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Pini Davidov
Ph.D, Azrieli Academic College of Engineering, Jerusalem, Israel
ORCID 0000-0001-5970-5978
pinida@jce.ac.il
Cohen Shaked
BSc. Azrieli Academic College of Engineering, Jerusalem, Israel
87shaked@gmail.com

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SUNK COST EFFECT AND FRAMING

Abstract

Behavioral economics is an important branch in a combination of psychology, sociology, and economics, and it has affected decision making for many years. In this paper we present the relationship between two behavioral economic phenomena - sunk cost effect defined as an expense already made that is unreturnable and is irrelevant to current decision making, and a similar phenomenon called framing, the principle that our choices are affected by the way they are framed. In this paper a survey (n=120) was used to present 3 scenarios to participants, each with a different level of investment of sunk costs; as a second step a framing effect, family status, was added to each scenario. We show that the influence framing exerts on the sunk cost effect is large, and that the specific framings we chose affect women more than men. We also propose that framing can reduce the effect of sunk cost in the decision-making process, therefore we recommend focusing on dealing with it. It is also observed that sunk cost is affected by the individual internal and external commitments as presented in the scenarios.

Keywords: *behavioral economics, sunk cost, framing.*

INTRODUCTION

Economics is the social science that studies the production, distribution, and consumption of goods and services (Webster, 2020), a field first developed in Britain during the 18th century. Behavioral Economics on the other hand acknowledges the way emotions, biases, and unpredictability are inherited to human thinking and perceptions. Their effect on decision-making gives economists a new set of tools in their effort to describe reality. Behavioral Economics combines psychology, sociology, and economics to deal mainly with decision making in 3 realms (Shefrin, 2002):

- Heuristics: Humans make a significant proportion of their decisions using mental shortcuts or rules of thumb.
- Framing: The collection of anecdotes and stereotypes that make up the mental filters upon which individuals rely to understand and respond to events.
- Market inefficiencies: These include mis-pricing and non-rational decision making.

Additional characteristics in behavioral economics are the vast use of field experiments to test, validate, or refute the existence of tendencies that affect decision making. While behavioral

economics was officially formatted during the 1970's, some prior landmarks can be cited. One of the first notions of non-cold-calculated behavior can be found in Adam Smith's 1759 book, "The Theory of Moral Sentiments," in which he claimed that individuals have sympathy for the well-being of others. In 1955, Herbert Simon used the term, "bounded rationality," (one of the works that earned him a Nobel prize in 1978), the idea that our ability to make optimal decisions is confined to the specific conditions in which the decision was taken. In 1979, Daniel Kahneman and Amos Tversky released their breakthrough article (whose early draft was read by Richard Thaler) about Prospect theory (Tversky and Kahneman, 1981). One year later, Richard Thaler introduced "Endowment-effect," that made use of prospect theory. In 1985 Thaler introduced the term, "Mental-Accounting," describing the way emotional factors are ascribed when making economic decisions. He distinguished between gains of acquisition (rational) to gains of the deal (emotional). Today, it is acceptable that decision making processes happen in 2 systems (Kannengiesser and Gero, 2019). The first system is a cost effective, automatic, minimal effort, pattern seeking, in search for irregularities. System one has higher sensitivity towards loss than towards gain, narrowly isolating issues that need to be decided upon. It is also more prone to biases. The second system is a conscious, calculated, logical, slow, and effortful "heavy-lifting" thinking system in which one must concentrate and invest mental effort. System one creates notions, feelings, and tendencies, that turn into beliefs, stands, and intentions after the examination of system two.

One economic behavior that we highlight in this paper is the "sunk cost effect," but prior to delving into sunk-cost term we must emphasize the difference between a fallacy and a bias. A Logical Fallacy is a flaw in an argument that weakens the argument or makes the conclusion invalid, whereas a Cognitive-Bias is a systematic inclination towards certain patterns of erroneous thinking (or "irrationality") when processing and interpreting information. These are largely products of evolution to help us survive by simplifying information processing. As such, biases greatly influence our behavior, opinions, and the decisions we make – and have made in the past (Tversky and Kahneman, 1972). The main difference between biases and fallacies is that biases affect how we interpret and process information, and fallacies relate to how we construct our arguments and communicate ideas.

Getting back to the term sunk cost, a Sunk-Cost fallacy also known as Irrational-escalation or Escalation of commitment, or the Concord effect can be defined as: an expense already made and that is unreturnable, thus making it irrelevant to current decision making regarding the future. The expense can be money, time or mental or emotional effort (Mankiw & Reis, 2018). This fallacy is realized in many aspects of life, from project management, career choices, and the way one conducts himself in a romantic relationship. For example, imagine that you went to see a movie in the cinema, and halfway through the movie you realize that the movie is not as great as you had imagined. You want to go home, but the money paid for the ticket and the time it took to get to the cinema make you rethink the choice. That is why you decide to stay, hoping that maybe the movie will get better towards the end. Had it been the same movie on Netflix where zero investment was made, one would not be so hesitant and would probably end the movie and decide to watch something else instead. This effect shows that once money, effort, or time have been invested in a project, there is a greater tendency to follow this project through. The investment is the main motivation for the continuation and is what influences the decision even though objectively it should not. The behavior in the example is not considered as rational economically according to traditional economic theory, since only incremental costs should influence economic decisions and sunk costs (Arkes and Blumer, 1985). Psychological factors involved in sunk cost are Loss aversion (Novemsky and Kahneman, 2005), Framing effect (Tversky and Kahneman, 1981), and Overoptimistic probability bias (Barber and Odean, 2001). The requisite of personal responsibility is the desire not to appear wasteful (Arkes and Blumer, 1985).

Sunk cost effect has stretched out of the pure economics and psychology into other fields. Examples are the use of the term in recent research that includes studies focused on medicine (Eisenberg et al., 2012), algorithms development (Eisenberg et al., 2012), and philosophy and morals. In addition, research has shown that apart from humans, rats and mice are also sensitive to sunk cost effect after they have made the decision to pursue a reward (Sweis et al., 2018).

The sunk cost effect is closely related to a similar phenomenon known as progress framing. When evaluating the progress of a certain project, managers can either look back at how much effort, money, and time have been invested, or they can look at the future and how much time or money will remain. It is thought that past oriented framing causes escalation of commitment that can lead to additional unproductive investments in money, time and effort in hopes of reversing the situation. Future oriented framing can be perceived as an opportunity to take a more productive path in a project (Karevold and Teigen, 2010).

We set examine the framing effect on "sunk cost" bias by showing how the framing effect can minimize it.

METHOD

One hundred and twenty adult participants (53 men and 67 women; mean age = 34.3 years, standard deviation= 12.428, age-range = 18–72) residing in Israel were recruited using social networks. They filled out an online questionnaire (see appendix A). For the first step, 3 scenarios regarding career were presented to the participants each with different levels of sunk cost - low, medium, and high. In each scenario, we asked the participant to choose whether to "cut the losses" or keep investing and "sink." We then evoked the participants' feelings regarding family and children by asking about how many children they have or would like to have. In the second step, we reframed the 3 above scenarios by adding a family status of having 2 children to the equation. Un-framed scenarios served as a baseline, and the framed set was used to measure the effect of framing on sunk cost.

RESULTS

Chi-Square test was done between scenarios and between pre- and post- framing (Table 1). Raw data are shown below (Table 2). We also used a McNamer test to examine the difference between male and female dispersion in answers (Graph 1). P-value between pre- and post- framing for females was 0.038, while 0.625 for males.

Table 1

Chi-Square Test results

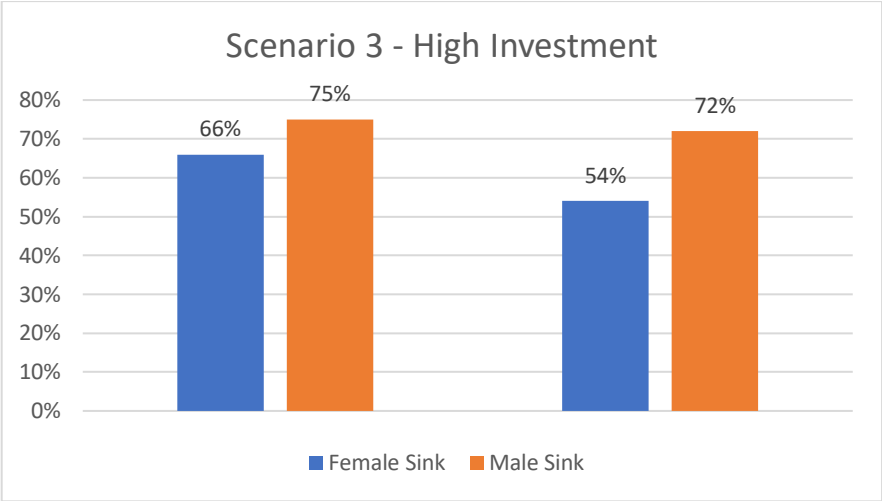
Group A	Group B	p-value
Pre - Low	Pre - Medium	0.057
Pre - Medium	Pre - High	0.000
Pre - High	Pre - Low	0.000
Post - Low	Post - Medium	0.242
Post - Medium	Post - High	0.884
Post - High	Post - Low	0.188
Pre - Low	Post - Low	0.000
Pre - Medium	Post - Medium	0.000
Pre - High	Post - High	0.021

Table 2

Pre and post framing answers

	Pre-sink	Pre-cut loss	Post-sink	Post-cut loss
Low	59 (49.17%)	61 (50.93%)	83 (69.17%)	37 (30.83%)
Medium	46 (38.33%)	74 (61.67%)	75 (62.5%)	45 (37.5%)
High	64 (70%)	36 (30%)	74 (61.67%)	46 (38.33%)

Graph 1: Scenario 3 – male and female differences



DISCUSSION AND CONCLUSION

Our results show that the sunk cost effect was presented at the non-framed scenarios. The sunk cost effect did not appear for scenario 2, and results were opposite to the effect. The framing effect heavily affected the sunk cost effect in scenarios 1 and 2. Scenario 3 was also affected but not as significantly. The results suggest that the framing effect can reduce the sunk cost fallacy. The sunk cost effect intensifies with an emotional investment (a dream job or a private business).

On one hand, when experiencing the scenario with these two element, children and family status, the sunk-cost bias is more pronounced in female decisions than that in males. On the other hand, the results show that in a high self-investment, men are highly affected by the sunk cost bias even though the framing effect appears, possibly because individuals tend to avoid taking actions when experiencing negative effects. As a result, they keep investing in an already failing plan. Possibly, the motherhood instinct is to give their children priority and give up on their own dreams for their children's sake. This motherhood Instinct significantly reduces the sunk cost bias.

A high level of goal commitment makes individuals more prone to escalate investment in troubled projects. Prior planning and pre-decided limitations such as budget and schedule for a well-defined achievable goal may help to avoid the sunk effect by providing points of assessment to decide about further investment in existing projects (Lee et al., 2012). While framing may help deal with sunk cost bias, it has problems such as disregarding aspects that were not presented in the frame of the scenario. Meissner and Wulf (Meissner & Wulf, 2013) address this issue and conclude that applying Scenario-planning methodology reduces the framing effect and can improve decisions quality.

In conclusion, the framing effect can reduce the sunk cost phenomenon. Certain scenarios can affect specific groups more than others. For example, the framing we chose (children) affects women more dramatically. Sunk cost effect is also intensified in an emotional investment, such as a dream, a self-owned business, or having children. There may be a change in the centrality of the workplace, as opposed to self-fulfillment. It is worth mentioning that the phenomenon of sunk cost is not detached from the environment of the individual, and that the effect of external/personal commitment and rationalization may reduce the effect.

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Pini Davidov
PhD, Azrieli Akademik Mühəndislik Kolleci,
Qüds, İsrail
ORCID 0000-0001-5970-5978
Cohen Shaked
BSc, Azrieli Akademik Mühəndislik Kolleci,
Qüds, İsrail

Batma xərc effekti və freyminq

Xülasə

Davranış iqtisadiyyatı psixologiya, sosiologiya və iqtisadiyyatın birləşməsində mühüm bir sahədir və illərdir qərar qəbuletmə prosesinə təsir göstərir. Bu məqalədə iki davranış iqtisadi fenomeni - geri qaytarılmayan və mövcud qərar qəbuletmə ilə əlaqəsiz olan artıq edilmiş xərc kimi təyin olunan batma xərc effekti və seçimlərimizin onların çərçivəyə salınma tərzindən təsirlənməsi prinsipi olan çərçivələmə adlanan oxşar bir fenomen arasındakı əlaqəni təqdim edirik. Bu məqalədə iştirakçılara hər biri fərqli səviyyədə batma xərcləri investisiyası olan 3 ssenari təqdim etmək üçün bir sorğu (n=120) istifadə edilmişdir; ikinci addım olaraq hər ssenariyə çərçivə effekti, ailə vəziyyəti əlavə edilmişdir. Biz göstəririk ki, çərçivələmənin batmış xərc effektinə təsiri böyükdür və seçdiyimiz konkret çərçivələmələr kişilərə nisbətən qadınlara daha çox təsir edir. Biz həmçinin çərçivələmənin qərar qəbuletmə prosesində batmış xərclərin təsirini azalda biləcəyini təklif edirik, buna görə də onunla mübarizəyə diqqət yetirməyi tövsiyə edirik. Həmçinin müşahidə olunur ki, batmış xərc ssenarilərdə təqdim olunduğu kimi fərdi daxili və xarici öhdəliklərdən təsirlənir.

Açar sözlər: *davranış iqtisadiyyatı, batmış xərc, çərçivələmə.*