



The Endowment Effect and Housing Studies: The Role of Multiple Reference Points

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Abstract: *One of the most researched and proven behavioural biases is the endowment effect, which manifests in people's higher valuation of goods they own relative to goods they do not. Loss aversion is considered the main cause of the endowment effect because of the assumption that losses loom larger than gains. Whether decisions are framed as either gains or losses depends on the adopted reference point, which is usually taken as current ownership. Mainstream behavioural economics also postulates that the decision-making process involves multiple reference points. This study aims to provide new arguments in favour of the existence of multiple reference points affecting the formation of the endowment effect based on theoretical reflections and empirical evidence from the housing market. A critical review of the literature, as well as an empirical study, revealed that there are multiple reference points in the housing market, the interaction between which leads to the endowment effect.*

Keywords: endowment effect; multiple reference points; housing market; housing economics; home ownership.



Introduction

The endowment effect is a cognitive bias that causes people to value the goods they own more than the analogous goods they could buy (Thaler 1980). More precisely, the minimum price at which a seller is willing to accept the sale of a good (WTA) is higher than the maximum price at which a buyer is willing to pay for that good (WTP). The endowment effect is one of the most proven phenomena in behavioural economics, and its main explanation is loss aversion bias (Morewedge and Giblin 2015). The latter derives from prospect theory and implies that individuals feel much more strongly about incurring losses than acquiring equivalent gains and are therefore characterised by loss-averse behaviour. Consequently, sellers treat the sale of a good as a loss that requires additional compensation, leading to a WTA-WTP gap. The above framing of the outcome of a given decision by the parties to the transaction is driven by the reference point, which is traditionally the ownership of the good – for the seller, this point is the ownership of the good, and for the buyer, the lack of ownership. However, the decision-making process is much more complex and, in theory, involves more than one reference point. Moreover, across various reference points, the same decision can be treated as either a loss or a gain (Tversky and Kahneman 1991; Kahneman 1992). The main literature on the endowment effect identifies as one of the key lines of research that which is attempting to identify multiple reference points and gauge the strength of the impact of individual points on WTA and WTP values.

Although efforts to identify the existence of the endowment effect in housing goods have been relatively rare in the literature to date, previous studies have strongly emphasised the role of reference points, including their varied nature. Accordingly, this study aims to determine the various reference points influencing the endowment effect in the housing market and to assess the strength of their impact on the decision-making process. To achieve this goal, this study was divided into two stages. First, using the method of a critical literature review, an overview was obtained of past academic studies on housing goods and the endowment effect, which made it possible to identify the reference points considered in these analyses. Second, a lab-in-the-field experiment was performed to empirically verify the validity of various reference points in the context of shaping WTA and WTP values. Both the literature review and the empirical study indicate that the endowment effect is the result of multiple reference points of different types. Therefore, the development of an endowment effect theory and future empirical studies should consider this fact.

Literature evidence

Morrison and Clark (2016), in their theoretical discussion of prospect theory and the endowment effect, point to two reference points for owner-occupiers of residential properties. First, Morrison and Clark (2016) highlighted that the primary reference point in relocation decisions is housing ownership, which property owners do not want to lose. Ownership of housing also causes owner-occupiers to become attached to the neighbourhood and locations in which they live, thus developing a second reference point for housing location. Specifically, Morrison and Clark (2016) specify that owner-occupiers begin to incorporate neighbourhood and location into their endowment and are not willing to lose them without compensation. Similarly, Yan and Bao (2018), analysing residential mobility, highlighted that people take their home ownership and associated locations as reference points. Consequently, sellers treat the sale of the property as a loss of these elements, which causes them to increase the value of the WTA, leading to an endowment effect.



Bao and Gong (2016) and Bao (2020), studying the endowment effect in the housing market, emphasised the importance of price reference points affecting both sellers and buyers. These authors empirically demonstrated that WTA and WTP values change when transacting parties have information about, among other things, the initial purchase price (INI) of a property. However, their results suggest that buyers and sellers adjust their prices in the same direction following INI, which, according to Bao (2020), suggests that this reference point does not affect the emergence of the endowment effect. The same adjustment in WTA and WTP values was also observed when respondents were informed about the intermediate price of the property, that is, the price between the initial purchase price and the current market price, and about the alternative transaction price (in the context of sellers) or the alternative bid price (in the context of buyers). Finally, it is important to note the studies of Gong et al. (2019) and Tomal (2024a), which, theoretically based on the considerations of Kőszegi and Rabin (2006), propose the expected price of a property as a reference point for buyers and sellers. Specifically, according to Tomal (2024a), the expected price as a reference point will result in sellers not being willing to accept the current market price as a transaction price during an upward market, as they will consider such a situation as a loss. Ultimately, sellers demand additional compensation to sell their property. On the other hand, making a transaction below the expected price will be framed by buyers as a gain, which will induce them to set the WTP value close to the market price. This leads to a WTA-WTP gap, the size of which depends on the compensation requested by the seller. The opposite situation occurs during downward markets. In this case, the seller is willing to sell the property at the market price and the buyer at a lower price, which also leads to an endowment effect.

Another reference point influencing the endowment effect in the housing market was proposed by Tomal (2024b), according to whom such a reference point is the absence of the need to pay a real estate agent's commission during a housing transaction. However, when the seller or buyer has an agent, the need to pay the commission will be treated not only as a transaction cost but also as a loss requiring compensation. Tomal (2024b) empirically demonstrated that this situation applies, in particular, to sellers. For the latter, having to pay a commission is a particularly painful loss that causes a significant increase in the value of WTA, thus exacerbating the endowment effect.

Finally, several social reference points are proposed. The first concerns the social norm of the 'right' form of housing tenure (Lux and Sunega 2022). Tomal (2024a) proposed that this point can be activated in specific situations in the housing market, which is when a seller changes the form of housing tenure from ownership to rent. In this case, when society recognises ownership as the only appropriate form of housing tenure, the value of WTA can increase, leading to the intensification of the endowment effect. Furthermore, Bao and Saunders (2023) proposed that WTA and WTP values may depend on reference points relating to the comparison of oneself to social groups such as friends, colleagues, neighbours, family members, or ourselves in the past.

In summary, previous studies analysing the endowment effect have highlighted several different reference points (Table 1) that influence the formation of WTA and WTP values. On this basis, the WTA and WTP can be conceptually presented as

$$WTA = V + \sum_{n=1}^N C_n^s \quad (1)$$

$$WTP = V + \sum_{m=1}^M C_m^b \quad (2)$$



where: V denotes the market value of the property, and C_n^s (C_m^b) denotes the n-th (m-th) compensation of the seller (buyer) resulting from framing the transaction as a loss with respect to the n-th (m-th) reference point. It should be noted that more compensations are made by the seller because he/she loses ownership of the property and the associated neighbourhood and location, resulting in $\sum_{n=1}^N C_n^s > \sum_{m=1}^M C_m^b$, and hence $WTA - WTP > 0$, which implies the endowment effect.

However, previous studies have not addressed the issue of the importance of particular reference points for the parties to the transaction but have rather made certain a priori assumptions. The lack of knowledge in this area prevents a full understanding of the intensity of the endowment effect on the housing market. For example, if the dominant price reference point for the seller is the expected price, then during an upward market, the seller will treat such a transaction as a loss requiring compensation. If, for the buyer, the most important price reference point is the expected price, then he/she will treat such a transaction as a gain and will therefore be willing to buy at the market price. However, if the buyer's dominant price reference point is not the expected price but, for example, the initial purchase price, acquisition at the market price will be treated as a loss, causing the buyer to seek to reduce the transaction price towards the initial purchase price. Together, this leads to an increase in the WTA-WTP gap.



Table 1: A classification of reference points in housing studies on the endowment effect

Study	Reference points type		Ownership		Location		Social		Other	
	Seller	Buyer	Seller	Buyer	Seller	Buyer	Seller	Buyer	Seller	Buyer
Morrison and Clark (2016)	–	–	Ownership; possession	Lack of ownership; lack of possession	Location; neighbourhood	Lack of location; lack of neighbourhood	–	–	–	–
Bao and Gong (2016)	Initial purchase price; Intermediate price; Alternative transaction price	Initial purchase price; Intermediate price; Alternative bid price	–	–	–	–	–	–	–	–
Yan and Bao (2018)	–	–	Ownership	Lack of ownership	Location	Lack of location	–	–	–	–
Gong et al. (2019)	Expected price	Expected price	Ownership	Lack of ownership	–	–	–	–	–	–
Bao (2020)	Initial purchase price; Intermediate price; Alternative transaction price	Initial purchase price; Intermediate price; Alternative bid price	–	–	–	–	–	–	–	–
Tomal (2024a)	Initial purchase price; Intermediate price; Alternative transaction price; Expected price	Alternative bid price; Expected price; Alternative bid price	Ownership; possession	Lack of ownership; lack of possession	Location; neighbourhood	Lack of location; lack of neighbourhood	Social norm on the 'right' form of housing tenure	Social norm on the 'right' form of housing tenure	–	–
Tomal (2024b)	Expected price	Expected price	Ownership	Lack of ownership	–	–	–	–	Lack of a need to pay a real estate commission	Lack of a need to pay a real estate commission
Bao and Saunders (2023) * The study did not look directly at the endowment effect but rather at the formation of WTA and WTP values	Initial purchase price; Intermediate price; Alternative transaction price; Expected profit	Initial purchase price; Intermediate price; Alternative bid price; Alternative bid price	–	–	–	–	Social group (friends; colleagues; neighbours; family members; ourselves in the past)	Social group (friends; colleagues; neighbours; family members; ourselves in the past)	–	–



Empirical evidence

Methodology

The empirical study was based on a lab-in-the-field experiment conducted using an online panel data platform from Prolific. The latter is characterised by obtaining better quality responses than similar services (Douglas et al. 2023). The experiment consisted of three stages. First, respondents were randomly divided into sellers and buyers. People living in Poland, speaking Polish, and owning or co-owning residential property were invited to participate in the experiment. The last element increases the reliability of the responses received. Respondents were told that they were participating in a hypothetical transaction in the housing market and that the subject was a standard flat located in the centre of a city with 200,000 inhabitants. They were asked to disregard the financial constraints and transaction costs associated with the transaction, and it was emphasised that there would be no opportunity to change their answers. The above conditions were created to remove drivers of the WTA-WTP gap not derived from behavioural economics, that is, income and substitution effects, transaction costs, and strategic motives. Respondents were then given the information that similar dwellings are currently being sold in the market in the range of PLN 700k to PLN 800k, after which sellers were asked to provide WTA values and buyers to provide WTP values.

In the second stage of the experiment, further reference points were introduced that occur in real housing market transactions, which can significantly change the valuation of the WTA and WTP. Specifically, respondents were informed about the initial purchase price of the property four years ago (620k), the market price of the property two years ago (685k), the alternative transaction/bid price (800k), the trend of price increases in the housing market in the coming year (+5%) (a phase of rising market prices is simulated), the social aspects of the transaction, that is, the family insists on it, and the fact that the realtor was not involved during the transaction. Respondents were then asked to provide the WTA (sellers) and WTP (buyers) values.

Finally, in the final stage of the experiment, sellers and buyers were asked to indicate on a 5-point Likert scale how important (1 = not important; 2 = slightly important; 3 = moderately important; 4 = important; 5 = very important) each reference point was to them when estimating the WTA and WTP values. Specifically, they were asked about (i) the price reference points (the initial purchase price (INI), the price 2 years ago (INT), the alternative price (AO), the expected price (EXP)), (ii) the social reference points (the opinion of the family (SF); the social norm on the superiority of ownership over other housing tenures (SN)); (iii) the ownership reference point (OWN); (iv) the locational reference point (LOC); and (v) the reference point related to the non-participation of the real estate agent in the transaction (REA).

A final sample size of 180 people was recruited for the experiment, similar to other studies on the endowment effect in the housing market (Tomal 2024b). A total of 97 people acted as sellers and 83 as buyers. The average age of the respondents was 34, which is a desirable value because, as the available data in Poland indicate, those in the 30-40 range are most active in the housing market (Prajsnar 2023). The data used in this study is available at <https://doi.org/10.58116/UEK/PH8IJK>.



Results and discussion

The average deviation of the WTA value from the benchmark market price of the property (750k) after the second stage of the experiment was 4.33%, and the corresponding deviation of the WTP was -2.02%. The latter means that the WTA-WTP gap is 6.35% of the market price of the property, almost 48k in absolute terms. This confirms the existence of the endowment effect in the housing market, in line with the research presented in Table 1.

The next stage of the study focused on determining which reference points were important for sellers and buyers when estimating the WTA and WTP values. The median values of the different reference points are listed in Table 2. In the context of price reference points, it can be seen that for both parties to the transaction they are significant, which confirms the findings of Bao and Gong (2016). The alternative and expected prices play a key role in this regard, which is partly in line with the theoretical considerations of Tomal (2024a). Furthermore, the results obtained indicate that social reference points for sellers are only slightly important, which is in agreement with the conclusions obtained by Bao and Saunders (2023). The ownership reference point is also relevant, in line with the standard theory of the endowment effect. In turn, the locational reference point is moderately important, which confirms that the elements of the location and the neighbourhood of the property can also enter into someone's endowment. Finally, the study is in line with Tomal's (2024b) theoretical predictions and empirical results on the relevance of the reference point on the lack of participation of the real estate agent in the transaction.

The next stage tested whether the estimated medians for each reference point differed significantly between sellers and buyers. To do this, we applied the procedure proposed by Conroy (2012), using quantile regression to test the equality of medians between groups. In the context of this study, this method involves estimating a quantile regression, where the dependent variable is the importance of a given reference point and the only independent variable is a dummy variable with the value of 1 if it is the seller and 0 if it is the buyer. When the estimated parameter for the independent variable is statistically insignificant, it means that the medians between the sellers and buyers are identical.

The results of the analysis testing the equality of medians indicate that the validity of the various reference points between sellers and buyers differs for the price two years ago (INT), the alternative price (AO), and both social reference points (see Table 2). The identified differences highlight that price reference points have a stronger influence on sellers, and social reference points impact buyers. The fairly high level of consistency in the importance of individual reference points between sellers and buyers has implications for the formation of the WTA-WTP gap, that is, for the endowment effect. Given the price reference points, the parties place a large role in the transaction to the alternative price (AO) and expected price (EXP), which are higher than the current market price. Therefore, for the seller these reference points frame the sale as a loss and for the buyer as a gain, resulting in an endowment effect. An analogous situation occurs for the ownership and locational reference points. In addition, the REA reference point could contribute to the WTA-WTP gap if the parties in the transaction decide to employ a real estate agent. In this case, as Tomal (2024b) points out, sellers and buyers will want to cover at least part of the commission by increasing WTA or decreasing WTP.



Table 2: The importance of reference points for sellers and buyers

Reference point type	Reference point	Median		Quantile regression estimates	
		Sellers	Buyers	Constant	Coefficient
Price	INI	3.00	3.00	3.00*	0.00
	INT	4.00	3.00	3.00*	1.00*
	AO	5.00	4.00	0.00 [‡]	
	EXP	4.00	4.00	4.00*	0.00
Ownership	OWN	4.00	4.00	4.00*	0.00
Location	LOC	3.00	3.00	3.00*	0.00
Social	SF	2.00	3.00	3.00*	-1.00*
	SN	2.00	3.00	3.00*	-1.00*
Other	REA	4.00	4.00	4.00*	0.00

Source: author. Notes: * Significant at the 0.01 level. [‡] A *k*-sample equality-of-medians test was used because quantile regression did not converge. This test has the null hypothesis that the two samples come from populations with equal medians. The table shows the *p*-value, indicating the rejection of the null hypothesis.

Conclusion

The evidence from the literature and from empirical studies is consistent and indicates that the parties to housing market transactions depend on multiple reference points, with the largest role played by price reference points and the reference points related to ownership and broker participation in the transaction. Thus, the endowment effect is a product of the operation of multiple reference points in the housing market. These findings are central not only to housing research but also to the wider body of academic work analysing the endowment effect. This is because reference points relating to price and ownership are likely to occur in every transaction regardless of the type of good. Therefore, it is important that researchers studying the endowment effect increasingly focus on the problem of people’s dependence on multiple reference points. It is also possible that there may be different reference points for goods other than those operating in the housing market, which highlights the importance of conducting further research in this area.

Funding

The publication is financed by the Krakow University of Economics within the framework of the Conference Activity Support Programme – WAK-2024.



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