the investment preferences of investors when facing different levels of profit and loss. It is found that investors prefer products with previous gains and higher returns (i.e., first two rounds: +10,000 CNY), as shown in Figure 4. This result is similar to the prospect theory, which suggests that investors generally show loss aversion in making investment decisions, and therefore prefer to continue investing in products with previous gains to reduce the overall probability of losses in that product.

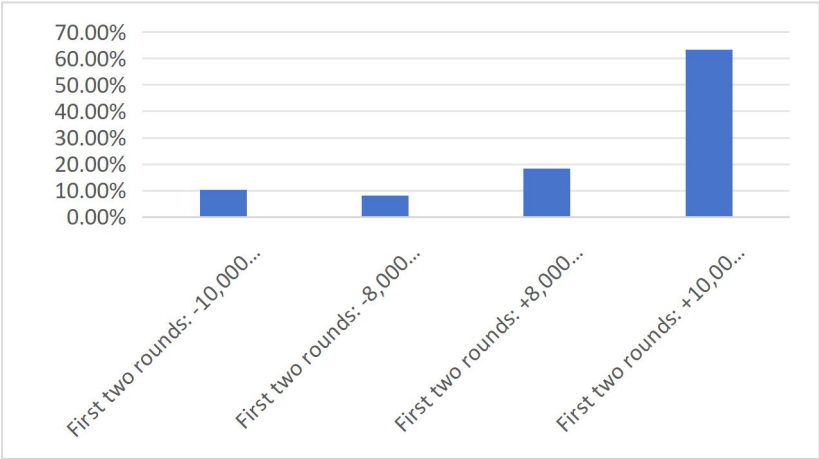


Fig. 5. Investors' Investment Preferences in the Face of Different Profit/Loss and Profit/Loss Levels.

Based on the momentum effect, an investor's investment decision is usually influenced by market expectations for that investment product and, according to prospect theory, investors prefer loss aversion when investing.To address this phenomenon, this paper designs a question to explore investors' decision-making tendencies in the face of different market reactions. It was found that investors are more inclined to sell stocks with a greater degree of decline, as shown in Figure 5.This result is roughly the same as that predicted by the momentum effect and prospect theory, i.e., investors are more inclined to sell losing stocks, and the greater the loss of stock, the more inclined investors are to believe that the stock will continue to lose money in the future, and thus to sell the stock to reduce the loss of their investment, which is contrary to the result predicted by the disposition effect.

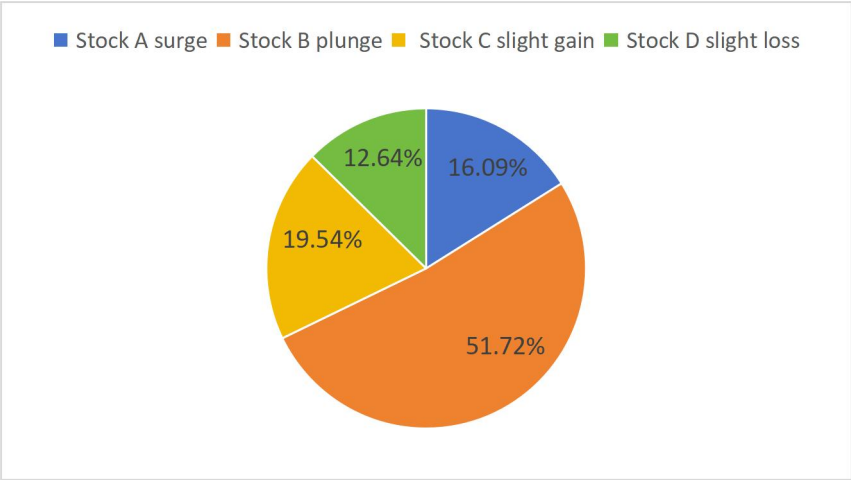


Fig. 6. Investors' decision-making tendencies in the face of different market reactions.

4.4 Risk Appetite

In real markets, most participants are not risk-neutral and will have different preferences for options with different volatility when faced with the unknown. To test this conjecture, we chose to test the consumer reaction through a manufacturer's sweepstakes. To test this conjecture, we chose to test consumer reaction through a manufacturer's sweepstakes. In the questionnaire, we fix the expected returns (discounts are the same) but with different volatility to observe the testers' choices. The results, as illustrated in Figures 6 and 7, indicate that the majority of consumers preferred the lowest risk scenario and identified as risk-averse. In contrast, the second largest group of consumers favored the highest-risk option, although they were still fewer in number than those who preferred the lowest-risk option, categorizing them as risk preference. This suggests that, in terms of consumer preferences, the predominant group is risk-averse, followed by those who prefer higher risk, while the risk-neutral category, often referenced in traditional economic theory, remains a minority.

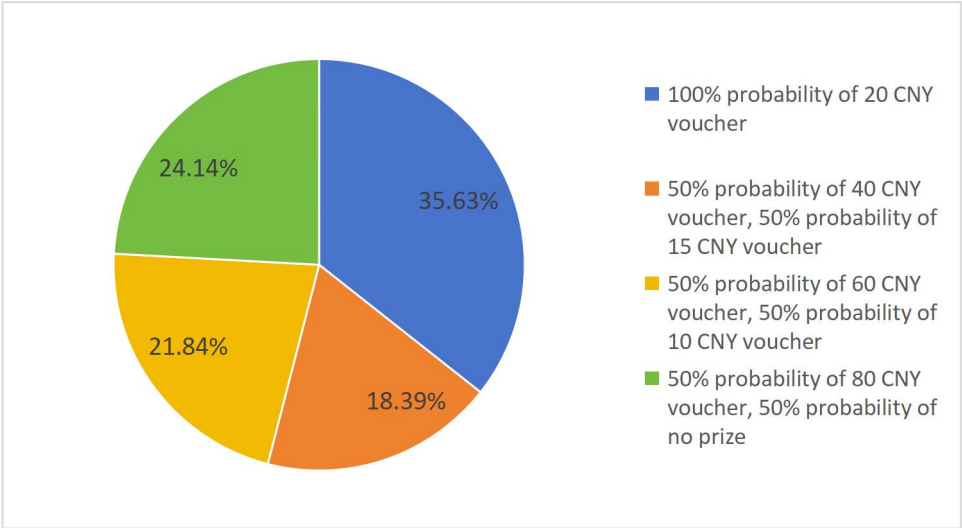


Fig. 7. Consumers' decision-making preferences under different risk-return combinations.

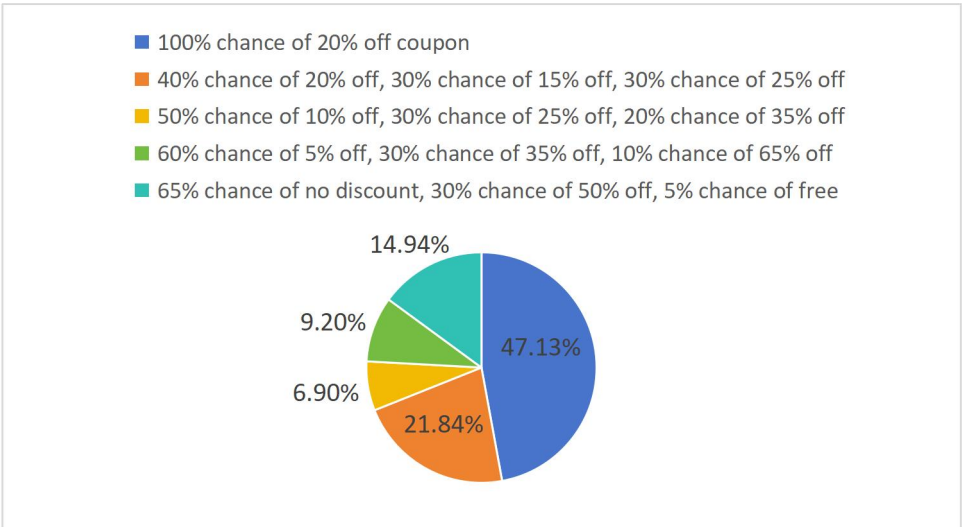


Fig. 8. Consumer decision preferences under different risk-return portfolios

5 Conclusion

This paper focuses on the impact of behavioral biases in economics on residential decision-making. By designing a questionnaire and analyzing it, it was found that

consumers preferred relative value forms, such as discount percentages, in the face of shopping decisions, digital big discount programs and vouchers, and other forms of discounts. This suggests that consumers when confronted with complex forms of offers, prefer those that give them an intuitive sense of utility. When investors buy and sell stocks, they reflect a stronger preference in the face of products with higher prior returns and a strong avoidance of products with higher losses, which demonstrates an overall loss aversion in investing, as well as a reliance on historical data. As for the sweepstakes, consumers' risk preferences are diversified, with most of them being risk averse, followed by risk preferred, which indicates that consumers have an overall preference for stable returns or high returns with high risk in preferential activities. Overall, residents' behavioral norms in consumption and investment activities are not entirely based on rational economic theory but are driven by multiple behavioral biases.

Based on the above results, it is suggested that merchants, when conducting promotional activities, try to choose preferential forms with relative values, strong intuitiveness, or a strong sense of gain, such as using discount ratios, vouchers, and other forms to enable consumers to obtain stronger utility and a stronger sense of gain and enhance consumers' satisfaction with the preferential offers. When formulating marketing strategies, it is necessary to combine the risk preference characteristics of consumers. While highlighting the advantages of low-risk products, targeted products that meet the needs of risk preferrers should be developed. For investors, it is suggested that investors understand their own psychological tendencies and reduce excessive anchoring on short-term data, so as to make more rational decisions.

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