# Application of Endowment Effect in Housing and Financial Markets

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Keywords: Endowment Effect, Behavioural Economics, Housing Market.

Abstract: Endowment effect refers to people assigning higher values to items they own compared to those they do not own. People are influenced by the endowment effect when they overvalue their belongings, which makes them reluctant to sell or trade them. People may demand greater prices than what is deemed to be fair market value as a result of this bias, which can lead to less-than-ideal decisions. Consumer behaviour and negotiating tactics are also impacted. Development of the concept by Thaler, Kahneman and Knetsch hinges largely on the excessive emotional value attached to losses compared to gains, and together they form a wider part of the alternative behavioural theory of consumer behaviour challenging standard economic theories. Through analysis of past experimental and observational research, this paper investigates the presence and impact of the endowment effect on housing markets and investment behaviours by focusing on the gap between WTA and WTP, coefficient on loss and impact of real-estate agents in housing; and how endowment effect causes disposition effect and familiarity bias in investment behaviours.

## 1 INTRODUCTION

Endowment effect can be defined as 'The fact that people often demand much more to give up an object than they would be willing to pay to acquire it' (Kahneman et al., 1991). First proposed by Thaler as part of his alternative consumer behaviour theory challenging standard economic theories, the famous coffee mug experiment ran by Kahneman et. al. solidifies this notion by concluding that based on the difference between buyer's willingness to pay (WTP) price and seller's willingness to accept (WTA) prices, mechanics of standard economic theory fails to lead to convergence to market equilibrium price (Thaler, 1980; Kahneman et al., 1990). One explanation for this irrational behaviour can be the possessional attachment formed by sellers to the product, leading to higher WTP prices than the market price. Loss aversion is another key mechanic associated with the development of the concept of endowment effect. It refers to the fact that the pain of losing something is psychologically more intense than the pleasure of gaining something of the same value. It is due to this greater loss of utility that sellers would require a higher selling price than the market price of the item – where the latter is associated with equating the disutility of losing and the utility of gaining the same exact item.

This essay will focus on how the mechanics of loss aversion and psychological attachment functions when housing and investment decisions are made. The essay will also aim to provide a comparative analysis between the two markets.

## 2 ENDOWMENT EFFECT IN THE HOUSING MARKET

### 2.1 Quantitative Evidence from Beijing Housing Market

Upon investigation of the effect in the residential housing market, one of the pioneering experimental studies was conducted by Bao and Gong on the Beijing housing market (Bao & Gong, 2016). They conceptualised the endowment effect in the real estate market as when the Willing To Accept (WTA) prices reported by seller of a certain housing property to be higher than the Willing To Pay (WTP) prices reported by buyer of the same property. Accordingly, their study investigates whether or not a significant difference of the two prices can be observed. Moreover, to enrich their analysis and to better simulate the highly cyclical nature of the housing market, Bao and Gong also investigated the impact of market conditions – overall up- or down-market



Zeng, Z.
Application of Endowment Effect in Housing and Financial Markets.
DOI: 10.5220/0014149900004942

In *Proceedings of the 2nd International Conference on Applied Psychology and Marketing Management (APMM 2025)*, pages 640-644
ISBN: 978-989-758-791-7

trends of prices - and various buyers and sellers' characteristics – such as the income and occupation of the buyers/sellers as well as their social perception of homeownership - on the magnitude of the endowment effect (Bao & Gong, 2016).

To better simulate the realities of the housing market, the researchers created a between subject study by splitting the participants into roughly equal groups of buyers and sellers, and to control for confounding variables, both groups share similar age and gender characteristics. Following this, interviews are conducted with individual participants through collecting their answers to a bi-partite questionnaire. The first part of the questionnaire focuses on recording important characteristics of the buyers and sellers as quantitative dichotomous variables (either recorded as 0 or 1 corresponding to yes/no to relevant questions). Several variables of note are 'income' – whether or not the participants' monthly income is higher than the average disposable level in Beijing; 'occupation' – whether or not the participant works in the private sector. While the variables of 'symbol' – notion of homeownership as symbol of success - and 'importance' – significance of the notion to the participants. The second part of the questionnaire provide both buyers and sellers with the imaginary scenario of trading an imaginary housing property without consideration to the constraints of their personal finances and are surveyed of their respective WTA and WTP prices given different information on the property. Both buyers and sellers are first given an evaluation of the current market price of the property, and then through providing information on the price of the same property four years and two years ago, the researchers attempts to establish the market trend of this property over the past four years – up-market scenario establish when the price is observed to rise during the period and conversely down-market scenario is observed when the price falls. Eventually when the market trend is established, the final set of WTA-WTP prices between the up-market and down-market scenarios are compared against one another. Moreover, the effort in providing the participants with multiple scenarios was also a conscious attempt to train them to acquire more market experience to mitigate the confounding impact of market inexperience on the results.

Given this procedure, the researchers first ran a hypothesis test on the sample mean WTA and WTP prices and a significant difference was found pointing to the presence of the endowment effect. It is also observed that the difference between the two prices is markedly higher in up-market scenarios by a significant margin of almost two hundred thousand RMB. Besides the influence of market trends, regression analysis ran on the variables of 'income', 'occupation', 'symbol' and 'success' also points to a strong and negative correlation of them and the magnitude of the difference in prices and hence endowment effect (Bao & Gong, 2016). Hence, through their study, Bao and Gong has observed a significant endowment effect in the housing market as well as the significant impact of market conditions and buyers and sellers' characteristics have on the effect.

## 2.2 Observational Evidence from the Boston Market

For a more grounded and realistic perspective on the effect's influence on the housing market, Genesove and Mayer's observation study on the Boston condominium market can offer more grounded insights into the interaction between sellers' initial asking price, the loss aversion mechanic and the eventual adjusted market price of a certain property (Genesove & Mayer, 2001). The researchers monitored and analysed the listing and selling prices data from a well-defined and rather affluent neighbourhood in downtown Boston over the period of 1990-97. To investigate the realistic functioning of the loss aversion mechanic from the sellers' side, they first defined the variable of 'LOSS' as the difference between previous selling price and potential selling price in this period (Genesove & Mayer, 2001). From their analysis of over 3000 properties sold, a specified range of 'coefficient on loss' (0.25-0.35) – parameter measuring the percentage to which seller would raise or lower their asking prices based percentage change of the variable LOSS – is observed (Genesove & Mayer, 2001). Challenging standard economic theory's suggestion of eventual 'correction' to the market price, the researchers have observed that although the eventual coefficient on loss of properties sold were lower – between 3 and 18 percent – the loss aversion mechanic is still persistent (Genesove & Mayer, 2001). They explained this phenomenon as sellers more sensitive to losses would have withdrawn from the market leaving those who are less sensitive to losses eventually selling their properties. Additionally, they also observed that despite having a lower coefficient on loss than average consumers, investors of investment properties still exhibited evidence of the endowment effect by having a positive coefficient. Hence, Genesove and Mayer's study further validifies the presence of endowment effect in the housing market by validating the significance of the loss aversion

mechanic involved with selling housing properties, while valuable insight towards presence of the effect amongst experienced traders was also observed.

### 2.3 Influence of Real Estate Agents on the Effect

Furthermore, another common perspective of the real-estate market is the employment of agents by both buyers and sellers. Tomal study provides insight into how such agents employed could impact the magnitude of endowment effect in the market (Tomal, 2024). Akin to the experiment by Bao and Gong, Tomal mainly investigated the effect through the difference between WTA and WTP, and designed his between-subject study in a similar bipartite questionnaire (Bao & Gong, 2016; Tomal, 2024). Tomal, on top of the market trend scenarios suggested by Bao and Gong, added the participation of agent on both buyers' and sellers' sides to observe the impact the magnitude of the gap between WTA and WTP. Findings from the results indicate that the difference is still positive and statistically significant after the introduction of the agents, illustrating that agents do not eliminate the endowment effect. Results also indicate that seller's employment of agent has, given that the buyer does not employ one, a statistically significant positive impact on the endowment effect; however, when both sides simultaneously employ agents, the effect is insignificant. This, the researchers concluded, was due to the commission charged by agents are regarded by sellers as a particularly negative loss. Hence, Tomal study verifies that the employment of real estate agent – a common occurrence in the market – intensifies the loss aversion mechanic involved with selling housing properties.

## 3 ENDOWMENT EFFECT OBSERVED IN FINANCIAL MARKETS

### 3.1 Pioneering Empirical Evidence from Disposition Effect

One prominent implication of the endowment effect in investment behaviours is perhaps with the disposition effect – defined as tendency of investors to 'hold losing investment for too long, and sell winning investment too soon' (Odean, 1998). Barberis and Xiong clarifies that the decision of an investor to either sell or hold a stock depends on associated 'realisation utility', and they attach a highly positive emotional value towards realising gains and conversely selling stocks at a loss are particularly frowned upon – echoing the loss aversion mechanic *Barberis & Xiong, 2009). Empirical and observational perspectives on disposition effect provided by Odean seeks to verify this mechanic by collecting trading data of 10,000 accounts between 1987-93 from a large brokerage house (Odean, 1998). Odean classified gains and losses on stocks as either 'realised' – already obtained from selling the stock – and 'paper' – not obtained but based on calculations of the difference between current and initial purchase price (Odean, 1998). Consequently, they calculated the ratio of proportions of gains realised (PGR) – realised gains divided by realised plus paper gains – and proportions of losses realised (PLR) – realised losses divided by realised plus paper losses.

Through a two sample t-test, significant difference between PGR and PLR is found, with the former being significantly higher than the latter, indicating the disposition effect. In addition, Odean also found that infrequent traders had a more significant difference between PGR and PLR than frequent traders, alluding to market inexperience exacerbating the disposition effect. Consequently, as there are fewer potential sellers of losing stocks, their prices would fall further, which only aggravates loss aversion and carries on the vicious cycle; simultaneously the reverse is true for gaining stocks. Interestingly, Odean observed a notable exception to the trend in December, since investors are incentivised to sell more losing stocks in order to escape higher amounts paid in capital gains taxes at the end of the year. Thus, through the loss aversion mechanic, endowment effect exerts impact on investors' selling of stocks by causing them to be more inclined to sell gaining rather than losing stocks and hence impacting stock prices.

### 3.2 Manifestation in Form of Familiarity Bias

Moreover, another prominent illustration of the endowment effect in investment behaviours is familiarity bias – overinvestment in familiar stocks that are seen as 'safer options' – as the latter exhibit a high degree of loss aversion and tendency to favour already-owned assets (Lei & Mathers, 2024). Analysing the dataset collected on investment behaviours from US' 2019 Survey of Consumer Finances, Lei and Mathers analysed the relationship between social-economic background of US investors – age, gender, level of education, presence

of financial advice - against their tendency to diversify their personal investment portfolios. It is found that there is a prevalent trend of under-diversification of portfolios amongst investors, who shares tendencies to overinvest in employer company's stock or in securities based in home country (the latter also known as 'home bias'). Well-educated, financially well-advised employees of large companies were shown to invest more in employer's stocks – likely due to presence of them in their pension plans - while financial literacy and personal risk adverseness are negatively correlated with 'home bias'. Thus, the effects of loss aversion and tendency to hold on to investments already owned and familiar with indicates that the endowment effect also asserts itself in investment decisions in form of the familiarity bias.

# 4 DISCUSSION

## 4.1 Comparative Analysis of Endowment Effect's Significance in Housing and Financial Markets

According to the Kahneman et. al. conceptualisation of endowment effect, the notion is largely hinged on loss aversion mechanism during decision-making – due to the psychological pain of losing something being greater than gaining the same item, people often require greater compensation for their losses (Kahneman et al., 1991). On the one hand, the two markets share a similar loss-aversion mechanic as it can be arguably observed in the housing market as the sellers only accepting asking prices (WTA) higher than equilibrium market price. For financial markets, the same mechanic is present considering investors are less inclined to realise losses made on investments compared to gains. Another similarity is that the traders in both market tend to form a strong psychological attachment to their housing properties or investments, where the former is highlighted as a strong emotional attachment whilst the latter being illustrated more as the tendency to invest in companies and markets that one is attached too. An explanation for the similarity of the observation is that both housing and investment decisions tend to constitute a sizeable proportion on one's disposable income and savings, and given the high sunk cost involved (Thaler, 1980). Moreover, turning away from one's 'endowment' of housing property or investment portfolio may provoke the 'regret avoidance' mechanic (Zeelenberg & Pieters, 2004). Consequently, consumers would refuse to turn away from the 'norm' – that is the 'endowment' – in anticipation for potential regret in doing so.

On the other hand, the magnitude of the effect differs between the two markets when considering the behaviour of experienced traders in respective markets. Through their observational study on the Boston condominium market, Genesove and Mayer have observed that experienced investors in investment properties have a markedly lower coefficient on loss compared to regular homeowners, as they points to a richer market experience leading to the observed lower level of risk aversion (Genesove & Mayer, 2001). Magnitude of the effect is, in comparison, more prevalent amongst investors of all backgrounds in the financial market as observed by Odean observational study on more than 3000 investors of various backgrounds (Odean, 1998).

## 4.2 Future Research

It is observed during the research process that all preceding efforts were rather limited in their scope. To start with, the established recent research of the effect's presence in the housing market have only been done in Poland and China, where, arguably, both markets have certain special properties (Bao & Gong, 2016; Tomal, 2024). When Bao and Gong were sampling data from the Beijing market, the Chinese housing industry was still in rapid growth with ever-growing housing prices and ever-increasing volume of transactions. However, since given context of the real estate crisis since 2020 experienced in China, prices have fell and stagnated significantly with falling housing prices and readily falling numbers of properties sold. While Tomal's 2024 research similarly highlighted a gloomy trend in domestic market. Thus, it is questionable whether similar magnitude of the effect can be observed in different international markets where it is not as dynamic and fast growing as pre-COVID 19 Chinese market, or in others where the recovery has been much more rapid. Therefore, the current research on housing market's endowment effect is largely limited in its international outlook, and for a more consistent conclusion to be drawn, more research must be done in markets across the world especially given the seismic downward shock that COVID-19 provided to the market. As for the financial markets, although a multitude of research such as Barberis and Xiong have elaborated the mechanics behind endowment effect's impacts on investment, there is a lack of quantitative research on a comparative scale to preceding ones performed by Odean (Barberis &

Xiong, 2009). Thus, conducting quantitative research through bipartite questionnaire or replicating similar observational study to Odean's can further solidify and enrich the study of the effect.

## 5 CONCLUSION

In conclusion, endowment effect refers to the fact that people often demanded much more to give up an object compared to the amount that they are willing to pay for it. Being strongly associated with the concept of loss aversion – the stronger disutility involved in giving up an item - and psychological attachment of ownership, this concept seeks to serve as an alternative theorem to standard economic theory in explaining why various markets cannot converge to identified market equilibrium prices and quantities. In the housing market, it is observed through the difference between the minimum WTA prices from sellers and maximum WTP prices from sellers, property sellers through a certain coefficient on loss would adjust their asking prices according with projected losses, which would eventually lead the market to converge to a higher price than the equilibrium level, and the presence of real-estate agent might act to raise such ratio causing a more prominent effect. In the financial market, endowment effect act as a significant cognitive bias, whose loss-aversion heuristic causes investors to overcapitalised on projected gains in assets as well as constructing an under-diversified portfolios that is in accordance with an investors' 'endowment' of current home country or employer. Hence, endowment effect is prevalent phenomena observed in various economic behaviours and act as a component of an alternative theorem of consumer behaviour.

## REFERENCES

D. Genesove, C. Mayer, Loss Aversion and Seller Behavior: Evidence from the Housing Market. The Quarterly Journal of Economics, 116(4), 1233–1260. https://doi.org/10.1162/003355301753265561

D. Kahneman, J. L. Knetsch and R. H. Thaler, Anomalies: The Endowment Effect, Loss Aversion, and Status Quo Bias. Journal of Economic Perspectives, 5 (1) 193–206 (1991) https://doi.org/10.1257/jep.5.1.193

D. Kahneman, J. L. Knetsch and R. H. Thaler, Experimental tests of the endowment effect and the COASE theorem. Journal of Political Economy, 98(6), 1325–1348 (1990) https://doi.org/10.1086/261737

H. X. H. Bao, C. M. Gong, Endowment effect and housing decisions. International Journal of Strategic Property Management, 20(4), 341–353 (2016) https://doi.org/10.3846/1648715X.2016.1192069

M. Tomal, Real estate brokerage and endowment effects in the housing market: Evidence from Poland. International Journal of Strategic Property Management, 28(3), 143–151 (2024) https://doi.org/10.3846/ijspm.2024.21456

M. Zeelenberg, R. Pieters, Consequences of regret aversion in real life: The case of the Dutch postcode lottery. Organizational Behavior and Human Decision Processes, 93(2), 155–168 (2004) https://doi.org/10.1016/j.obhdp.2003.10.001

N. Barberis, W. Xiong, What drives the disposition effect? An analysis of a Long‐Standing Preference‐Based explanation. The Journal of Finance, 64(2), 751‐784 (2009) https://doi.org/10.1111/j.1540-6261.2009.01448.x

R. Thaler, Toward a positive theory of consumer choice. Journal of Economic Behavior & Organization, 1(1), 39–60 (1980) https://doi.org/10.1016/0167-2681(80)90051-7

S. Lei, A. M. Mathers, Familiarity bias in direct stock investment by individual investors, Review of Behavioral Finance, 16(3) 551-579 (2024) https://doi.org/10.1108/RBF-03-2023-0074

T. Odean, Are Investors Reluctant to Realize Their Losses? The Journal of Finance, 53, 1775-1798 (1998) https://doi.org/10.1111/0022-1082.00072