Does Attenuating Endowment Effect Improve Efficiency? An Overview of Applications

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Abstract. This article explores the impact of the endowment effect on market efficiency, with a specific focus on attenuating this effect to improve overall efficiency. The analysis is grounded in a classical three-dimensional theoretical framework encompassing willingness to pay (WTP), willingness to accept (WTA), and loss aversion. The article discusses strategies to narrow the gap between WTA and WTP and reduce loss aversion as means to mitigate the endowment effect and enhance market efficiency. Drawing on literature reviews and case studies, the paper examines three applications of the endowment effect in the context of P2P payment, organizational co-determination, and the U.S. drinking water supply. The findings suggest that attenuating the endowment effect has the potential to improve efficiency, foster cooperation, and provide practical methods for enhancing market outcomes. To improve the future study, this paper provides insight to mitigate the endowment effect by combining closing the WTA-WTP discrepancy and reducing the loss aversion, introducing proxy variables based on specific contexts for empirical study.

Keywords: Endowment Effect; Market Efficiency; Cognitive Bias; Risk Prospects.

1. Introduction

The endowment effect, widely recognized as one of the most significant cognitive biases, has been a subject of extensive analysis and discourse in the realm of economics and various other scholarly domains. The term was originally introduced to describe the phenomenon whereby an individual, upon being endowed (currently in possession) of goods or rights, exhibits a tendency to assign a higher value to them. In recent times, an increasing body of research has endeavored to investigate and comprehend the multifaceted implications of the endowment effect across diverse areas such as price determination, allocation of public goods, stock valuation, and managerial cooperation [1-3]. Notably, these studies share a common focal point, illuminating the interplay between the endowment effect and the efficacy of decision-making processes within specific contextual frameworks.

The endowment effect has been observed within market interactions and specific transactions involving buyers and sellers. In other words, whenever a propensity for exchange arises, the endowment effect tends to manifest itself. Moreover, such exchanges are typically accompanied by a process of negotiation, commonly referred to as "offer asking," wherein the final price has not yet been determined [4]. This necessitates a heightened level of cognitive effort in the decision-making process. The specific appearance of “offer asking” varied in different contexts, however, basically, it is the different valuation of “goods” between who demands and who supplies.

By figuring out the nature of two-sided transactions, the endowment effect has been divided into two minor concepts, willingness to pay (WTP), and willingness to accept [5]. The framework of the endowment effect by incorporating the concepts of loss aversion and risk preference, thereby contributing to the development of a more comprehensive conceptual framework [5,6]. The expansion of framework was more advanced in conjunction with the integration of the Coase Theorem, thus further enhancing the overall coherence and robustness of the framework [7].

When the disparity between the Willingness to Pay (WTP) and Willingness to Accept (WTA) reaches a sufficiently narrow margin, the proposed price put forth by the seller and the buyer can be deemed a satisfactory match, indicating an efficient transaction. For instance, when the sole determinant influencing cognitive effort is time, the transaction's efficiency can be measured by the

variable of transaction speed. In this context, reducing the decision-making time can be achieved by minimizing the discrepancy between WTP and WTA. In essence, enhancing efficiency entails mitigating the impact of the endowment effect.

This paper, following the previous study will focus on how to attenuate the endowment effect and whether the decision-making efficiency can therefore be increased through the endowment effect framework. To be specific, willingness to pay, willingness to accept, and loss aversion will be discussed separately under different scenarios, and three cut-edge applications related to the endowment will be provided as details.

2. Overview of Endowment Effect

2.1. Definition and Theoretical Framework

2.1.1 Definition

Even though the concept of endowment effect varied over time, it consistently follows the core notion of valuation. Individuals who currently claim ownership relatively overestimate the value of objects to those who do not. It describes a situation that the minimum amount of compensation for an Individual to give up an object is higher than the maximum amount to make commensuration [4]. Later studies combine the Coase theorem and Loss Aversion with the endowment effect, suggesting both the current trading status and the individuals' prediction of future transactions affecting the valuation of goods in the market [5-7].

2.1.2 Theoretical Framework

The most acceptable theoretical framework of the endowment effect which consists of willingness to accept (WTA), willingness to pay (WTP), and loss aversion is in the introduction part [7]. Over time, the theoretical understanding of the endowment effect has evolved and advanced, the relationship of the three components is highlighted in recent studies. Some experiments with carefully selected samples demonstrate that the endowment effect and loss aversion are highly related [8,9], while some empirical evidence indicates a weak association between the endowment effect and loss aversion for risk prospects [10].

2.2. Endowment Effect Bias

The endowment effect has a wide influence on economics, finance, marketing, and policy-making fields. Even though an individual may gain a better bargaining position because of the endowment effect, this cognitive bias still has some negative impact on deciding efficiency. It can lead to some suboptimal economic decisions because individuals may overestimate the compensation for them to give up what they possess. In the marketing field, the huge gap between WTA and WTP caused by a less cooperative environment will the decrease rate of successful trade, wasting investment on platform operations. Meanwhile, the endowment effect will distort the pricing in marketing, leading to confusing market information. In conclusion, it is crucial to shed light on the implications of the endowment effect, designing interventions to mitigate the negative impact to improve efficiency.

3. Endowment Effect Bias in Applications

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3.1. P2P Payment and Transaction Efficiency

Under the context of C2C (Customer to Customer) transactions. Willingness to accept usually refers to Seller's minimum selling price. And a willingness to pay usually refers to Buyer's maximum amount they would pay for the item [2]. When Buyer's maximum amount they would pay for the item is below Seller's minimum selling price, that is, WTP is lower than WTA, a successful transaction cannot be expected. Considering the endowment effect as the condition when WTA is higher than WTP. A careful conclusion can therefore be drawn, the endowment effect would restrain the transaction between buyer and seller. Vice versa, when Buyer's max amount they would pay for the item is higher or equal to Seller's minimum selling price, that is, WTA is lower or equal to WTP a mutually acceptable match can be counted, which is one of the important conditions of a successful trade. It implies that by attenuating the endowment effect we can expect a higher possibility of a successful transaction on C2C planforms. According to historical data, 9% more of the potential transactions were successful in the P2P (Person to Person) market than in the traditional payment method markets. Therefore, to figure out the details of the mechanism, P2P payment can be taken as a cut put to attenuate the endowment effect, and the steps can be divided into how the WTA can be decreased from the seller's perspective and how the WTP can be increased from buyer's perspective. The study of the mechanism can therefore be based on a theoretical conceptual framework, compiled by participative pricing decisions, social norms, and the difference between economic transactions and social transactions.

Participative pricing decisions, in essence, are part of the "offer asking" process, it usually appears as "pay what you want" other than "pay $100", which usually refers to a fixed price. The P2P payment works by providing social cues when the individual is part of the transaction pricing process. Under the social context, the buyer side will actively be participative to pay more, decreasing WTP, meanwhile, the seller side tends to be more cooperative as well. Another part of the framework is the social norms. Basically, people intend to associate certain behaviors with specific contexts. And subtle reminders of that context can directly evoke the associated behavior.

As a result, when paying with P2P, sellers are willing to accept a bit less and buyers are willing to pay a bit more, attenuating the endowment effect. When reaching the interpersonal nature of the transactions, it can range from purely economic transactions to social transactions. Economic transactions refer to that buying or selling with authorized agents and social transactions have a stronger personal connection. Buyers will be more cooperative and less selfish when their transactions are exposed to a higher socialized context, and thus willing to pay more. Similarly, sellers are willing to accept less to promote the transaction. Therefore, in we can pattern the mechanism that when p2p payment is implemented it cues social transaction context, activating the associated social transaction pricing norm in which consumers make more cooperative pricing decisions. A more mutually cooperative pricing decision will lead to a higher WTA and lower WTP, narrowing the gap and attenuating transactions. The complete trans-action is shown in Figure 1

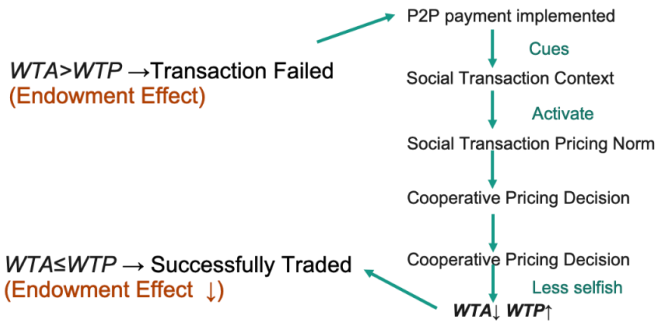

Fig. 1 P2P Payment and Endowment Effect Mechanism (Photo/Picture credit: Original)

3.2. Managerial Codetermination Efficiency

Apart from transaction efficiency, in the field of corporation managerial, the endowment effect is affecting the manager's preference for co-determination [3]. The endowment effect in firm management refers to a transaction of management right between managers and employees. It manifests itself as the managers' exclusive right to control the firm and employees' eagerness to legitimate their rights and interest in firm management. Co-determination is a practical management tool to improve the work environment by promoting a more cooperative interpersonal relationship and fostering shared responsibility to improve work efficiency as employees will have high flexibility and voices for the matters such as job security and working conditions [3]. However, the endowment effect has a side effect on flat management because managers value the right, they possessed higher and thus are reluctant to cede rights to employees. Under the internal hierarchal structure between the managers and employees, loss aversion as part of the endowment effect study framework, works better to explain the endowment effect than the combination of WTA and WTP.

To be specific, corporate management right was assigned to employees in different sectors (e.g., accounting & financing, purchasing, operation, and production) by varied managers, it implies that whether the transaction of management right of the company can go through depends largely on manager's personal management style (risk preference) even though limited by internal control system and regulations. According to previous studies, loss aversion as a risky prospect is significantly and positively related to the endowment effect. Due to the persistence of loss aversion, co-determination is unlikely to be fully realized when managers retain exclusive control over decision-making authority.

The endowment effect, characterized by a reluctance to relinquish ownership, plays a significant role in inhibiting the establishment of co-determination practices. Even though it is not wise to apply the co-determination to all companies, for organizations that get benefit from flat management, attenuating the endowment effect will be able to improve organizational performance and financial performance. However, it is unlikely to reduce the endowment effect by decreasing the discrepancy between WTP and WTA， therefore, attenuating the manager's loss aversion can be considered as a practical method. And setting more minor sectors in the organization can reach this aim.

3.3. Water Supply Efficiency

The drinking water supply in the U.S. has long been known to be high quality, even exceeding the Safe Drinking Water Act. Some evidence implies that high quality is highly related to the endowment effect [1]. Most of the study are discussing the transaction of goods and the endowment effect, however, the quality of goods is also affected by the endowment effect. And high quality of goods, in other words, can be considered as the signal of a successful transaction because of the high consumer surplus and no waste in supply. Willingness to pay in this context is the customer's bid for the drinking water, and willingness to accept is the water supplier's asked price. High-quality water usually is defined as filtered water and unfiltered is considered relatively low quality. In an empirical study, a statistically significant WTA-WTP gap is usually considered to be the existence of an endowment effect, however, the coefficient has no real economic meaning.

In the drinking water market, the transaction is affected by information and moral omission or commission through the endowment effect framework. The buyer usually bids a little bit less to prevent from taking away the seller's filter water because of environmental moral standards, and some of the sellers even would like to be participative to avoid excluding buyers from the market. If participants are provided with information on water quality, the endowment effect is significantly affected, and the difference in the WTP-WTA gap before informing the participants and after informing is significantly different. The mechanism behind the mathematical result is through an information cooperation process. When treated with positive information, market participation greatly increased, especially on the seller's side, and therefore decrease the WTA and narrow the WTP-WTA gap. The mechanism also suggested that through repeated learning, the endowment effect can be greatly attenuated, which refers to the improvement of the market efficiency of drinking water.

However, the endowment effect in drink water market cannot be eliminated, the improvement of market efficiency can only be achieved at a marginal level.

4. Suggestion

This paper concludes the current study of the applications related to the endowment effect and efficiency in three fields. Even though the cases are separated, they are tightly connected by the theoretical framework of the endowment effect.

The three cases provide an insightful prospect for the future study of the endowment effect and efficiency. The case of P2P payment suggests the important role of introducing an effective proxy in a mutual transaction. However, the study might be limited because different contexts are not built in these cases and no specific social environment is studied empirically. As for a more detailed study, different contexts could be studied separately.

As for the field of managerial codetermination, studies indicate that other than closing the discrepancy between WTA and WTP, reducing the loss aversion of "seller" could improve the efficacy of codetermination and therefore enhance the managerial efficiency of the company. Unfortunately, the problem lies under the limitation of the unitarist. When considering the endowment effect and trying to attenuate it from the loss aversion perspective, the carried-out experiment would inherently be unitarist rather than pluralist. The case of the company managerial codetermination in the future needs more effort on how the employee reacts to the manager's loss aversion and testify its influence on the endowment effect. To be specific, an employee's desire for rights that managers possess can be counted as a measurement of the anti-loss aversion degree and be empirically studied as an adjusting variable.

The last case of water supply implies that closing the gap between WTA and WTP can improve transaction efficiency by improving the quality of objects in the public goods supply field. The current studies treat the water consumers by informing them of the quality level of water and taking the WTA-WTP discrepancy as the potential outcome. To improve future experimental design, the loss aversion of water consumers can be measured and regress on it as a variable.

5. Conclusion

The literature study concludes that the most acceptable definition of the endowment effect still suits the recent economic environment. The endowment effect can be summarized as the scenarios in that individuals tend to value the item, they possessed higher than those who potentially have the desire to take over the item. We take WTA, WTP, and loss aversion as a three-dimension theoretical framework to make analyses on the endowment effect. Additionally, the paper finds out that the discrepancy of WTA-WTP can be considered the variable to represent the endowment effect. Loss aversion is positively correlated with the endowment effect as some of the empirical evidence shows.

Based on the framework, this paper figures out the mechanism of how the endowment effect contaminates marketing efficiency and demonstrates the significance of diluting it by closing the gap to enhance efficiency.

Based on the theoretical studies, the paper provides three cases to talk about the endowment effect in different situations. The application of using P2P payment to mitigate the endowment effect to improve the transaction efficiency on the C2C platform implies that under the socialized context, enhancing the interpersonal connection may close the gap between WTA and WTP. Another application about the company management suggests another way to attenuate the endowment effect, the situation when the endowment effect is caused by loss aversion. The last application suggests that not only the transaction itself is influenced by the endowment effect, but the quality of service or goods is also affected as well, providing the buyers and sellers with such information could narrow the gap between WTA and WTP.

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