



The influence of Sunk Costs on Rational Decision Making in Behavioral Economics

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ABSTRACT

At present, the research summarized of sunk cost effect almost all come from the cost of money. The behavioral sunk cost effect caused by time or effort has not attracted the attention of researchers until recent years, but the research in this aspect is just starting, and the few research conclusions are also controversial: some studies have confirmed the sunk time effect and sunk effort effect, but other studies have come to the opposite conclusion. In order to explore more factors affecting people's decision-making in the case of sunk cost, the following contents and questionnaire collection will be elaborated.

Keywords: *Sunk costs, Rational decision-making, Reality and theory, Uncertain scenario.*

1. INTRODUCTION

Behavioral economics is a discipline that revises economic models based on the findings of psychology in order to better understand people's real-world decisions and their impact on the economy. The human being as an emotional individual, when making choices in reality, they are often different from theories, and may be influenced by other emotions or factors to make irrational and intelligent behavior choices. The following will explain some examples of sunk costs in life and explore how sunk costs teach us to make rational choices and influence our decision making.

2. ANALYSIS THE EXAMPLE OF SUNK COSTS

2.1. The brief information of sunk costs

2.1.1. The definition of sunk costs

The definition of "sunk costs" is used in economics and business decision making, referring to costs that have already been paid and cannot be recovered[1]. When people decide whether to do something, they not only look at whether it is good for them, but also whether they have invested in it in the past. These Sunk costs -- time, money, effort -- which we call "Sunk costs". For example, few people eat buffet is just enough to pay the bill and

leave, less people study abroad to find their major difficult to find a job after graduation can resolutely change careers[2]. Also, almost no one can turn around when they drive the wrong way. In fact, people tend to care about the cost they have paid, and often cannot accurately identify what is sunk cost and what is a reasonable choice. Some people even waste more "cost" in the hope of saving something[3].

2.2. The relevant cases of sunk costs

Nobel Prize in Economics 2001 Sunk cost once said that economists often ignore "sunk costs" and even choose to abandon them, which is very correct and wise. "If assumed that one event is paid for a movie ticket and watching this movie that make people feel boring, it's not worth the effort. So, what people to choose between stay in the theater or just turn around and leave. Many people think that since I have bought a movie ticket, it must be a loss if I choose not to watch it. So, they don't care if the movie is good or not, they always stick to the last second of the movie[4]. In fact, Professor Joseph Stiglitz tells us that the act of sitting through discomfort and boredom at the cinema and staying through the movie is an act of ignoring sunk costs. "In making this decision, you should ignore the price of ticket," the professor says. That is a sunk cost, which you've already spent whether you stay or go." If you have to be obsessed with earning your money back and watching all the bad movies, you will pay a lot of time and energy, but it is better to leave the

cinema early and use this disposable free time to do something meaningful. In fact, this kind of timely exit through sunk costs, timely stop loss behavior from an objective point of view is a good way to reduce their losses. If we are already paid the anyway, one thing cannot take back, we should rationally choose to give it up.

Sometimes, not only individuals to make irrational decisions, but also enterprises do not invest in big projects rationally. In the mid-20th century, Britain and France jointly developed the first large commercial supersonic airliner, Concorde, which is a classic example of a loss-making state project. At the beginning, everyone was confident that they could create an epoch-making invention, so they invested a huge budget, the cost of the new engine alone was in the hundreds of millions of dollars, but halfway through, there was a problem, and they found that the cost had skyrocketed, and the risk was huge, and the future was uncertain. They have to choose whether to give up or continue. The question came before us. According to the data, continuing was the worst option, but they still chose to stick to it. The aircraft was developed, but it was eliminated because it did not adapt to the market, and the British and French governments suffered a huge loss. So, the obsession with sunk costs is often referred to as the Concorde effect. It leads not only to huge costs, but also to bad decisions with serious consequences.

Certainly, markets and technology change so quickly that bad investment decisions are inevitable. The real test for companies is how to avoid making bad investments when they've already made them -- Intel's decision in December 2000 to cancel its entire line of Timna chips, an integrated chip designed for low-end PCS. At the time of the project, the company believed that future cost reductions in computers would come through highly integrated designs. Since then, however, the PC market has changed a lot, and PC makers have met their goals through other system cost reductions. Intel saw this and decided to pull the plug on the project to avoid further expense[5]. Reducing sunk costs through joint ventures or bilateral contracts Many times, sunk costs are not caused by the company itself, but by the interruption of cooperation by partners or upstream and downstream parties in the supply chain. Because a durable investment invested in a particular trade often has the characteristic of specificity, in this case the invested assets will be completely or substantially abandoned if the trade is abruptly terminated, resulting in a significant proportion of "sunk costs". Therefore, it is particularly important to ensure the continuity of transactions through joint ventures or bilateral contracts, because contractual or organizational safeguards can significantly reduce transaction costs.

2.3. Theoretical interpretation related to sunk costs

Prospect theory is a decision model of descriptive paradigm, which assumes that the risk decision process is divided into editing and evaluation. In the editing stage, individuals collect and process information by means of "frame" and reference point, and judge information by value function and weighting function of subjective probability in the evaluation stage[6]. The value function is empirical, which has three characteristics. First, most people are risk-averse when facing acquisition. Second, most people are risk-biased when facing loss; Third, people are more sensitive to losses than gains. As a result, people tend to be cautious about taking risks when it comes to acquisition; And in the face of loss will be very unwilling, easy to take risks. People's sensitivity to loss and gain is different, the pain of loss is much more than the pleasure of gain[7].

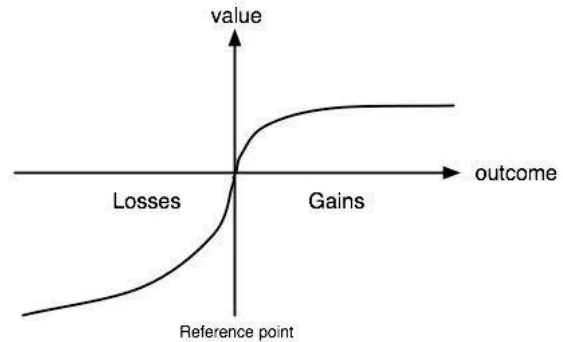


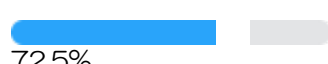
Figure 1 Prosepect Theory[7]

3. DISCUSSION

In order to explore whether sunk cost theory is effective in real life, the following specific decisions that can be encountered in life are investigated for people's choice. Forty people were asked to fill out their choices about decisions they had made in life, The respondents were asked what age group they were likely to encounter choice and the same partial subjective questions to analyze the theory more specifically.

Table 1. Detailed distribution of investigators

| Option | Number | Proportion |
|---------|--------|------------|
| Adult | 12 | 30% |
| Student | 28 | 70% |
| Male | 11 | 27.5% |

| | | |
|--------|----|---|
| Female | 29 |  72.5% |
|--------|----|---|

In table1,in terms of age, adults are more likely to avoid the irrational influence of sunk costs because they have better decision-making strategies, especially because they do not take sunk costs into account as young people do.It can be explained by comparing the decision results of adults and students in the following set of survey questions,adults (58.33%)chose the risky option at a smaller rate than students(67.86%).

Sunk cost effect is also affected by the characteristics of sunk cost, situational factors, individual differences and cultural differences, and these factors are essentially the psychological significance of sunk cost on decision makers[8].

For example,time preference .Frederick, Loewenstein, and O 'Donoghue have summarized the results of most of the time experiments, which consist of the following four

Scenarios 1.Current loss and future gain, accept small current loss in exchange for large future gain. 2.Current gains and future losses, give up small gains to avoid big losses in the future.3. Current losses and future losses, accept small losses now to avoid large losses in the future.4. Current revenue and future revenue, give up small current revenue in exchange for big future revenue[9].In table2,the research has shown that between current gains or losses and future gains or losses, people tend to value the future more than the present and past gains and losses.

Table 2. Whether the future is more important than in the present and in the past

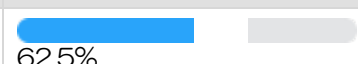
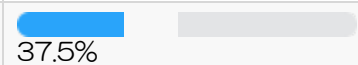

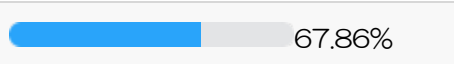


| Option | Number | Proportion |
|--------|--------|---|
| True | 25 |  62.5% |
| False | 15 |  37.5% |

Table 3. Whether or not to give up sunk costs in choosing education and work

| Option | Number | Proportion |
|-------------------------------------|--------|---|
| Continue to work hard in this major | 9 |  32.14% |
| Choose your favorite major | 19 |  67.86% |
| Stay in your current position | 5 |  41.67% |
| Choose the better job opportunities | 7 |  58.33% |

When people of different ages make choices , for example, when spending a lot of energy and time on a discipline, found not to like and not ideal,or when spending a lot of time and effort in a job,but better job opportunities with uncertainty.

People often mistakenly assume that energy is not part of the sunk costs, because often ignore the energy of the influence of the sunk cost effect to our daily life, so you're often in a professional or post, in the first choice of your life, for we had choice has spent too much energy, and let yourself think really like. Cause cognitive judgment errors, which lead to decision-making errors, and then affect a series of subsequent decisions, resulting in difficult to recover the butterfly effect. The reason is that when we put in the same amount of effort, we hope to bring the same benefit. If we don't meet the expectation

in our hearts, we will get tired, or finally settle down, leading to mistakes in decision-making.

In addition to being presented with a given choice scenario, the respondents were also asked the following personal subjective decision questions.

The first one is that the most important thing want to do at the stage.Most of the choices are related to the real life of the respondent, such as academic achievement, admission to the ideal university or suitable major, and doctoral study. At work, be passionate and steady. As well as life, enjoy traveling and keep healthy. At the same time, people will also consider influencing factors when making choices, such as external factors such as unattainable epidemic costs and current tasks,And adults have more factors to consider than students.

These are also related to the second question, the most important decisions that respondents made. Some people who meet or do not have much expectation of the present situation do not have a more important choice on the second question. Because some people feel that the important decisions they made in the past are not as important to one stage as they are to the next. And despite the existence of sunk costs and preliminary theories, there are risks and uncertainties in the expected decisions and the important decisions that people have made, such as not learning music, art or painting as most people do, or studying abroad. As well as at work, choose to develop in other places or other positions. Theory is to some extent different from reality.

4. CONCLUSION

How to make rational decisions about sunk costs. Whether it's the decision to go to the movies or the enterprise decision making sunk costs teach us the same lesson. Stop your losses and move forward, do not be a person who is loss aversion, which refers to people perceiving losses as more unbearable when faced with the same number of gains and losses. We can't wait to get out when we're in trouble; By then it may be too late, or too costly to make up for. We need to give ourselves a stop loss and give ourselves a safe backup. A movie is not good, you can choose to leave, you lost a movie ticket, but to save the time to see the movie. As people with subjective initiative, we should always recognize what is the sunk cost in life, so as to make rational choices, and then grasp the present, down-to-earth, to meet a better future. However, according to research the theory may not be the same as the reality. These contradictory research conclusions are not only related to the characteristic that behavioral cost is different from monetary cost, but also may result from experimental operation problems. This essential difference may mean that it is difficult to induce the cost of industry.

Therefore, future research should further demonstrate the existence and formation mechanism of behavioral sunk cost effect on the basis of clarifying the characteristics of behavioral sunk cost and experimental manipulation mode.

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