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„The Endowment Effect – a Literature Review“

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Für meine Familie,  
mit der es nicht immer einfach ist,  
aber ohne die es undenkbar wäre.



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## **Introduction**

We live in a consumer society, and a good part of our daily decisions revolve around buying and sometimes also selling. Thus the reservation prices, the prices we are just willing to pay or accept for an item, have become an increasingly important variable in our economy. Yet an anomaly has been found when comparing the values obtained by different elicitation procedures: not only do the hypothetical values remarkably differ from the values in a real market setting, but also a significant discrepancy has been found between the amount people are willing to pay to acquire an object, and the amount they are willing to accept to part with it if it is in their possession. This discrepancy has proven to be robust and thus to have a noticeable impact on standard economic theories and the daily market transactions.

Consequently a lot of theories have been devised to explain these new findings, the most commonly accepted being the Endowment Effect theory by Thaler (1980), later elaborated by Kahneman, Knetsch, and Thaler (1990), the concept of loss aversion and the status quo bias.

Whereas the endowment effect has first been described for consumer goods, later studies have shown that it will also manifest itself for public goods or intangible items like time or information. As a psychological phenomenon, it is subject to differences in magnitude depending on situational factors as well as personal characteristics of the agents. It seems further noteworthy that the endowment effect cannot be accurately predicted during a trade, neither for our own changes in valuations nor for another agents', even though it is omnipresent in our everyday life. This leaves room for a multitude of possible applications of this theory once it is thoroughly explored and understood.

The following work tries to give a survey of the most important aspects of the endowment effect described in the contemporary literature, introducing the theoretical background and different theories explaining the discrepancy between willingness to pay and willingness to accept in the first part, then rounding up the different factors that can influence the presence and magnitude of the endowment effect in the second part, as well as some psychological aspects in the third part, finally presenting possible practical applications and some suggestions for future research in parts four and five.

## **I. Theoretical background**

### **1. Definitions**

“Willingness to pay” (WTP) is the value a person attributes to a good and is willing to pay, sacrifice or exchange in order to obtain the good or service. WTP is therefore the maximum buying price that an individual would pay to obtain a good.

Respectively, the “willingness to accept” (WTA) is the stated price that an individual is willing to accept in compensation for the loss of a good in their possession, also known as the minimum selling price or the reservation price.

Knowing the values of these two variables is very significant since they are often used as the basis for economic theories and major public policy decisions. In the following I shall discuss some ways of measuring these values as well as the explanations that have been proposed in the literature to explain the gap that has been discovered between them.

### **2. Measures**

Various methods to elicit valuations have been used in past experiments involving incentives and market environments, not all of them equally incentive compatible, such as Smith auctions, binary choice designs, Vickrey auctions and the Becker-DeGroot-Marschak ("BDM") method, which is explained hereafter.

Becker, DeGroot, and Marschak (1964) designed a procedure that would give utility maximizers, as modern economic theories usually expect agents to be, the incentive to reveal their true reservation price.

In the BDM method, both sellers and buyers face a random bid after stating their own reservation prices. Owners willing to trade for a price lower than or equal to the random bid will sell the good they own and receive the randomly selected price. In the same way, buyers who were willing to pay at least as much as the random bid will acquire the good at the random price. Sellers with a reservation price higher than the random bid will not trade, and neither will buyers who bid lower than the random price.

Both sellers and buyers have an incentive to state their true reservation price, since neither can influence the actual trading price, nor gain from misrepresentation, but only miss some desirable selling opportunities or be forced to enter into some undesirable transactions.



### **3. Disparity**

The discrepancy between WTA and WTP was first discovered in surveys trying to elicit money values of public goods using contingent valuation. By asking people either how much they would be willing to pay for an improvement of a public good or how much money they would demand to accept a deterioration of the good, researchers noticed that the way the questions were phrased made a great difference. The values of hypothetical WTA proved to be much higher than the values of hypothetical WTP. These findings inspired a series of examinations in an experimental setting with real money and goods.

Knetsch and Sinden (1984) for example ran an experiment in which participants were initially given either a lottery ticket or \$3.00. The subjects later had the possibility to trade one for the other. Since the initial assignment was random, theory would predict approximately half the participants in each group preferring what they got, and half the participants preferring the other option and therefore willing to trade. Yet significantly fewer subjects from either group chose to exchange goods, the experiment thus showing that subjects were somehow reluctant to give up what they had.

### **4. Hypothetical vs. real values**

Brookshire and Coursey (1987) compared elicitation procedures for public goods. They investigated resident's valuations of either an increase or a decrease of the tree density of a public park in Fort Collins, Colorado, collecting data in a one-square-mile area around the park in three different ways.

The traditional Contingent Valuation Method was used as the hypothetical, non-market elicitation process. People were asked what minimum dollar amount their household would be willing to accept for a decrease in the base plan of trees by a certain number, or what maximum dollar amount their household would be willing to contribute to a fund for the increase of trees in the park. A field Smith Auction Process that added the context of other people's bids to the valuation was used to create a market-like setting. To elicit WTP values, people were asked how much they would be willing to contribute to a fund for the planting of additional trees, under the consideration that they would eventually pay either nothing if the sum of all neighbours' payments was too low to cover the costs of the additional trees, exactly the dollar amount they stated if the collected sum was equal to the resulting costs, or proportionally less if the sum of the contributed money exceeded the costs of the trees. The

same logic applied for elicited WTA values. Finally a laboratory Smith Auction was used to examine valuations in a repetitive market-like environment, based on the same process of collecting money, but using actual payments after up to five auction rounds.

The results show an approximately seventy-five-to-one ratio between WTA and WTP using the field instruments, but only a ratio of about five-to-one in the final trial values of laboratory results. Further, the dynamics of the laboratory auction biddings show that while the values for WTA and WTP converge over the trials, there is a difference in magnitude: compensation demand values drop much more than the willingness to contribute increases.

This leads Brookshire and Coursey to conclude that *“the magnitude of the loss-aversion phenomenon is sensitive to the degree in which values are measured in a market or nonmarket environment”* (p. 565) and that *“hypothetical willingness-to-pay values may be both more accurate and more stable than hypothetical willingness-to-accept values.”*(p. 565)

Coursey, Hovis, and Schulze (1987) conducted an experiment where subjects were either offered payment to taste a bitter-unpleasant substance (WTA) or could offer to pay to avoid tasting the substance (WTP). The individual values were collected first hypothetically and then using a Vickrey auction setting with trial rounds to allow learning and full understanding of the experiment. The results suggest that hypothetical WTA values are likely to be biased upwards by psychological factors, whereas hypothetical WTP values are much closer to market values. Another conclusion was that *“values for WTA and WTP tend to converge in a mature market setting.”* (p. 688)

Nape, Frykblom, Harrison, and Lesley (2003) compared values for WTA in real and hypothetical treatments to find that the hypothetical bias is influenced by certain socio-demographic characteristics like age, race and personal income. For an elaboration on socio-demographic factors that have an influence on the real gap between WTA and WTP, see section II.2.

By now, there has been plenty of experimental evidence of the discrepancy between willingness to pay and willingness to accept so that it is now generally accepted. However, there has been no consensus yet as to the cause of this discrepancy. Some theories shall be elaborated hereafter, the most commonly accepted of them being the endowment effect.

## 5. Theories explaining the disparity

### 5.1 The endowment effect

The most famous article and the basis of the theory about the endowment effect presents a series of experiments from Kahneman, Knetsch, and Thaler (1990) who examined alternative explanations for the previously observed systematic discrepancy between buying and selling prices, to show that “*many discrepancies between WTA and WTP, far from being a mistake, reflect a genuine effect of reference positions on preferences. Thaler (1980) labeled the increased value of a good to an individual when the good becomes part of the individual's endowment the "endowment effect."*” (p. 1326)

The effect is seen as a manifestation of loss aversion even in riskless choice situations, meaning that losses are perceived substantially more important than equal gains in the evaluation of trades. This implicitly leads to the assumption that the set of mutually acceptable trades in a market is reduced, considering that owners would attribute a higher dollar value to the good in their possession facing a loss when giving it up, than buyers would attribute to a comparable gain by acquiring the same good.

The theories are backed up by data resulting from a series of experimental tests on the endowment effect and the Coase theorem with over 700 participants that will be described in more detail hereafter as examples of typical endowment effect experiments.

In a first experiment, 44 advanced undergraduate students at Cornell University were asked to participate in a series of 11 consecutive markets. The first three markets were held for induced-value tokens. In each market, participants were either owners (= sellers) or non-owners (= buyers). Sellers were told that they now owned a token with a certain value that they could either keep and cash in for the indicated value or consider selling. If they chose to sell the token, they were asked to indicate on a list for each value ranging from \$ 0,25 to \$ 8,75 in steps of \$ 0,50 if they would or would not sell at this price.

Buyers were asked respectively if they wanted to take the opportunity to buy the token and cash it in for an indicated sum of money, and if so at what price they were willing to buy it, or if they would rather not buy the token. Subjects alternated between buyer and seller role in the three successive markets and were assigned a different individual redemption value in each market.

The forms were collected from each participant after each market period, the market clearing price and the number of trades were announced immediately for each market. Three buyers and three sellers were picked randomly after each market and were paid off according to their stated preferences and the market clearing price. Those were the control rounds of the experiment, to see if the participants had understood the procedures. Of course the indicated reservation price was expected to equal the induced value of the tokens.

Right after the three induced-value markets, half the participants were given a Cornell coffee mug which was selling for \$ 6 at the local bookstore. After everyone had examined the mugs, four markets for mugs were announced, similar to the previous ones with two exceptions: only one of the four markets would be selected randomly to be binding and in this market all trades would be implemented. The buyer – seller assignment was maintained for all four markets, clearing price and number of trades were announced after each market. Once all four markets were completed, the trades of the selected market were executed, mugs exchanged. This design made sure learning could take place over the consecutive markets while each one was still potentially binding.

Another four markets followed, using the same procedures as before but trading boxed ballpoint pens with a visible price tag of \$ 3,98 , given to those participants being the “non-owners” in the mug markets.

All participants faced the same incentives in the consumption goods markets as in the induced-value token markets. It was in their best interest to answer truthfully and act according to their true reservation values. Buyers would purchase at all prices below their ascribed value to the good, owners would agree to sell at all prices above the good’s worth to them.

The results from the induced-value token markets and the consumption goods markets differed remarkably. Since the goods were allocated randomly, and if preference was unrelated to allocation, this should imply that about half of the goods were allocated improperly and would be traded. And in the induced-value markets, the expected values were obtained: the median buying and selling prices were identical and equal to the induced value, and the ratio of actual to predicted trade volume ( $V/V^*$ ) was 1, aggregating over the three periods.

On the other hand, the median selling prices in the consumer goods markets were more than twice the median buying prices, with a  $V/V^*$  ratio of only 0,20 for mugs and 0,41

for pens. There was no increase in observed trade volume over successive markets, participants did not learn to adopt equal buying and selling prices.

Kahneman, Knetsch, and Thaler (KKT) further observed that both sellers and buyers displayed a wide range of values in the markets, not changing much between the first and last market, which would allow gains from trade in the absence of an endowment effect. Mugs were desirable and even a small commission for trading would not significantly alter the results.

A second experiment was conducted in nearly the same way with 38 undergraduate economic students at Cornell, the only difference being the second consumption good which was replaced by a pair of folding binoculars for \$ 4.

In a third and fourth experiment, participants were asked to state their minimum selling prices or maximum buying prices rather than checking yes or no on a list of prices as in the first two experiments. No monetary pay-offs were made for the induced-value token markets. In experiment 3, four markets for pens followed, the first three being non-binding and used for practice only. In experiment 4, five markets for mugs were conducted after the token markets, one of them being selected at random to be binding. All the other procedures remained unchanged.

The results for experiments 2-4 all show remarkable similarities to those obtained in the first experiment. In the induced-value markets, the index of  $V/V^*$  was 0.91 summed over all four experiments, even though the participants had no experience with the trading rules and the monetary incentives were limited or non existent. In contrast,  $V/V^*$  averaged only 0,31 in the markets for consumption goods, with median selling prices being more than double the corresponding buying prices even though all participants faced monetary incentives and already had gained some experience with the market rules from the token markets.

The results of those first experiments already acknowledge the existence of an endowment effect by eliminating a couple of other possible explanations for the observed undertrade of consumer goods. Transaction costs as well as experimental errors like misunderstanding the market procedures could not be considered to be a valuable explanation since trading procedures were identical for all the markets, yet only the consumer goods markets showed low volume of trade. Also there were no learning effects, the discrepant evaluations of buyers and sellers remained stable over successive markets.

If the gap between WTA and WTP had been caused by bargaining habits, this would have shown for induced-value tokens as well as for consumer goods since subjects faced identical incentives in both markets. Nevertheless, another experiment was conducted to eliminate this possible interpretation that the gap was caused by habitual strategic behaviour. The procedure was similar to the first four experiments but using the Becker-DeGroot-Marshak procedure for eliciting values, meaning that the price was selected at random.

Once again, the results showed a significantly large endowment effect: while nearly all the expected exchanges were realized in the induced-value token markets (13 of 14 and 16 of 17), only six exchanges were realized out of the 14,5 that would have been expected if entitlements did not influence valuations. The ratio of actual to predicted trade volume ( $V/V^*$ ) was equal 0,41, the median selling price was over twice the median buying price.

To create a realistic market setting, participants were not given money to buy either tokens or goods but had to bring their own money supply for all experiments. Even though the magnitude of the possible resulting income effects can be considered trivial, they were considered a possible explanation of the observed undertrading. Therefore two other experiments were conducted, designed to eliminate this possibility of income effects or cash restraints.

In experiment 6, 77 participants were randomly assigned to three groups: sellers, buyers and choosers. Sellers were given a coffee mug and then asked for a series of prices, if they would be willing to trade the mug at that price. Buyers were asked to indicate if they wanted to buy a mug at each of the listed prices. Choosers were asked for each possible price, if they would rather take a mug or cash. Nearly the same design was used for experiment 7 with 117 students at the University of British Columbia, only then the price tags were left on the mugs. Both results were consistent and showed once more a serious undertrading, with only three actual instead of 12,5 expected trades in the first experiment ( $V/V^*= 0,24$ ) and only one of nineteen expected trades in the second experiment ( $V/V^*=0,05$ ). The median valuations were \$7,12 for sellers, \$3,12 for choosers and \$2,87 for buyers in experiment 6 and very similar in experiment 7.

Since owners and choosers were clearly in the same position as far as gained wealth is concerned, it is legitimate to say that the discrepancies in the valuations of the mugs cannot be attributed to income effects but rather reflect the sellers' sense of endowment created by the allocation of the mugs that did not occur with/ arise in the choosers.

Something else could be learned from these experiments, given that the endowment effect is created by a difference in the individual valuation and preference for either good or money. By comparing the buying and selling behaviour to the decisions of the group with the choice, the relative weight of reluctance to buy and reluctance to sell as a component of undertrading could be determined.

The results for buyers and choosers were very close, which leads to the assumption that the reluctance to pay was very small and not a significant factor, but rather that the observed undertrading is mostly due to a reluctance to part with entitlements; the sellers showed a considerably higher relative preference for the good than the money.

As a conclusion, KKT deduced that “*The undertrading observed in these experiments appears to reflect a true difference in preferences between the potential buyers and sellers.*” (p. 1343) The observed results should not be seen as mistakes but rather establish the endowment effect and loss aversion as fundamental characteristics of preference that aren’t likely to be eliminated by either experience, training, or market discipline. Consequentially, the endowment effect will also exist and subsist in genuine market settings.

Furthermore, the experiments also proved that the endowment effect could be a quite instantaneous phenomenon, since a substantial increase was witnessed in the value that the subjects assigned to the trading objects as soon as they were in their possession. This was a remarkable new discovery, since previous discussions of the endowment effect had focused on goods that had been possessed for a longer time. Apparently the shift of the reference point and the consequent value change were not only caused by sentimental attachment and improved technology of consumption as was assumed for long-term endowment effects.

## **5.2 Non-reversible indifference curves**

Indifference curves usually indicate the tradeoffs between two goods, but Knetsch (1989) argued that if gains and losses are valued differently, then the direction of the trade must also be considered in these representations. Using different real exchange experiments he showed that the standard representations are no longer valid, that indifference curves have a kink in the status quo and are thus no longer reversible.

He conducted three sorts of experiments that nonetheless all led to the same results. The first experiment was a preference exercise offering the participants the choice between two goods. Respondents were given either a coffee mug or a chocolate bar that they could

trade without uncertainty or effort against the other good if they wanted to. A control group was given the choice between the two goods straight away. The results showed that the initial endowments and the resulting direction of the trade significantly influenced the valuations of the two goods.

A second experiment compared the exchange between a good and money. Again, the results showed a strong bias towards the initial endowment. Thirdly, Knetsch analysed general public reactions obtained in a series of telephone surveys, also with similar results.

The substantial disparities recorded in these three experimental approaches provide strong evidence that indifference curves are not completely reversible, but that the preferences vary according to the initial reference entitlement. This observation could support the theory that losses are valued higher than possible gains.

### **5.3 Theory of substitutes**

Michael W. Hanemann (1991) proposed another explanation of the reason behind the divergence between WTP and WTA values and of its magnitude.

After noticing that there was disaccord between the environmental-economics literature that predicted relative equivalence of WTP and WTA values for changes in environmental amenities unless values were biased by income effects, and empirical evidence on the other hand that showed large disparities of the two values, and because he was not satisfied with unusual income effects or failures in the survey methodology as an explanation, Hanemann re-examined Randall and Stoll's (1980) work to show that its implications have been misunderstood.

Using the conventional welfare measures for price changes, the compensating and equivalent variations, which correspond to WTP and WTA respectively and can also be extended to quantity changes, he showed that "*the difference between WTP and WTA depends not only on an income effect but also on a substitution effect.*" (p. 635) He defined this effect as "*the ease with which other privately marketed commodities can be substituted for the given public good or fixed commodity, while maintaining the individual at a constant level of utility.*" (p. 635) By analyzing the two polar cases of either perfect or zero substitution, he demonstrated that if a good has a number of readily available substitutes, then the values of WTA and WTP are close to equal. On the other hand, if an item has only imperfect or no substitutes at all, like personal health, then the values for WTA can be infinite. So the fewer substitutes are available for a good, the greater the gap between WTP and WTA is to be



expected. He further suggested that “*the substitution effects could exert a far greater leverage on the relation between WTP and WTA than the income effects.*” (p. 646)

Shogren, Shin, Hayes, and Kliebenstein (1994) supported Hanemann’s proposition after testing it in a nonhypothetical auction market.

An experiment in two stages was designed to elicit participants’ WTP or WTA values both for a market good with almost perfect substitution, a candy bar, and for a nonmarket good with no substitution, personal health risk, using Vickrey auctions with trial rounds and small initial income. First, participants received a small piece of candy that could be upgraded to a regular-size brand-name candy bar. In the second stage, they were given a free lunch purchased from a local store that had a typical chance to cause food-borne illness that they either had to eat or could upgrade to food that had been stringently screened for food-borne pathogens, thus evaluating the values for reduced health risk.

The results showed that: “*For the market good with close substitutes, WTP and WTA measures of value are not statistically different with repeated market exposure. In contrast, for the nonmarket good with imperfect substitutes, WTP and WTA measures are significantly different, even after repeated market participation and with full information about the probability and severity of the health risk.*” (p. 264)

As an alternative to Hanemann’s theory of a substitution effect, Shogren et al. also conducted another experiment on the endowment effect as described by Kahneman et al. (1990) to study the relation between these two effects and to see if the inability to substitute goods might even be an underlying motivation to explain the latter.

The additional experiment was designed similar to the previous one, exchanging only the candy for a plain plastic mug that could be upgraded to an ISU coffee mug. Yet the results do not show an endowment effect, in neither of the two experiments, what among other things may be due to the differences in the experimental designs.

#### **5.4 Intrinsic values**

Boyce, Brown, McClelland, Peterson, and Schulze (1992) noticed that while WTA exceeded WTP by about a factor of 2 in most experiments with consumer goods, field studies of environmental goods produced a gap sometimes five times as big. They wondered what the source of this difference in magnitude of loss aversion for different commodities could be and

suggested as a possible explanation the theory that the valuation of environmental goods is influenced by intrinsic values.

Moral motives may lead individuals to want to preserve natural resources even without hope of recompense. Thus, kinked indifference curves can occur, if along with the attribution of property rights goes the assignment of moral responsibility; intrinsic values would mostly be included in WTA measures but not in WTP measures. Attributes that have been connected with intrinsic values are for example irreversibility, uniqueness, a sense of moral obligation and sentimentality.

In their study, Boyce et al. chose a Norfolk Island pine tree to test this theory by comparing the results from a typical experiment to elicit WTA and WTP measures to the values obtained from a second scenario where participants knew the tree would be destroyed if they sold it back to the experimenter/ failed to buy it. The results show a ratio of WTA to WTP values of about 1,7 for the standard experiment, while the ratio is about 2,4 for the experiment where trees were effectively destroyed.

Thus Boyce et al. concluded that *“the disparity between WTA and WTP for environmental goods may in great part be due to the intrinsic “moral” values captured by such commodities”* (p. 1371) and that *“the framing effect caused by a difference in implicit property rights when shifting from WTP to WTA may contribute to the disparity between these measures.”* (p. 1371)

## **5.5 Imprecise preferences**

Dubourg, Jones-Lee, and Loomes (1994) suggested that the imprecision of people’s preferences also contributes to the magnitude of the disparity between WTA and WTP. In their study, they elicited participants WTP and WTA values for changes in the risk of road injuries to see if people maybe have imprecise preferences over combinations of wealth, risk and safety that lead to a gap between WTP and WTA.

In personal interviews participants were asked how much they would be willing to pay for a safety feature for their car that would reduce their own risk of different types of road injuries by half. Responses were collected in intervals between the largest monetary amount they definitely would, and the smallest amount they definitely would not pay, including a best estimate. Subsequently the interviewers inquired two WTA values if the participants had the possibility to buy a new car without a standard safety feature that would increase their risk of a road injury, again in intervals.

The results show not only a significant gap between participants WTP and WTA, but also support the assumption that those preferences are in fact imprecise. Participants could not easily decide within the intervals if they would pay or accept compensation for changes in the risk of injuries or not. Further, they found that respondents when facing such uncertainty became increasingly cautious. Yet they acknowledge that imprecise preferences alone are not enough to account for more than part of the disparity between willingness to pay and willingness to accept measures of value.

### **5.6 Asymmetric information**

Dupont and Lee (2002) proposed yet another explanation for the discrepancy between WTA and WTP. They showed that “*a framework where rational agents face asymmetric information can also explain the wedge between ask and bid prices without invoking psychology.*” (p.88) If two agents trade an item, and at least one of them is uninformed and has reservations about the true risks of the trade, then this will reflect in his offers, causing a gap between WTA and WTP values even without endowment effect.

### **5.7 Uncertainty**

Inder and O’Brien (2003) argued that since many decisions comprise an element of uncertainty and because this uncertainty causes negative psychological reactions in most people, it can thus influence the valuations of their decisions to buy or sell goods, encouraging them to remain with the status quo, thus leading to the endowment effect. According to them, loss aversion alone cannot explain the wide range of results obtained in experiments when eliciting WTP and WTA values, and neither does it explain the convergence of the values with repeated market trials, whereas variations in the degree of uncertainty faced by the participants can, because both buyer and seller can acquire additional information with each trial.

While loss aversion is usually attributed to sellers’ behaviour, Inder and O’Brien focus on the buyers’ role mostly. They demonstrated that a buyer will only accept a selling price if his psychological reactions to buying and selling are zero, otherwise there will be an observable endowment effect. Further they argue that the influence of uncertainty on decisions also explains why the ratio of WTA and WTP can vary considerably for different goods, depending on how common the traded items are.

## **5.8 Information processing**

Nayakankuppam and Mishra (2005) argued that differing reservation prices are caused by differences in information processing, sellers and buyers perceiving the traded item fundamentally differently. While sellers would rather focus on the positive features, buyers would put more importance on the negative features of the good. Thus the endowment effect would reflect biased information integration.

They supported their theory with data from three different experiments, showing also that if the traders' foci are manipulated, the endowment effect can be moderated.

## **5.9 Ownership**

Morewedge, Shu, Gilbert, and Wilson (2009) contrasted two different explanations for the endowment effect. For one thing, the idea of loss aversion, where giving up a good is perceived more painful than acquiring it would be pleasurable. On the other hand, the theory that people might want to hold on to a good because they own it and have come to associate the good with themselves. They opposed these theories one to the other in two experiments, both trading coffee mugs using a Becker- DeGroot-Marschak procedure.

In the first experiment, subjects were assigned to one of four groups: they were either typical sellers or buyers as seen in other standard endowment effect studies, or they were assigned the roles of buyers who already owned a mug and therefore acquired a second one, or pair-buyers who could choose to receive two mugs at a time.

The results produced a typical endowment effect for the standard conditions, but further showed that buyers who already owned a mug were valuing a second mug higher than ordinary buyers their first mug, and as much as sellers valued the mug they owned. All owners thus valued the mugs equally and there was no more endowment effect between sellers and owner-buyers. Also, it can be said that complementarity did not bias the valuations of the owner-buyers, since pair-buyers had the same per-unit valuation of mugs as ordinary buyers.

In a second experiment, participants were first randomly divided into owners or non-owners of a mug. Then they were randomly assigned the roles of buyer's agents or seller's agents, allowing them to undergo a typical endowment effect experiment but making the decisions on behalf of a future participant. The results are once more in favour of the

ownership theory, because participants owning a mug themselves also valued the other person's mug more, regardless of whether they were buyers' or sellers' agents.

In summary, for both experiments ownership has proven to be the driving force behind the endowment effect while loss aversion has not.

### **5.10 Subject misconceptions**

Plott and Zeiler (2005) took the fact that there was no consensus in the literature as to the nature of the gap between willingness to pay and willingness to accept values as a motivation to examine more closely the influence of the experimental designs and more specifically the relevance of subject misconceptions, suggesting a misinterpretation of previous experimental results.

Since the notion of "misconceptions" has been neither quantified nor operationalized, even though all experimenters try to avoid them, Plott and Zeiler argue that the best way to approach the matter is to simultaneously control for all possible sources of misconceptions at once to reliably eliminate them. Yet they noticed that not one experiment reported in the literature had previously done this.

In their own study, they first successfully replicated one of Kahnemann, Knetsch, and Thaler's (1990) experiments to see if they too could reproduce the gap between WTA and WTP measures. In a second step they designed their own experiment in which they tried to completely control for subject misconceptions to determine if the procedures themselves were responsible for the discrepancies. In this case, the gap between WTA and WTP values would not be related to the nature of preferences.

They tried to come by the shortcomings of previous studies by adapting the standard experiment according to their own conception, using a really incentive-compatible elicitation method (modified BDM procedure) and providing participants with detailed explanations of the valuation mechanism, paid practice rounds, extensive training and anonymity all at once.

Under these circumstances their results did not show a gap between WTA and WTP. Plott and Zeiler therefore concluded that since the discrepancy between WTA and WTP can be turned on and off by using different experimental procedures it does not "*reflect a fundamental feature of human preferences.*" (p. 542)

However, they also encouraged discussion of their results, admitting their theory was far from thoroughly elaborate. As only one example they offered the interpretation that the procedures themselves might have discouraged differences between WTA and WTP by

assigning the participants both buying and selling roles during the lottery training rounds. This could then have led to a transference from subjects' attitudes towards lotteries onto the actual object of interest, the mug, having neither ownership nor loss take a major part in the formation of preferences. Another possible shortcoming of their procedure could be that by giving too many explanations and guided training rounds, they could have influenced the responses of the participants away from their true reservation prices towards stated values that would be more likely to result in a trade.

## **II. Factors influencing the Endowment Effect**

In their article from 1990, Kahneman, Knetsch, and Thaler already identified some conditions they believed necessary for the endowment effect to be observed. Since then, numerous articles have been published further eliciting factors influencing the presence or the magnitude of the endowment effect, some of which will be discussed hereafter.

For an easier overview, these factors can be grouped roughly into three categories: the features of the traded good or service, the characteristics of the bargaining agents and the properties of the market settings.

### **1. Product characteristics**

As seen in Part I, loss aversion and the endowment effect have been demonstrated for a variety of goods. Even though these objects were mostly low-price consumer goods such as mugs, pens and binoculars given their applicability in laboratory experiments, there is no reason to believe that the endowment effect would not also occur considering more valuable goods. Likewise, the early research on willingness to pay and willingness to accept has shown that the disparity between these values can also be measured for public goods or services.

Kahneman, Knetsch, and Thaler (1990) even proposed that "*Endowment effects are not limited to cases involving physical goods or to legal entitlements*" (p. 1345) but can also occur during negotiations about terms of previous transactions and arrangements. Loss aversion could manifest itself in an unwillingness to make concessions on a dimension of an agreement if it is conflicting with the reference position.

On the other hand, there are scenarios in which the endowment effect is very unlikely to occur, like markets for induced-value money tokens, where the tokens are valued only because they can be converted into cash. In the same spirit, no loss aversion is expected for

goods that have been purchased for resale only, especially not if a perfect substitute was available at a lower price. See part II.1.3 for more elaborations about exchange goods.

There are many more factors to be considered about the features of a traded good that can influence the endowment effect; a selection of articles shall be discussed below.

### **1.1 Source dependence**

Loewenstein and Issacharoff (1994) showed in two experiments that people value their possessions differently depending on how they got endowed with them.

Participants who believed they had received a mug by chance valued it significantly less than those who believed they had received the mug as a result of their good performance on an exercise. Also, participants who gained a mug due to their good performance at a task valued it higher than participants who got the mug as a consolation price for their poor performance at the task.

Further, their results showed that source dependence effects can be either positive or negative, but that “*source dependence has a greater effect on the valuation of objects that one obtains than of objects that one fails to obtain.*” (p. 163)

On a quantitative note, Loewenstein and Issacharoff found that “*this ‘source dependence’ effect is approximately equal in strength to the endowment effect*” (p. 157) in both their experiments to the point of the two effects neutralizing each other when operating in opposition, but conceded that this could be coincidental.

### **1.2 Ownership history**

Not only does current ownership instantly affect object valuation, but Strahilevitz and Loewenstein (1998) demonstrated that the ownership history also has an influence on the endowment effect.

Previous research had established that the endowment effect begins instantly when people are given an object, but since the instant endowment effect is subject to changes in strength according to objects (Sayman 1996), studying the development of loss aversion under other influential factors like time seemed also promising.

Based on the concept of shifting reference points as a basis of loss aversion, combined with the fact that people eventually adapt to both positive and negative changes in their

material situation, but that this adaptation is gradual rather than instant, Strahilevitz and Loewenstein developed the hypotheses that the longer a person holds possession of an object, the higher the valuation of this object will be, just as the buy-back price of an object will be higher the longer the object had been owned, but decreasing over the time that has elapsed since the loss.

In a series of four experiments where the time of ownership of small goods like mugs and key chains was manipulated across participants before eliciting their WTA and WTP values, they found that past and present ownership have an effect on object valuation.

*“For objects currently in one's possession, we find that valuation increases with duration of ownership. For objects not in one's possession, previous ownership experience increases valuation, and the increase appears to be related to the duration of ownership before loss. In addition, the perceived attractiveness of objects, although not instantly affected by endowment, is found to increase with duration of ownership.”* (p. 276)

The decrease in valuation related to the time that has passed since the loss of an object could not be supported, but this might have been due to the limitations of the experimental settings and remains subject to further research.

### **1.3 Exchange goods**

Van Dijk and Van Knippenberg (1996) examined possible circumstances under which loss aversion can occur for exchange goods. Contrary to previous research, they showed that the endowment effect can be observed if the future exchange rates are uncertain.

As stated by Kahneman (1992), loss aversion should not affect transactions of goods that were held for exchange only, and even less so if the transactions are part of an economic routine. The value of these goods is often given by the amount of money they realize during the sale, so traders should not think in terms of gaining or losing a good, but focus on the net gains and losses that result from the exchange. This was often tested in experiments, typically using money tokens for simplicity.

However in cases of uncertain future exchange values, net gains are no longer computable and may lead to loss aversion.

Results obtained from an experimental market that included buying and selling of bargaining chips with a fixed value as well as tokens with an uncertain value confirmed that *“exchange goods may, like consumption goods, be susceptible to the endowment effect, provided that exchange rates are uncertain.”* (p. 521)



Further the answers from participants in the exchange under uncertainty condition revealed that, when asked to estimate the monetary value of the tokens, buyers and sellers did not expect significantly different values. Thus uncertainty about exchange rates did not influence value estimates, only trading prices.

Van de Ven, Zeelenberg, and van Dijk (2005) suggested that curiosity might be an additional variable that contributes to the endowment effect of exchange goods with uncertain value.

They argued that by selling an exchange good with an uncertain value, owners not only lose the good but also the possibility to know about its future value. This inability to satisfy their curiosity is supposed to be more pronounced for sellers than for buyers because the later don't lose the chance for information but simply don't acquire it. The endowment effect would thus be reinforced by a double loss aversion on the seller's side.

The hypothesis was verified in an experimental scenario that elicited minimum selling and buying prices in different scenarios: The value of the exchange good was either fixed or uncertain, and the information about the eventual value of the good was either given to all participants or to final owners only.

The results confirmed the hypothesis by showing an endowment effect in both scenarios with uncertain value. Also the manipulation of final information led to significantly different WTA values: if the eventual value was available to everyone, sellers were inclined to lower their demands towards the prices asked from sellers in the scenarios with fixed exchange value. Also buyers were not affected significantly by the manipulation of information availability.

Even if curiosity is only one of many factors leading to the endowment effect and was found in their paper primarily in owners of exchange goods with uncertain value, Van de Ven et al. raised the question if the curiosity effect may not be relevant for all goods that include an element of uncertainty. Also, the results suggest that other useful insights may be found on the endowment effect by studying the behaviour of non-owners.

## **1.4 Time**

Hoorens, Remmers, Van de Riet (1999) showed that the good does not need to be a physical one, but that people also value the time they spend for doing chores more highly than

the time someone else spends for doing the same things. ”*Subjects indicated both higher fair wages for oneself than for another person (...) and higher fair wages for selling time than for buying time.*” (p. 383)

### **1.5 Information**

Raban and Rafaeli (2003) ran an experiment in which participants could buy or sell information. They found that “*people value information they own much more than information they do not own*” (p.119), with an endowment effect comparable in magnitude to the one found for market goods, but attribute the disparity to risk aversion rather than to loss aversion.

### **1.6 Money**

Bateman, Kahneman, Munro, Starmer, and Sugden (2002) argued that spending money could be seen as some kind of loss, therefore it should be possible that there also is loss aversion for money. To try to measure the extend of it they designed an experiment eliciting not only the usual valuations of an item in amounts of money, but also the valuations of money in units of a good.

The results are not as conclusive as they had hoped for. Even though an endowment effect is generally found, it is weaker than usual and the hypotheses are not rejected but not supported at a statistically significant level either. So the idea that an endowment effect can exist even for money is conceivable but there certainly remains need of future research.

## **2. Transaction participants**

Another important aspect when talking about the endowment effect is to analyze the agents involved in the transactions and what influences might motivate them to act the way they do.

KKT noted that the endowment effect seems to be primarily a problem for sellers, since they observed a lot of reluctance to sell but little reluctance to buy in their experiments. Yet not all sellers seemed affected, just as not all sellers are necessarily individuals. Endowment effects can for example also be observed for firms and other organizations and

are also discernable in team negotiations. A selection of articles concerned about the important differences of transaction participants will be reported below.

## 2.1 Socio-economic factors

Gächter, Johnson, and Herrmann (2007) did a series of experiments with over 600 customers of a car manufacturer on individual-level loss aversion.

In a first step, they compared measures of loss aversion from the same individuals in a riskless and a risky choice task to see if people were equally loss averse in both conditions. The results showed that the values were positively correlated, participants exhibiting loss aversion under one condition were much more likely to show it in the other situation too.

Further, their experimental design allowed to elicit both WTA and WTP values from the same individuals, which showed a remarkable “*degree of individual heterogeneity in loss aversion.*”(p. 2) Even though the average valuations for WTA/WTP are not significantly different in the within-subject study and in a between-subject study that serves as a control benchmark, there is a “*substantial heterogeneity in riskless individual-level loss aversion*”. “*For 78 percent of individuals it holds that  $1 < WTA/WTP \leq 4$ . Ten percent of individuals have a ratio above 4 and for the rest the ratio is at most 1.*”(both p. 4)

Finally, the paper showed that socio-demographic variables have an influence on individual loss aversion. The pool of participants was not restricted to students as in most other experiments but comprised a wider spectrum of different variables, even though it was not representative for the whole population. Still Gächter et al. were able to discern six economically interesting factors and their impact on loss aversion: gender, age, income, wealth, education and occupation. The results were similar for loss aversion in riskless and risky choice tasks: “*We find no gender effect. Loss aversion increases in age. Higher education decreases loss aversion. Household income and wealth are positively correlated with loss aversion.*“ (p. 16) This is an interesting outcome since education and income are usually positively correlated, and although it seems imaginable that they influence loss aversion in opposite directions, a more thorough analysis could be worthwhile.

## **2.2 Personal experience**

Harbaugh, Krause, and Vesterlund (2001) argued that most experiments designed to examine how the endowment effect changes with experience only examined respondents' adjustments to experimental mechanisms by repetition instead of the effects of real experience with actual market transactions on the endowment effect. According to them, if the endowment effect was a manifestation of a mistake due to peoples' inexperience with market situations, then the endowment effect should decrease as individuals gain experience with trade, that is to say decrease with age. On the other hand, if the endowment effect was explained by reference-dependent preferences, then it would persist even with accumulated general market experience.

To test their theory, they conducted a series of simple experiments where children from kindergarten, third-grade, fifth-grade and undergraduates were endowed with a good they could keep or trade for a different item.

The results show that the initial endowment has an effect on the good the respondents choose. Further, the behaviour across age groups is not significantly different, all ages are equally susceptible to the endowment effect and there is no evidence that the endowment effect decreases with age or general market experience, thus the theory of a manifestation of a mistake is not supported. This seems compatible with the findings of Gächter et al. (2007) even though the results did not show a significant positive influence of age on the endowment effect, what could be due to the fact that the latter had considerably more participants with a substantially higher age difference.

## **2.3 Market experience**

List (2003) also examined the influence of experience on the endowment effect, however not the general market experience people gather with age but rather the experience related to trading frequency in a specific market.

To this purpose he compared responses to a simple choice experiment between two goods from dealers and consumers at a sports memorabilia trading event. Dealers have intense trading frequency in the market, whereas consumers usually trade less often and are rather inexperienced.

The results showed that dealers behaviour converged towards the neoclassical prediction of half the items being traded, revealing no significant endowment effect, whereas consumers' preferences were biased by initial endowment. Moreover, when dividing the

consumers further into an experienced and an inexperienced group according to their trading frequency, the endowment effect for experienced non-dealers was much smaller and not significant.

List also replicated these results in another market and thus showed that the trading frequency can extenuate the endowment effect.

## **2.4 Transaction demand**

Mandel (2002) analyzed if the discrepancy between buying and selling prices could be linked to motivational factors, more specifically to transaction demand, the motivation to complete a transaction.

In a first experiment he manipulated the levels of transaction demand, asking participants to imagine themselves in different scenarios with varying levels of transaction demand for buyer and seller, to see if the magnitude of the endowment effect would be affected by the participant's inclination to buy or sell. When their own transaction demand is high, sellers should be willing to decrease, buyer to increase their offers to the point of reducing and possibly even reversing the endowment effect. The results supported this theory, showing that transaction demand works as a moderator of the endowment effect.

In a second experiment, Mandel tested the effect of inferred transaction demand on buying and selling prices. The hypothesis was that if individuals believed the transaction demand of their trading partners to be high, than they would be likely to increase selling prices and decrease buying prices, thus amplifying the endowment effect. This theory was not supported by the results.

Still the experiments showed the importance of motivational factors among other factors to elucidate the endowment effect. They could even help explain the fact that loss aversion is not found for exchange goods: they are per definition meant to be sold, so transaction demand is relatively high compared to goods held for use where transaction demand is low.

## **2.5 Individual vs. team negotiations**

Galini, Gross, Kella-Egozy, and Sapir (2006) examined the varying impact of judgement biases such as the endowment effect on negotiating teams.

Since the existing literature about group decisions was at odds whether group judgments reduced, enhanced or did not affect the endowment effect at all, Galin et al. conducted their own study on the matter. They compared the results from negotiations between university authorities and students, either individually or as groups. Negotiations were held about the combination of courses students needed to complete to achieve their academic degree. The current curriculum with its combination of advanced courses and more challenging seminars was considered the status quo, adding another seminar would imply a decrease in leisure time and an increase in intellectual effort, a relative loss for the students that could be compensated by a negotiable number of advanced courses students could drop instead and vice-versa. So the central goods were the intangible items time and intellectual effort, while the procedure of the experiment elicited possible differences between individual and group decisions, comparing the answers from 153 individual students to those collected from 31 groups of three students each.

The results showed that there is a gap between WTA and WTP even when trading intangible objects, and that “*the intensity of the Endowment Effect in groups in comparison to individuals is much higher*”. (p. 9)

These findings suggest that it might be more efficient, especially on a practical business level, not to negotiate in groups because teams are not more rational decision makers but rather amplify individual judgment biases.

### **3. Market settings**

#### **3.1 Situational influences**

Franciosi, Kujal, Michelitsch, Smith, and Deng (1996) examined the influence that the wording of experimental designs can have on the results of endowment effect experiments. They argued that the use of emotive terms such as “buying”, “selling” or “choosing” could trigger psychological effects and induce strategic considerations.

They replicated some of KKT’s experiments with small changes in the experimental design that eliminated all references to buying or selling and presented a mere choice task instead, thus neutralizing the psychological aspects.

Their results showed that the discrepancy between WTA and WTP can be decidedly lowered but nevertheless remains significant and still results in undertrading.

### **3.2 Emotional influences**

Lerner, Small, and Loewenstein (2004) tested how specific emotions carried over from prior situations can affect the endowment effect.

They had noticed a lack of studies concerned with the impact of carryover effects of emotions on behaviour with financial consequences. In their study, they combined a manipulation of different emotions (neutral, disgust, sadness) with an ownership manipulation (sell and choice) to see if emotions triggered in the first stage of the experiment would influence valuations in the second.

Participants were seated in front of computers in private cubicles and some were given a highlighter set as trading goods. After watching one of three films that were chosen to make the participants feel either sad, disgusted or just neutral, buying or selling prices for the trading good were elicited. Also, the accuracy of the emotion-induction effects was controlled by an emotion-manipulation check.

The results showed that *“disgust induced by a prior, irrelevant situation carried over to normatively unrelated economic decisions, reducing selling and choice prices and eliminating the endowment effect. Sadness also carried over, reducing selling prices but increasing choice prices - producing a “reverse endowment effect” in which choice prices exceeded selling prices.”* (p. 337)

This shows that emotions can strongly influence trading even if they are not directly related to the transaction.

### **3.3 Influences of property rights**

Heyman, Orhun, and Ariely (2004) examined consumer behaviour in online auctions. Even though second-price auctions are supposed to encourage bidders to state their true valuations of the traded objects, sniping and repeated bidding can often be observed to lead to over-bidding. In their work, Heyman et al. identified two factors that can explain such behaviour, namely a quasi-endowment and an opponent effect.

The opponent effect results from the fact that auctions are perceived as competitive, the final price of an auctioned good is positively related to the number of bids and bidders and reflects a certain satisfaction of winning by outbidding the other participants. On the other hand, *“quasi-endowment is a sense of ownership that bidders develop during an auction, even though they are not the owners in any common or reasonable sense of the word.”* (p. 9)

Previous studies focussing on the relation between ownership and valuation of an object had known only three conditions: current ownership, past ownership or none at all. Since according to the idea of loss aversion, not acquiring a good is less painful than giving one up, because individuals develop some sort of attachment to goods in their possession, the allocation of the perceived rights of a good seems important. Whereas in all previous experimental studies the physical or legal possession of the traded good was unambiguous, online auctions abide by different rules.

Heyman et al. argued that high bidders might feel like they were already owners during the time when they lead an auction, thus already starting to adjust their reference point and changing their valuation of the object before even having any rights to the good. They “*call this attachment to an un-owned item the “quasi-endowment” effect*“ (p. 10)

In two studies, a survey-based experiment and a real-money laboratory auction, they could verify the existence of both effects. Furthermore, the results suggested that the two factors were additive and together made bidders change their valuations of a good in the course of its auction.

Thus, Heyman, Orhun, and Ariely demonstrated that at least in an auction scenario, perceived competition increased the endowment effect and actual possession was not even necessary to influence people’s valuations of a good and to cause loss aversion.

### **3.4 Competition**

Shahrabani, Benzion, and Shavit (2008) wondered about the influence of competition on the values of WTA and WTP for different types of goods. They compared values obtained in a second-price auction scenario and a BDM procedure for physical goods and lotteries. Even though the mechanisms should be theoretically equivalent, the empirically obtained values diverged.

In a BDM procedure, there is no competition among the participants, whereas in a second-price auction, the bidders compete against each other, and often derive utility from winning. Shahrabani, Benzion, and Shavit analyzed several psychological effects like regret, disappointment, ownership or asymmetry, their possible interaction with a competitive environment and their influence on individuals’ bidding patterns according to procedure and traded good.



Their results showed that WTP was significantly higher, WTA significantly lower when using a competitive elicitation method for assets that were not highly risky. Likewise the values for the WTA-WTP gap differed “*as a result of the interaction between the competitiveness effect and other psychological effects on bidding patterns*”. (p. 153)

Thus competition had an influence on the valuation of goods, even though the magnitude of the effect depended on the product type and various other factors.

### **III. Psychological aspects**

#### **1. Empathy and misperception**

Successful social interaction is based on accurate perspective taking, which is not easy and if failed can lead to misunderstandings and conflicts. Van Boven, Dunning, and Loewenstein (2000) explored this ability in an important everyday interaction. In five studies they examined the level of empathy between owners and buyers, the accuracy of their perspective taking and their perceptions of the endowment effect.

In the first two experiments that were based on the classical design by Kahnemann, Knetsch, and Thaler, buyers were additionally asked to estimate the reservation price of the sellers and vice versa.

The results showed the expected endowment effect but also demonstrated that owners and buyers are heavily biased by their subjective experience. They were unable to correctly envisage the responses of participants in the other role, overestimating the similarity between their own and the others' valuations of a good: buyers underestimated the owners' selling prices and owners overestimated the buyers' reservation prices. There was no difference whether the participants had learned about the endowment effect or not, neither did a lack of motivation or the order of the statements have any influence.

In a real market setting, an unbiased perception of the endowment effect and the accurate assessment of other peoples' valuations of a good can be crucial to making a profit, which is especially important for agents. So the next experiment was designed to investigate if this failure to estimate the correct valuations will lead to costly behaviour.

Participants were divided into mug owners and buyers' agents. The later were given a \$10 budget to make an offer for a mug, and if the price was acceptable to an owner, buy the mug and keep whatever was left as their profit.

The hypothesis was that since agents are not owners themselves, they would fail to estimate the owners' true value of the mug, thus making poor offers that would be rejected. The results confirmed this hypothesis; the agents were not very successful as only 19% of their offers were accepted, the rest was too low. This demonstrated that egocentric empathy gaps can lead to costly decisions.

Having shown that people cannot accurately estimate how valuable a good is for someone else, and that this neglect of the endowment effect can lead to unprofitable behaviour, the next questions addressed by the last two experiments of the article were whether people would at least draw the right conclusions after they were informed about the real valuations of the other party, how the empathy gaps could be at least partially explained and if the ability to empathize could be manipulated.

Learning from mistakes is important to enhance economic performance, but can only take place if the right conclusions are drawn after a failed transaction. So resolving the question what participants would consider to be the underlying cause of the transaction failure is essential to see if correct learning can be achieved.

By asking participants who failed to complete a transaction to rate the likeliness of several possible explanations, Van Boven et al. discovered that people blamed personal dispositions like greed for the disparity between WTA and WTP rather than identifying the endowment effect. This means the failure to empathize with someone else's subjective experience leads not only to unwise decisions but also to misinterpretations and wrong learning.

As to the question how the empathy gaps could be explained, Van Boven et al. found that an underlying reason was that people could not even imagine how much they would value the good themselves if they were in the other role.

By giving half the buyers' agents their own mug and thus letting them experience ownership, their ability to anticipate owners' behaviour was increased significantly, their estimation of the owners' selling prices much more accurate and the empathy gaps reduced considerably.

Thus people's inaptitude to estimate the behaviour of their trading partner is a result from their incapacity to introspect their own behaviour should they be in the other position.

## **2. Misprediction**

Based on the theory of non-reversible indifference curves, Loewenstein and Adler (1995) considered the endowment effect as a type of endogenous taste-change and investigated whether people were able to accurately predict this change in their own tastes. They argued that economic agents should be able to “*predict without bias the effect of their current behaviour on their own future tastes*” (p. 929) but worried that the endowment effect could lead them to make systematic mispredictions.

In their experiment they asked participants to predict their reservation price for an object they did not yet own and compared the values to actual selling prices. The results showed that even if prior desire to possess the good was low, people became attached to it with ownership without being aware of this development. So participants were unaware how much their own tastes would be influenced by the endowment effect and could not accurately predict its’ impact.

This means people cannot predict the impact of the endowment effect because they cannot predict their own tastes in the future.

## **IV. Application**

Endowment effect and loss aversion are robust, important phenomena that occur in everyday market situations and should therefore be considered, not least because of their sheer magnitude.

As the articles discussed above have shown, people do not always have a clear perception of their own or someone else’s endowment effect and they cannot predict that they will become attached to something they own in the future since they generally don’t know what they want before they have it. This makes a practical application of the endowment effect the perfect tool to be used in marketing, even more so since there are a lot of ways to manipulate loss aversion and it can be applied for almost anything that can be owned.

While companies can use knowledge about the endowment effect to design marketing strategies to maximize their sales, consumers can also benefit from awareness and understanding of the phenomenon in order to identify possible manipulations and to optimize their market behaviour, for instance when facing an auction. Agents finally need to consider the gap between valuations as a possible cause of disagreement between buyers and sellers

they need to overcome, and will be well advised to try hard to keep the endowment effect in mind when handling offers in order to maximize their profits.

Some ideas how to translate and use the knowledge about the endowment effect profitably shall be discussed below.

### **1. Test-ownership**

A good way for a company to increase the consumers' willingness to pay is to give them one of the products for trial use. This way, the potential buyer has not only the possibility to see for himself all the advantages of the product, but can already make experiences with the product and develop a sense of ownership, adjust the status quo and become averse to the idea of losing the commodity again. Of course such a marketing strategy can only apply for high-priced consumer goods, that allow sellers to keep track with their possessions easily and that can generate a certain profit worth the effort.

Also this chance to use the product before buying it can be especially worthwhile for products that require a collective decision of more than one group member, a whole family deciding to buy a new car for example. When they are given a nice replacement vehicle during their own car's repair, this gives every family member a chance to enjoy the feeling of almost owning it, so as a function the willingness to spend more money on the next car the family buys will probably increase.

Another common example these days is to award the use of a motor-vehicle for a weekend as the price of a lottery. Even though the time of the ownership-like state is limited, the disposition to buy the good at a later time will increase.

### **2. Default option**

The selection of a product is affected by the status quo bias, and the default option is the equivalent of the reference point. It is more often chosen than not, even if it does not fit the consumers wants or needs best, because all derivations from the status quo involve effort and because especially when downsizing an offer, this elimination of unwanted features is still seen as a loss and therefore avoided. This phenomenon has been shown for a wide range of products, from expensive ones such as cars or insurances to non-durable goods like food.

Therefore any company needs to be considerate when fixing the default features of a product and the strategy to market add-ons, while consumers who are aware of the

endowment effect could be able to make more rational choices when pondering what they really want instead of just opting for default options.

### **3. Time span**

Another aspect of the endowment effect to be kept in mind is that it occurs instantly once the good is owned, and does not weaken over time. And since consumers cannot anticipate that they will get attached to a good simply by owning it, offering products with generous rights to exchange and an extended time frame for cash-back options is a way of facilitating the purchase that is unlikely to be exploited once the product is part of the endowment.

### **4. Source dependence**

Since Loewenstein and Issacharoff (1994) have shown that the source of the endowment has an influence on the valuation of a product, manipulating the origin of the endowment can be profitable. Consumers could be more willing to buy a product if they have the impression that they gained the chance to buy an otherwise rare good, or that they won some part of it, or that they had taken part in a competition even if it is a fake one. Also inviting consumers to forward a second item to their friends, and thus creating a chain of purchase could be a way to use source dependence by arguing that people would value a product more if it was a gift.

### **5. Emotion**

Designing the point of sales in a way that puts costumers in an emotional state that is favourable to a purchase is not a new marketing idea but has on the contrary evolved into an art of its own by now. The knowledge that carry-over effects of emotions can in fact influence the reservation price of a customer can thus merely add a few more ideas to consider to this science, probably rather in situations that involve some bargaining. Also the profit margins probably need to be high enough to justify such measures, whereas for everyday consumer goods it should at least be made sure that consumers are not in an adverse emotional state.

## **6. Status quo**

The status quo is an important influence to be considered not only in default options but also in pricing decisions or negotiations about new terms of agreement. Even small deviations from the reference point might be seen as a big deal, whereas not allowing for much improvement might not be noticed so much. This is to say that this should be accounted for in negotiation techniques to facilitate compromises that are not deemed unfair or a rise in prices that seems uncalled-for.

## **7. Other areas of application**

Finally it is noteworthy that the endowment effect and loss aversion do not only apply for buying decisions. Another area that is affected by the difference in valuation of a good before or after it is part of someone's endowment is for example the jurisdiction. Many legal decisions have retroactive consequences, therefore the fact that it is not the same if one failed to acquire something or if it has to be given up should be accounted for. One example of practical application in legal use is the division of goods in the course of a divorce, where usually the party who brought the good into the union is granted it after the separation.

## **V. Future research**

Even though the endowment effect was only uncovered a few decades ago, the literature is already fairly abundant and comprises a lot of different aspects of the phenomenon. But the subject is far from being totally explored, and new articles are published every year, so the available knowledge is rapidly growing further.

Still because the endowment effect is interlinked with so many other economically relevant theories as well as everyday decisions and behaviour, there remain a multitude of unclear and unexplored thoughts. A few open questions that seem worth further investigations shall be mentioned hereafter.

### **1. Multiple units of a good**

Since most objects that are traded are not unique but mass-marketed products, it is not unlikely to assume that either sellers or buyers have another example of the good to be traded.

Therefore the question how a second, third or tenth item affects the endowment effect is not only interesting, but can be quite relevant for everyday life and economics.

Morewedge et al. (2009) have shown that buyers who already own one example of a good are willing to pay more for a second identical item, therefore trade occurs at a higher price level and the endowment effect is minimized. Ownership of one exemplar thus is enough to influence WTA and WTP.

But how many units of a good are necessary to influence sellers' loss aversion? Do owners still suffer from loss aversion even if they have more than one item of sorts, so they still get to keep at least one for themselves after the transaction? Is there a maximum number of identical objects for which there is loss aversion, and after that any additional item can be traded with diminishing endowment effect? Research in this direction should also consider that some objects could be more valuable in pairs or bigger numbers.

## **2. Multiple products**

Most experiments only focus on eliciting an endowment effect for one product per participant under varying circumstances, mainly for simplicity reasons. But in everyday life we are frequently confronted with several products and trading decisions at the same time. It could therefore be a relevant question to investigate whether the endowment effect is the same in magnitude, immediacy and persistence for every object in one's possession, especially if the endowment is recent or if there are already some close substitutes among the possessions.

Would a respondent show an equal endowment effect for every one of several items he got endowed with in the course of an experiment, or would there be a discernable primacy or recency effect, especially if the participant did not get a chance to use the objects he got?

## **3. Time**

Is there a possibility to draw a curve for the evolution of the Endowment Effect as a function of elapsed time? We have seen that the Endowment Effect occurs instantly upon endowment, and sometimes even beforehand, but how long before it has reached its maximum? And especially for goods we do not really use anymore but cannot part with, does the endowment effect ever wear off, or does it lay dormant until the time we think about parting with the object? This is probably a question that will be difficult to elicit experimentally, but could be relevant for everyday trading decisions.

#### **4. Non-owner manipulations**

Van de Ven, Zeelenberg, and van Dijk (2005) noticed that the discrepancy between participants' valuations of a good and its actual objective value was much higher for non-owners than for owners, and not only in their own experiments but also in other examples from the literature. They thus suggest that contrary to the usual assumption that the endowment effect is primarily due to sellers' overvaluation, "*the possibility that the endowment effect may be attributed to the Buyers' behavior may provide new insights in the theory of the endowment effect. A further investigation of the behavior and motives of the Buyers may produce new insights into the causes and consequences of the endowment effect.*" (p. 467)

This idea is in opposition to the results from Kahneman, Knetsch, and Thaler (1990) that decomposed the gap between WTA and WTP into reluctance to buy and reluctance to sell as components of undertrading by comparison to the control group with the choice between mug and money. They found that the relative weight of reluctance to part with entitlements was significantly more important, so the endowment effect really can be primarily attributed to the sellers. This does not however rule out the possibility that buyers' behaviour also contributes to the endowment effect.

So the question remains why buyers' valuations of the goods tend to be so low. Could it be that the products used in the experimental settings, though generally worthwhile, are just not really desired under those circumstances? If so, would the endowment effect be different in a real market, when buyers seek to buy products they want to acquire for themselves? A more profound analysis of the behaviour of non-owners could in fact lead to new insights and a critical review of existing theories.

#### **5. Product categories**

Another question that could have an influence on the practical application of the endowment effect theory is whether or not the increased valuation of a good in ones possession can be extended to the whole product category. If a person gets endowed with a mug, would the change in preference for this mug transfer to another mug as well, and mugs in general? Or could the increase in valuation of the owned item maybe also be transferred to the label, the company that produced it, and their other products?



This might of course be linked to other factors like the ownership source and history as well, but eventually could be a thought worth considering when building and reinforcing loyalty.

## **6. Undesired goods**

Loewenstein and Adler (1995) have shown that the endowment effect leads to considerable changes in people's tastes they are not aware of beforehand. Given this power to influence tastes, could the simple ownership also change our tastes for a product we explicitly did not like before and make us like it simply because we own it? Is there an endowment effect and loss aversion for products we do not like?

This could be a relevant question for the application in the marketing mix, especially if companies give away a first free item of a good that then is more valuable in numbers and thus achieve a higher price for the consecutive pieces even though the consumers might not have had any intention to buy the product in the first place.

An experimental treatment to test this theory could be to first give respondents a hypothetical choice between two different goods, and then assign one of the two goods randomly to half the participants and conduct a classical endowment effect eliciting experiment for each product. Thus by comparing the results of the different groups, more specifically the anticipated endowment effect for the desired good and the potential endowment effect for the initially undesired item, any difference in the magnitude of the gap between WTA and WTP would reflect the effect of endowment on tastes for unwanted goods.

## **7. Other influences**

There are a lot of other conceivable factors, psychological or circumstantial, that could be able to influence our valuation of a good and therefore our willingness to trade it, and the reservation price.

The list of plausible influences can never be exclusive, but could comprise psychological correlates such as a sense of morality, fairness and justice reasoning, the cultural background and values, sympathy towards the exchange partner and evaluation of his financial situation, preconceived plans made about the desired good or its anticipation, as well as circumstantial factors such as spontaneity of the trade, time allowed for the decision, total amount of time invested in the whole bargain, experiences with the exchange partner or

potential pressure from agents or peers in case of a group decision. Even though not all the factors will have a significant influence on their own, their combination could account for a substantial amount of undertrading.

## **Conclusion**

The possibilities for future research seem as unlimited as the endowment effects influences and implications, and the ideas above are only a few possible directions for further investigations that seem promising. To fully understand such a complex phenomenon as the endowment effect and all its causes and consequences a lot more than that will be necessary. Fortunately economists worldwide have understood the importance of the effect that has impacts not only on fundamental economic theories but also unconsciously manifests in our everyday life, so that a lot of research is currently done and new articles are constantly being released all over the world. The present work is therefore only a survey of the existing literature and does not claim to be either complete or concluding.

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## German summary

Alles hat seinen Preis. Nur entspricht dieser Preis nicht immer dem Wert den wir einer Sache beimessen. Die gegenwärtige Arbeit beschäftigt sich mit dem Phänomen, dass die Summe die wir bereit sind für etwas auszugeben ("willingness to pay", WTP) und die Höhe der Entgeltung die wir für die Abgabe derselben Sache verlangen sobald sie uns gehört ("willingness to accept", WTA) oft merklich auseinander liegen. Ein Überblick über den aktuellen Stand der Literatur dient als ein Erklärungsversuch dieser oft deutlichen Diskrepanz.

Ende der 70er Jahre haben erste Studien, die den Geldwert von öffentlichen Gütern erheben sollten gezeigt, dass die Angaben der befragten Personen deutliche Unterschiede aufwiesen, je nachdem wie die Fragen zur Bewertung formuliert wurden. Die hypothetischen Summen die die befragten Personen wenigstens bereit waren als Entschädigung für eine Verschlechterung der Ausgangssituation zu akzeptieren lagen weit über den hypothetischen Summen die sie bereit gewesen wären aufzubringen um eine Verbesserung der Ausgangslage zu bewirken. Dieser Widerspruch führte zu einer ganzen Reihe verschiedenster Studien die sich mit der Frage beschäftigten: Wie hoch ist der wahrgenommene Wert einer Sache, und wieso steht dieser mit den Besitzverhältnissen in Zusammenhang?

In der Literatur zeigt sich, dass hypothetische Werte generell höher sind als tatsächlich gebotene Summen in realen Experimenten und dass man außerdem stets darauf achten sollte dass die Erhebungsmethode den Teilnehmern auch den Anreiz bietet, ihren tatsächlichen Reservationspreis zu nennen. Die bekannteste und bewährteste Methode dazu wurde von Becker, DeGroot und Marschak (1964) beschrieben. Gleichgültig jedoch mit welcher Methode die Werte für WTA und WTP letztendlich erhoben wurden, die Diskrepanz zwischen den beiden Werten bleibt bestehen.

Es wurden mehrere Theorien als Erklärungsversuch hierfür entwickelt, die mittlerweile Geläufigste und universell Anerkannte ist die Theorie des Besitzumseffektes, erstmals definiert von Thaler (1980) als die Wertsteigerung eines Gutes für eine Person wenn es in den Besitz der Person eintritt. Diese Theorie wurde ergänzend überarbeitet in dem Artikel von Kahneman, Knetsch und Thaler (1990) der als Grundlage für die Theorie des Besitzumseffektes gilt. In dem Artikel werden vor allem alternative Erklärungsversuche widerlegt und durch eine Reihe verschiedener Experimente wird immer wieder bestätigt, dass der Besitzumseffekt kein Fehler sondern ein nachhaltiger Beweis des Einflusses von Referenzpunkten auf unsere Präferenzen ist. Der Verkauf eines Gutes aus unserem Besitz wird als Verlust desselben empfunden, der Erwerb eines Gutes als Gewinn. Da die negativen

Konsequenzen eines Verlustes jedoch deutlicher wahrgenommen werden als die positiven Folgen eines Gewinnes verlangt der Verkäufer eine zu hohe Entschädigung für seine Verlustaversion, die der Käufer oftmals nicht bereit ist zu zahlen.

Eine andere Theorie zur Erklärung der Diskrepanz zwischen WTA und WTP ist unter anderem die von Hanemann (1991) entwickelte Theorie der Substituierbarkeit, die besagt dass je leichter ein Gut durch ein anderes, gleichwertiges, gehandeltes Gut ersetzt werden kann, desto weniger werden die Werte für Kauf- und Verkaufspreis auseinander liegen. Hat ein Gut jedoch keine oder nur unzulängliche Substitute, wie zum Beispiel die eigene Gesundheit, so kann der Unterschied zwischen den beiden Werten ins Unendliche gehen. Weitere jedoch nicht so bedeutende Theorien beschäftigen sich mit asymmetrischer Informationsverarbeitung, Ungewißheit oder ungenauen und intrinsischen Werten.

Der zweite Teil der Arbeit beschäftigt sich mit den Einflußfaktoren auf den Besitztumseffekt. Verschiedene Forschungsarbeiten haben gezeigt dass, wie Kahneman et Al. in ihrem Artikel schon vorweggenommen haben, der Besitztumseffekt nicht ausschließlich bei materiellen Konsumgütern auftritt, sondern ebenfalls für Handelsgüter, Zeit, Geld oder Informationen nachweisbar ist. Weiters wurde durch Forschungsergebnisse bestätigt dass auch sozioökonomische Faktoren wie Alter, Bildung und Einkommen, sowie persönliche Erfahrungen und Erfahrung mit dem Markt Einfluss auf die Höhe des Besitztumseffektes haben, und dass sich die Stimmung der Handelspartner auf die Preise auswirken kann. Von psychologischer Seite ist bemerkenswert dass, obwohl der Besitztumseffekt sich bei allen erdenklichen Käufen und Verkäufen die wir tätigen manifestiert, wir uns seiner dennoch nicht bewußt sind. Dadurch können wir auch weder unseren Eigenen noch den unseres Handelspartners antizipieren oder in Angeboten berücksichtigen. Bei gescheiterten Transaktionen wird der Besitztumseffekt außerdem nicht als mögliche Ursache erkannt, so dass kein produktiver Lerneffekt für die Zukunft stattfinden kann.

Es bietet sich eine Vielzahl von Möglichkeiten zur Berücksichtigung des Besitztumseffektes in der Unternehmenspraxis. So sollten zum Beispiel bei der Erstellung des Marketing-Mix die standardisierten Produkteigenschaften und die Fristen für Rückgaberechte, bei Preisänderungen die Sensibilität für den Status Quo bedacht werden und eine Leihgabe für beschränkte Zeit könnte sich positiv auf die Zahlungsbereitschaft auswirken.

Weiterführende Forschungsarbeiten scheinen vor allem bei Problemstellungen mit mehreren Gütern vielversprechend, aber auch in Bezug auf Käuferverhalten und psychologische Zusammenhänge, da der Besitztumseffekt noch lange nicht gänzlich erforscht ist.



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Führerschein B  
Erste Hilfe Kurs  
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