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ENDOWMENT EFFECT, INFORMATION ASYMMETRY, AND REAL ESTATE MARKET DECISIONS: WILLINGNESS TO PAY AND WILLINGNESS TO ACCEPT DISPARITIES

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ABSTRACT

The endowment effect has gained dominance over the decades due to its ability to explain behavioral instincts portrayed by individuals when making decisions and its inconsistency with standard economic theories. It has been extensively applied in different fields of study, however its applicability to the housing market has been limited since its establishment. The study seeks to investigate whether the endowment effect exists in the housing market and whether the disclosure of information, increased affordability and agent evaluation significantly reduce the endowment effect. Using data obtained from a survey conducted between January and August 2022 in the Eastern Cape Province of South Africa, the study found that the disclosure of information eliminates the gap between buyers' valuations and market values, while the gap between sellers' valuations and market prices is reduced but not eliminated by information disclosure. The study has further concluded that increased affordability and agent evaluations significantly reduce the endowment effect in the housing market. Therefore, the study recommends that private and public entities should establish laws and regulations which promote the disclosure of information to reduce the gap between the willingness to pay (WTP) and the willingness to accept (WTA) that exists in the market.

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1. Introduction

Thaler (1980) coined the endowment effect and defined it as a scenario where individuals demand more to give up on a commodity than they are willing to pay to acquire it. The concept was further explored by Knetsch and Sinden (1984), who defined it as a state in which the willingness to accept significantly exceeds the willingness to pay for an identical commodity. As of then, the existence of the WTA and WTP gap has sparked a lot of debate in different fields of study, such as the retail sector (Wang, 2009), business investment decisions (Peñón & Ortega, 2018), politics (Alesina et al., 2015), management (Harcourt et al., 2020; Ştir & Zaiţ, 2022), social psychology (Chu & Shu, 2023; Smitizsky et al., 2021; Yamamoto & Navarro-Martinez, 2022), environment (Dietz & Venmans, 2019; Villanueva & Gómez-Limón, 2023) and the real estate sector (Gong et al., 2019; He & Asami, 2014; Paraschiv & Chenavaz, 2011; Yan et al., 2021). The application of the endowment effect to the real estate sector got the attention of scholars due to valuation inconsistencies, where buyers and sellers do not value properties to the same market price (Gong et al., 2019; Paraschiv & Chenavaz, 2011). Gong et al., (2019) discovered that sellers tend to attach emotions when valuing properties, which result in overvaluations, whereas buyers are reluctant to pay the market price for a property when its desired amenities do not meet their needs (Mishi & Mwanyepedza, 2023) and simply
because they do not own the property (Yan et al., 2021). The overvaluation by sellers and undervaluation by buyers creates a disparity between WTA and WTP. However, according to Gong et al., (2019) the gap

between WTP and WTA in the real estate sector can be reduced by information disclosure. To provide more insights on the phenomena, the study investigated whether the endowment effect exists in the housing market in the Eastern Cape Province in South Africa and evaluated the extent to which the disclosure of information, agents' evaluations, affordability, and proximity to amenities influences the WTA – WTP gap.

2. Literature Review

The tendency where individuals price a commodity higher when selling it than when buying it has been documented in literature and is widely discussed using the exchange and valuation paradigm (Ericson & Fuster, 2013; Yu & Wong, 2022). The exchange paradigm states that, when individuals are endowed with a commodity, they are reluctant to trade the commodity with another one of the same value. In an experimental set up by Knetsch (1989), one group received a coffee mug, while others received a chocolate bar. After a short while, participants were informed they could either keep their commodities or exchange them for an alternative item. The results showed that 90% of those with chocolates kept their chocolates and 11% of those with mugs exchanged them for chocolates. The reluctance to trade by the majority showed the presence of the endowment effect. The valuation paradigm notes that, when individuals are endowed with a commodity, they demand more than the value of the commodity to sell it off. Knetsch and Sinden (1984) in an experimental setup where one group was endowed with a lottery ticket and the other with $2, those who were given lottery tickets seemed to like them better than those who were given money and those with tickets requested a compensation measure that significantly exceeded their willingness to pay when requested to trade the lottery ticket. The two paradigms have gained dominance in setting up the endowment effect with different commodities, such as chocolate bars, lottery tickets, or coffee mugs were applied in these experiments.

Despite the well-established paradigms, the cause of the WTA – WTP gap remains debatable as it is mainly influenced by what characterizes the market in which the endowment effect is being tested, the framing of experiments (Plott & Zeiler, 2011), and the nature of commodities. Thaler (1980) said that the endowment effect exists because equal amounts of gains and losses do not yield the same emotional impact, as losses are felt more acutely than gains (Saltık et al., 2023). According to Song and Ahn (2019), the endowment effect is also traced to a situation where individuals prefer their current state as compared to the available alternatives, particularly when the disutility of giving up an object is greater than the utility associated with keeping it. Furthermore, the endowment effect was traced to ownership. Individuals tend to value commodities they own more than commodities they do not own (Dommer & Swaminathan, 2013; Reb & Connolly, 200+7.; Ştir & Zaiţ, 2022; Yan et al., 2021). This is typical of the nature of residential properties were owning a house is a lifetime achievement of most households in South Africa, and people may not be willing to give up their properties if requested to trade them for other assets of the same value. He and Asami, (2014) further traced the WTA - WTP gap to bargaining strategies between the buyer and the seller. Sellers set high prices since most buyers request discounts and buyers might start low to avoid paying much. The WTA – WTP gap has also been traced to a lack of experience in how the market works and the WTA – WTP gap might decline as individuals gain experience (Knetsch & Sinden, 1984). Recently, the endowment effect in the housing market has been attributed to information asymmetry (Gong et al., 2019). According to Gong et al. (2019) the real estate sector is characterized by heterogeneous locational and urban amenities, which are a source of imperfect information. Therefore, the existence of a gap between the willingness to pay and willingness to accept can be explained by the presence of asymmetric information. Thus, the study is interested in estimating whether the endowment effect is due to information asymmetry and whether the disclosure of information can reduce the WTA – WTP gap in the housing market.

Studies which investigate the WTA – WTP gap and information asymmetry in the housing market are still limited. Paraschiv and Chenavaz (2011) were among the first to investigate the WTP - WTA gap in the housing market. Paraschiv and Chenavaz (2011) investigated whether reference points for sellers and buyers are influenced by market evolution and available information. The study concluded that buyers and sellers do not value houses to the same market price, past prices influence the reference point, and that the reference point can be manipulated by information disclosure. He and Asami (2014) further surveyed residents in Central Beijing, investigating the

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disparity between the willingness to accept and the willingness to pay. The study discovered that there is a significant gap between WTA and WTP. The gap was attributed to households' strategic motives of seeking profit in relocation, which is uneven across different geographic areas due to price differences. Carin van der Cruijsen and David-Jan Jansen (2014), conducted a study in the Netherlands titled, "The rose-colored glasses of homeowners". The study found that, despite a decline in the market price of houses, owners of houses still valued their properties highly. Bao and Gong (2016) investigated the role of the endowment effect in the housing market. The study concluded that the endowment effect exists in the housing market and is it is attributed to judgment bias.

Clark and Lisowski (2017) also investigated whether the endowment effect influenced residential mobility. The study found that the endowment effect explained why residents prefer staying within their residences than relocating. Gong et al. (2019) investigated if the endowment effect existed in the housing market and how information disclosure can reduce the WTA – WTP gap, the researchers concluded that WTA–WTP disparity exists in the housing market and the WTA–WTP disparity can be reduced after information disclosure. Liu et al. (2021) investigated the endowment effect accompanying villagers' withdrawal from rural homesteads in Chengdu, China. The study noted that changes in individuals' livelihoods intensified the endowment effects. Emotional attachment strengthens the degree of pain experienced by villagers when they withdraw from rural homesteads, thereby intensifying endowment effects. Liang and Gao (2021) further traced the misestimation of house prices to the endowment effect and lack of information; concluding that the disclosure of information plays a key role in the property market.

Asymmetric information in the housing market is traced to the heterogeneous nature of the residential properties (Seifert et al., 2021; Zhou et al., 2015), involvement of agents buying and selling on behalf of their principals (Bagnoli & Khanna, 1991; Levitt & Syverson, 2008) and the monetization of amenities and disamenities (Benson et al., 1998; Song et al., 2022; Stetler et al., 2010). Addressing information asymmetric from all these angles in real estate markets plays a greater role in reducing the endowment effect. Therefore, there might be a need for the government to promote a policy framework concerning the disclosure of information, whether private or public, as it plays a pivotal role in determining the efficiency of valuations in the real estate sector (Nanda, 2008). Given the limited studies, particularly in South Africa, which have provided insights on the endowment effect, the study investigated whether the endowment effect exists in the housing market in South Africa and further estimated if the disclosure of information, affordability, agent evaluation and the proximity to amenities influence the gap between the WTA - WTP in the housing market.

3. Data and methods

The study was conducted in the Eastern Cape Province of South Africa from January 2022 to August 2022, using a survey. A contingent valuation approach was used to estimate the willingness to pay, willingness to accept, and agents' evaluations. There is growing literature using contingent valuations to estimate the willingness to pay and the willingness to accept in environmental goods (Peng et al., 2022), public goods (Spindler et al., 2019), healthcare (Martín-Fernández et al., 2021) and energy (Meles et al., 2021). The contingent valuation method is the most widely used technique to measure willingness to accept and willingness to pay. It has been used to estimate the value of non-market commodities (Peng et al., 2022). However, in a bid to get more insights into consumer behaviour, contingents' valuations are now used to understand behavioral patterns amongst consumers (Geng et al., 2023). The study compared contingent valuations from three different groups on the same residential property. Buyers, owners/sellers, and agents of residential properties were asked to provide their valuations on residential properties which owners had advertised on property24, a property market website. The study requested:

1) Sellers to provide the minimum amount of money they were willing to accept to sell their property; on the same note, potential buyers were requested to provide the maximum amount of money they were willing to pay for the property. Real estate agencies were further requested to provide valuations on the same property. A total of 300 responses were obtained from buyers, sellers, and agents on the 100 properties which were under study. To make sure the valuations obtained reflect the behavior of the targeted participants and promote external validity, real owners of the

properties provided their WTAs, potential buyers who had shown interest in the property provided their WTPs, and real estate agencies selling the properties of behalf of the sellers provided their valuations of the properties. The valuations of buyers and sellers were compared to those of real estate agents. Real estate agents provide estimates that reflect the market prices of the property since they are informed of current market trends, use recommended valuation techniques, and are trained as valuers. Valuations were compared to establish if these three parties value properties at the same market price or not. If sellers are significantly willing to accept more than the estimated market price of the property and if buyers are willing to pay less than the estimated market price of the property, it implies that the WTA – WTP gap exist in the housing market in the Eastern Cape Province of South Africa.

2) After the buyers and sellers had provided their valuation, hidden positive information about the property was disclosed to the buyers and hidden negative information was disclosed to the sellers. The study has been carried out on the premise that buyers are willing to pay less than the value of the property whereas sellers are willing to accept a monetary value more than the value of their property due to ownership effect. The ownership effect has been explained as one of the leading causes of the endowment effect (Dommer & Swaminathan, 2013; Giblin, 2020; Reb & Connolly, 2007; Ştir & Zaiţ, 2022; Yan et al., 2021). Due to psychological attachment placed on the property by sellers, when asked to sell their property, they are pricing the disutility associated with parting with their property, resulting in a higher willingness to accept. Just because buyers do not own the property, they are willing to pay less to get the property since there is no emotional attachment toit. Hidden positive information that is disclosed to buyers includes proximity and juxtaposition of the property to strategic amenities, quality of materials used to erect the property, and the likely future value of the property given its location. Buyers are then requested to revalue the property after the disclosure of such information by real estate valuers. On the other hand, hidden negative information regarding the age of the property, and how drainage, sewer, and water systems of the property have aged, dilapidated and deteriorated was disclosed. After the disclosure of such information, sellers/owners are requested to revalue their properties. The WTA - WTP gap before and after information disclosure was assessed to ascertain the effect of information disclosure on the WTA - WTP gap.
3) Further information was obtained from sellers, buyers, and agents as control dummy variables. The information regards the demographic characteristics and knowledge about the real estate market. This information included their level of income, gender, and experience with how the property market works, whether they were first-time buyers or not, their level of education, and their risk profiles. In addition to this, the study captured the preference of buyers and the amenities around the properties under investigation.

Repeated or paired sample tests were used to compare whether the mean of willingness to pay (buyer valuation) is significantly different from the mean of willingness to accept (seller valuation). The hypothetical test further showed if willingness to accept was significantly higher than willingness to pay. Endowment was defined as a scenario where the willingness to accept is significantly higher than the willingness to pay (Chu & Shu, 2023; Morewedge & Giblin, 2015; Smitizsky et al., 2021). Rejecting the null hypothesis implies that there is a significant difference between buyers' and sellers' valuations and willingness to accept is significantly higher than willingness to pay, concluding that the endowment effect is present in the housing market. The hypothesis is as follows:

$$H_0 = \text{WTA (mean)} = \text{WTP (mean)}$$

$$H_A = \text{WTA (mean)} \neq \text{WTP (mean)}$$

The second hypothesis tested whether the gap between willingness to accept and willingness to pay was due to information asymmetry. Different studies in the housing market concluded that sellers demanded more than what buyers are willing to pay and the disparity is traced to information asymmetry (Gong et al., 2019; Liang & Gao, 2021). To further ascertain the hypothesis, the study tested whether the willingness to accept after information disclosure (WTAID) and willingness to pay after information disclosure (WTPID) is significantly different from agent evaluation (AE). Agents are well-informed, and their

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valuations reflect the current market prices of the properties (Bartke & Schwarze, 2015; Baum et al., 2005). If WTPID and WTAID are significantly different from AE, then the endowment effect is traced to asymmetric information in the housing market. However, if the degree of significance is decreasing to insignificant then the disclosure of information can reduce the WTP- WTA gap. The hypothesis is as follows.

H_O = WTAID (mean) = AE (mean)

H_A = WTAID (mean) ≠ AE (mean)

H_O = WTPID (mean) = AE (mean)

H_A = WTPID (mean) ≠ AE (mean)

The study then tests if the WTPID – WTAID gap closes given that information was disclosed to both buyers and sellers. The study expects a reduction in the WTP – WTA gap after information disclosure when compared to WTP – WTA gap before information disclosure. The hypothesis is as follows:

H_O = WTPID (mean) = WTAID (mean)

H_A = WTPID (mean) ≠ WTAID (mean)

Paired or repeated sample t-tests have been widely used when comparing means between groups in different fields of study (Bosman et al., 2023; Gupta et al., 2023; Khosravi et al., 2018; Prabowo et al., 2023). However, it must only be used if underlying assumptions of normality, independence, and homogeneity hold true (Horn, 2009). The study further used ordinary least squares and quantile regressions to estimate the effect of the involvement of agents and affordability on the endowment effect with demographic, structural, and neighborhood variables as dummies. According to McCord et al. (2018) ordinary least squares regression has been the most extensively utilized strategy in property forecasting due to its well-established methodology, extensive history of usage, and universal support among practitioners and academics (Can, 1992; Mishi & Mwanyepedza, 2023; Zhou et al., 2013). However, the ordinary least square's inability to handle inter-variable relationships, nonlinearity, and multicollinearity well has resulted in researchers adopting other non-parametric models in estimating regressions (Abidoye & Chan, 2018). In the case that the assumptions of the ordinary least squares do not hold, quantile regressions estimates will be used. Quantile regressions have been widely used in estimating and forecasting residential property values due to the unavailability of underlying assumptions (Chu et al., 2023; Ma et al., 2022; Spagnolo et al., 2023).

The regression model is specified using the log–log and log-linear function forms. When specifying a regression model, correct model specification is one of the essential classical linear regression model assumptions which must be respected since incorrectly specified regressions result in spurious estimates. Regression models 1 and 2 have been correctly specified. The model specification of these models has been tested using the RAMSEY RESET test and results obtained rejected the null hypothesis that the model has omitted variables. When estimating classical linear regression, assumptions of linearity, homoscedasticity, and collinearity must be met to avoid analyzing spurious results. The assumptions of the classical regression models were met and model 1 and model 2's coefficients were unbiased. Model 1 was specified in regression model 1 as follows:

$$\begin{aligned}&\text{Log}\,(Endowment\ Effect) = \\ &\beta_0 + \beta_1 log(Information\ Disclosure)_i + \\ &\beta_2 \log(Agent\ Evaluation) + \beta_3 \frac{WTA}{Floor\ Size_i} + \beta_4 \frac{WTP}{Family\ Size} + \\ &\beta_5 \Delta WTA3M + \beta_6 log(Location) + \beta_7 \log(Race) + \\ &\beta_8\,(Education) + \beta_5 \log(Income) + \beta_5 Gender + \varepsilon_i \quad (1)\end{aligned}$$

One of the secondary objectives of the study is to estimate if the gap between the WTP and WTA results from the affordability constraint of the buyer. Willingness to pay is significantly influenced by constrained affordability, if buyers offer to pay less, then the WTP – WTA gap widens, so the study expects the increase in income from one income bracket to a higher income bracket to close the WTP – WTA gap in the housing market. The study was further interested in providing supporting evidence of the results obtained by the paired t-test. So, the regressions further estimated if the disclosure of information will reduce the WTP – WTP gap. The study expects the disclosure of information to reduce the WTP – WTA gap. The study further evaluated whether the involvement of agents in buying and selling properties reduces the endowment effect, expecting their involvement to reduce the WTA – WTP gap. Secondly, in the housing market amenities play a significant role in determining the willingness to pay and willingness to accept, thus the study further estimated the effect of amenities on the endowment effect in the housing market. The model was specified as follows:

$$\begin{aligned}&\text{Log}(Endowment\ Effect) = \beta_0 + \beta_1\, Mall + \beta_2 Beachfront + \\ &\beta_3\, Workplace + \beta_4\, Schools + \beta_5 Affordabilty + \\ &\beta_6 Bedrooms + \beta_7 Bathrooms + \beta_8 Floor\ Area + \beta_5 Parking + \\ &\beta_5 Home\ Type + \beta_5 Risk\ Profile\ of\ Seller + \beta_5 WTA *\end{aligned}$$

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$Risk\ of\ Seller + \beta_5\ log(Agent\ Evaluation) + \beta_5 \Delta WTA + \varepsilon_i$ ... (2)

The study estimated the effects of structural and urban amenities on the WTA – WTP gap, as other variables which are in the model are control variables. Previous studies have investigated the effects of these amenities on house prices and not the WTA – WTP gap (Benson et al., 1998; McCord et al., 2018; Song et al., 2022; Stetler et al., 2010; Wu et al., 2004). The effect of these amenities on the WTA – WTP gap is uncertain, as it depends on psychological factors which differ with personality. More insights will be provided by the results obtained.

4. Results

Firstly, the study tested for the existence of the WTA – WTP gap and found a significant difference between willingness to pay and willingness to accept at 1% since the probability value is 0.000. Therefore, the study concludes that the WTA – WTP gap exists in the housing market since buyers and sellers do not value properties at the same market value. The results further show that sellers value residential properties higher than buyers, since the average WTA is higher than the average WTP. Table 1 shows the results.

The study further estimated whether the WTP-WTA is due to information asymmetry in the market and whether the disclosure of information reduces the gap. Agents' evaluation reflects the estimated market value of residential properties since they are experienced and use recommended valuation techniques in determining property prices (Bartke & Schwarze, 2015). Therefore, WTA is compared to the agents' evaluation and WTAID = with agent evaluations to see if the disclosure of information to the seller closes the information gap. The results have been presented in Table 2.

The study found that there is a significant difference between agent evaluations and seller evaluations. Sellers' residential properties values are higher than those of agents'. After disclosing information to sellers, the gap between the willingness to accept and agent evaluation is reduced, but not eliminated. Before information disclosure, sellers' evaluation is significantly different at 1% (p-value =0.000), and after information disclosure, the difference becomes significant at 10% (p-value = 0.057). The study further compared whether the buyers' evaluations were significantly different from the agents' evaluations before and after information disclosure. The results obtained have been shown in Table 3.

The study further showed that there is a significant difference between the willingness to pay and the agents' evaluation before information disclosure (p-value = 0.000). However, after information disclosure, there is no significant difference between buyer and agent evaluation (p-value = 0.197). The results have shown that the disclosure of positive information regarding the property eliminates the WTA – WTP gap. The study has further compared whether the WTA after information disclosure is significantly different from the WTP after the disclosure of information. The obtained results have been shown in Table 4.

Table 1

Willingness to Pay and Willingness to Accept Disparities

	obs	WTA(Mean)	WTP(Mean)	dif	St Err	t value	p-value
WTA - WTP	100	ZAR1 032 100	ZAR797 900	ZAR234 200	10674	21.95	0.00

*** p<.01, ** p<.05, * p<.1

Source: own study.

Table 2

Agents' Evaluations and Owners' Evaluations

	obs	WTA (mean)	AE (mean)	dif	St Err	t value	p-value
WTA - AE	100	ZAR1 032 100	ZAR855320	ZAR176781	10694.639	16.55	0.000
WTA(ID) – AE	100	ZAR1014 740	ZAR855 320	ZAR159 420	82839.659	1.9	.057

*** p<.01, ** p<.05, * p<.1

Source: own study.

Table 3

Buyers' Evaluations and Agents' Evaluation

	obs	WTP (mean)	AE (mean)	dif	St Err	t value	p-value
WTP - AE	100	ZAR797 900	ZAR855 320	ZAR-57 419.5	7292.03	-7.85	0.000
WTP(ID) – AE	100	ZAR983 700	ZAR855 320	ZAR128 380.5	98798.14	1.3	0.197

*** p<.01, ** p<.05, * p<.1

Source: own study.

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Table 4

Willingness to Pay and Willingness to Accept After Information Disclosure

	obs	WTA(ID)	WTP(ID)	dif	St Err	t value	p-value
WTA(ID) –WTP(ID)	100	ZAR1 014 739.5	ZAR983 700	ZAR31 039.5	129518	0.25	0.811

*** p<.01, ** p<.05, * p<.1

Source: own study.

The study has shown that, after information disclosure, the WTA – WTP gap is eliminated since the probability value, 0.811 is greater than 10%, implying that there is no statistical difference between willingness to accept after information disclosure and willingness to pay after information disclosure. Although the endowment effect has been eliminated, this was done through buyers' responsiveness to disclosed information as there is still a gap between the agents' evaluations and sellers' evaluations that cannot be eliminated through information disclosure. Thus, the endowment effect is eliminated at the expense of the buyer, as the sellers' response to information disclosure doesn't eliminate the endowment effect but rather reduces it, whereas the buyers' response to information disclosure eliminates the disparity between the WTP and agent evaluation.

The model estimated the effects of information disclosure, agent evaluation, and affordability on the WTA – WTP gap using ordinary least squares and quantile regression. The first hypothesis the study tested was whether information disclosure significantly reduces the endowment effect in the housing market; secondly, the study assessed whether agents' evaluation significantly reduces the endowment effect, and thirdly, whether increased affordability significantly reduces the endowment effect. Lastly, the regression analysis tested whether having some knowledge of how the property market works significantly reduces the endowment effect. The results obtained have been shown in Table 5.

Table 5

Regression Results: Factors Influencing the Endowment Effect

	Ordinary Least Squares				Quantile Regression			
Log (Endowment Effect)	Coef.	St. Err.	t-value	p-value	Coef.	St. Err.	t-value	p-value
Log (Agent Evaluation)	-0.427*	.246	-1.74	0.089	-0.536**	0.223	-2.40	0.02
Log(Information Disclosure)	-0.197*	.116	-1.70	0.096	-0.141	0.103	-1.36	0.179
Log (WTA/Floor Size)	0.069**	.031	2.21	0.032	0.043*	0.025	1.74	0.089
Log (WTP/Family Size)	-0.186**	.077	-2.40	0.02	-0.075	0.061	-1.23	0.224
Log (WTA After 3 months)	0.943***	.247	3.82	0	0.942***	0.202	4.65	0
Location	0.062	.071	0.87	0.391	0.04	0.064	0.63	0.535
Whites	0.103*	.055	1.87	0.067	0.114**	0.05	2.28	0.027
Colored	0.006	0.054	0.10	0.917	-0.011	0.04	-0.28	0.784
Indian/Asian	.034	0.059	0.58	0.568	-0.02	.045	-0.44	0.662
Repeated Buyers	0.044	0.048	0.91	0.365	0.04	0.05	0.80	0.429
NSC	-0.198**	0.083	-2.38	0.021	-0.184**	0.077	-2.39	0.021
Diploma	-.128	0.083	-1.55	0.129	-0.124	0.08	-1.55	0.128
Degree	-0.125	0.079	-1.58	0.121	-0.176**	.073	-2.39	0.021
Post Grad	-0.08	0.093	-0.86	0.393	-0.135	0.087	-1.55	0.127
Income: R150 001 - R360 000	-0.135**	0.054	-2.50	0.016	-0.05	0.041	-1.21	0.233
Income: R360 001 - R630 000	-0.112*	0.065	-1.73	0.091	-0.069	0.047	-1.46	0.15
Income: R630 001 - R860 000	0.136	0.116	1.17	0.248	0.2**	0.08	2.50	0.016
Gender: Female	0.103**	0.042	2.43	0.019	0.126***	0.03	4.26	0
Constant	0.911	1.149	0.79	0.432	0.992	0.835	1.19	0.24
R Squared	0.734							

*** p<.01, ** p<.05, * p<.1

Source: own study.

The results from the study have found that real estate agent valuations of residential properties in the housing market significantly reduce endowment. Real estate agents are informed parties who should work in the interest of the principal to obtain the best deal (Bartke & Schwarze, 2015; Klamer et al., 2021). Real estate agents have experience and are skilled in providing valuations of properties, therefore their estimate reduces overestimation by sellers and underestimation by buyers through disclosing information to parties involved in the transaction. The research has further found that the disclosure of

hidden information to buyers and sellers reduces the endowment effect in the housing market. The housing market is classified as an imperfect market where public information regarding suburbs and housing structures cannot be relied on when making decisions to acquire residential properties. There is a need for hidden information to be disclosed to make sound decisions. The disclosure of hidden information to buyers and sellers significantly reduces the endowment effect. The study has further noted that increased affordability and moving from a lower income bracket to a higher one significantly reduce the endowment effect in the housing market. One of the factors that influence the willingness to pay is the level of income. As income increases, affordability also increases; the increase in affordability in turn enables households to offers in the market leading to the reduction of the endowment effect. Lastly, the study found that having basic knowledge of how the housing market works can reduce the endowment effect; Therefore, the study has rejected the null hypothesis that the disclosure of information, agents' evaluation, increased affordability, and knowledge of how the property market works doesn't reduce endowment, and concluded that the disclosure of information, agents' valuation, increased affordability, and knowing how the property market operates all play a significant role in reducing the endowment effect in the housing market.

The second regression model explores the effects of structural and public amenities on the endowment effect. The theoretical framework notes that the core of property valuation is characterized by the attributes that define it (Song et al., 2022; Stetler et al., 2010; Wierenga, 1984). According to Lancaster, (1976); Rosen, (1974), the value of any commodity can be viewed as a function of these inherent, utility-bearing characteristics. In Lancaster's framework, attributes matters in the consumers' utility function**.** The consumer chooses the combination of attributes that provides the highest level of utility given the affordability constraint. The study asked buyers and sellers whether or not they prefer a property close to urban amenities such as schools, shopping malls, and their workplaces over environmental amenities such as a beachfront (Mishi & Mwanyepedza, 2023). The effects of structural features of properties that were included in the survey, which includei the number of bedrooms, bathrooms, floor size, parking spaces available, and whether the property is a townhouse or an apartment, on the endowment effect were estimated as well. The results have been shown in Table 6.

Table 6

Regression Results: Factors Influencing the Endowment Effect

	Ordinary Least Squares				Quantile Regression			
Log (Endowment Effect)	Coef.	St. Err.	t-value	p-value	Coef.	St. Err.	t-value	p-value
Shopping Malls	-0.027	0.082	-0.32	0.748	-0.078	0.081	-0.96	0.341
Beachfront	0.071*	0.041	1.74	0.089	.074*	0.04	1.83	0.074
Workplace	0.12***	0.041	2.90	0.006	0.081*	0.041	1.98	0.054
Schools	0.083*	0.043	1.93	0.06	0.109**	0.042	2.58	0.013
Affordability	-0.041	0.039	-1.04	0.304	0.003	0.039	0.07	0.944
Bedrooms	-0.084**	0.039	-2.16	0.036	-0.026	0.039	-0.68	0.497
Bathrooms	0.063	0.042	1.50	0.14	0.003	0.042	0.06	0.949
Floor Size	0.001**	0	2.69	0.01	0*	0	1.93	0.06
Parking	-0.012	0.018	-0.64	0.526	-0.022	0.018	-1.19	0.239
Apartment	0.089*	0.049	1.80	0.079	0.093*	0.049	1.90	0.064
Risk of Seller	-0.064***	0.023	-2.75	0.009	-0.089***	0.023	-3.84	0
WTA* Risk of Seller	0***	0	4.14	0	0***	0	5.52	0
Log (Agent Evaluation)	-0.242**	0.091	-2.65	0.011	-0.334***	0.09	-3.70	0.001
Log (ΔWTA over time)	0.083***	0.035	2.38	0.022	0.045	0.034	1.31	0.197
Constant	7.437	1.34	5.55	0	9.126***	1.325	6.89	0
R Squared	0.740							

*** p<.01, ** p<.05, * p<.1

Source: own study.

The study found that the endowment effect is high on properties located on the beachfront, near workplaces and schools. This implies that owners of properties are willing to accept high prices for properties that are close to the beachfront, workplaces, and schools, whereas buyers are not willing to pay what sellers are willing to accept. Owners usually feel attached to properties which are located close to their workplaces, and are not willing to give up their properties due to their convenience to

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the workplaces, which is associated with a reduction in commuting costs. Properties close to the beachfront, on the other hand, enjoy the benefit of nature and the convenience of accessing beachfronts at a minimal cost. Schools remain one of the most important basic facilities for families with school-going children. The emotional attachment to the convenience of these facilities may result in sellers incorporating their emotions in valuing their properties. The study has further noted that the endowment effect is lower in properties with more bedrooms. The study has further found that the endowment effect is high in properties classified as apartments and housing properties with larger floor sizes. The study has also further noted that endowment is high if a property stays on the market for more than 3 months. Even if owners reduce their willingness to pay, the endowment effect is still high, buyers are willing to pay less and less the longer a property continues to stay on the market, as the time a property takes to sell is a negative indicator to potential buyers.

5. Discussion

The study has established that the endowment effect exists in the housing market in the Eastern Cape Province of South Africa. The findings are consistent with previous studies which have established that buyers and sellers do not value housing at the same market price (Bao & Gong, 2016; He & Asami, 2014; Paraschiv & Chenavaz, 2011). The study attributes the existence of the WTA – WTP gap to information asymmetry. Previous studies, such as those by Gong et al. (2019), trace the existence of the gap between the willingness to pay and the willingness to accept to asymmetric information in the housing market. The study concluded that the disclosure of information significantly reduces the endowment effect. However, the disclosure of information from a seller's perspective does not eliminate it. After estimating whether sellers' evaluations after information disclosure differ significantly from the agents' evaluations, the study found out that sellers still value their properties high that is they still do not value their properties to market value, even after information disclosure. The reason sellers still overprice their products even after information disclosure is traced to the involvement of emotions in valuations. The study further concluded that after information is disclosed to buyers, the gap that exists between the willingness to pay and market prices is eliminated, and buyers are even willing to pay more than what the agents are offering, although the difference is insignificant. Therefore, buyers respond more to information disclosure when compared to sellers. This implies that the ownership effect remains the main source of the existence of the endowment effect in the housing market since sellers who are the residential property owners continue to charge high prices even after information disclosure. Despite the disclosure of information not eliminating the difference between the willingness to accept and market prices, information disclosure remains vital in reducing the disparity. According to Nanda (2008), the United States of America enacted laws on real estate agent supervision to ensure that there is information disclosure since the existence of asymmetric information is one of the causes of valuation disparities in the real estate market.

Furthermore, the study found out that valuation by real estate agencies greatly reduces sellers' overpricing and buyers' under-pricing, and significantly contributes to the reduction of the WTP – WTA gap. The valuations of real estate agencies are based on different techniques, such as hedonic pricing methods (Goodman & Thibodeau, 2003), changes in the economic environment and housing market trends (Edelstein & Tsang, 2007), and the monetization of external effects (Benson et al., 1998). Therefore, real estate agents provide valuations that reflect market prices (Bartke & Schwarze, 2015). The study has also shown that increased affordability can reduce the endowment effect. Moving from a lower income to a high-income bracket increases affordability, hence the willingness to pay for residential properties in the market (Tita & Opperman, 2022). The study has shown that properties close to the beach have a higher WTA – WTP gap than properties which are not close to the beach. The geographic location of these properties makes them more expensive than other homogenous properties which are not close to the beach, so sellers and agents incorporate the coastal lifestyle in pricing these properties, resulting in higher asking prices. Higher asking prices increase the endowment effect if buyers are not willing to pay a higher price for a coastal lifestyle. The study has further noted that properties close to schools have a higher WTA – WTP gap than those that are not close to schools. In the valuation process of agents and sellers, proximity to schools increases the value of a property. However, buyers compare homogenous properties in terms of structural features, making buyers willing to pay less than the property's actual value when public amenities

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have been included. While some buyers may view schools as an amenity, others may view them as "not in my backyard" (NMBY) due to the negative externalities generated, which include noise and congestion (Mishi & Mwanyepedza, 2023).

The study has found that there is a wider gap between the willingness to pay and the willingness to accept if the residential property is an apartment. In most cases, apartments do not have spaces for gardening and car parking, so the endowment effect tends to be high due to the unwillingness to pay for certain attributes that are limited to apartments. The study has further depicted that properties with larger floor size widen the gap between WTA - WTP. Properties with a larger floor area can accommodate families with more members. These houses can also allow guests to stay over. As a result, they are more expensive. If buyers are not willing to pay for the additional property benefits that go along with larger floor sizes, the endowment effect widens. Lastly, the study found that an additional bedroom in a property reduces the WTA – WTP gap, thus buyers are willing to pay more as the number of bedrooms increases. These findings are of paramount importance in promoting housing market efficiency.

5. Conclusions

The study estimated whether the WTA – WTP gap exists in the housing market in Eastern Cape, South Africa, and whether imperfect information contributes to the gap. The study concluded that the WTA – WTP gap does in fact exist, and that the disclosure of information plays a significant role in reducing the WTP – WTA gap. The study further concluded that increased affordability, agent evaluation, and information disclosure significantly reduce the WTA – WTP gap in the housing market. Moreover, it was observed that a coastal lifestyle, larger floor areas, and the vicinity of schools widens the gap between WTA – WTP, whereas an additional bedroom in a property reduces the WTA – WTP gap. The study recommends the involvement of independent valuators in the valuation process to avoid valuation disparities. The study further recommends that the government and private players invest more in information disclosure legislation to protect buyers. For inclusiveness, banks, real estate agencies and the government should play a significant role in making affordable mortgages more available to low income earners. The study suggests that further studies can be carried out on the implications of endowment effect on housing market efficiency, investigating how correct juxtaposing of amenities to residential properties influences the valuation of properties and choices regarding household location.

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