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THE ENDOWMENT EFFECT

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Abstract

This chapter reviews the literature on the endowment effect that challenges the validity of using neoclassical economic theory to evaluate legal issues. While a consensus does not yet exist, much of the research suggests that the endowment effect phenomena does not offer as much of a challenge to neoclassical economic theory as was once thought.

JEL classification: D0, D6

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1. Introduction

This essay discusses the issue of whether the results of recent experimental research on consumer behavior undermines the conclusions of neoclassical economics enough to render arguments based on that theory incorrect. This entry is not a thorough review of the rich experimental economics literature (see Kahneman, Knetsch and Thaler, 1991) for summary of much of this research and Conlisk, 1996, for a statement of the case for using the notion of bounded rationality in economics). Instead, we focus on the possibility that the phenomena known as the 'endowment effect' may provide evidence that questions the applicability of some of the basic assumptions made by economists about consumer rationality. After describing the endowment effect and some of the theories used to take account of this effect, we recount how some law and economics scholars use the endowment effect in their analyses.

2. The Endowment Effect

The endowment effect arises when consumer's willingness to accept (WTA) for a good is greater than their willingness to pay (WTP) for it. While economists have long recognized that an income effect may make cause the WTA to be

greater than the WTP, they accepted the conclusion by Willig (1976) that these differences should be small. While psychologists had noted a difference between the WTP and WTA as early as the 1960s (see Coombs, Bezembinder, and Goode, 1967, and Slovic and Lichtenstein, 1968), economists only began to focus on the issue after observing this difference when using surveys to measure the value of environmental projects. When the economists asked consumers about both their WTP and their WTA in these surveys, they found that the reported WTA is much larger than the reported WTP - much larger than Willig's predictions suggest. Using students as subjects and goods such as coffee mugs, candy bars and trees as the commodities, experimental economists have been able to find evidence that their subjects often have a WTA that is substantially greater than their WTP (see, for example, Bishop, Heberlein and Kealy, 1983; Knetsch, 1984; Knetsch and Borcharding, 1979; Knetsch and Sinden, 1984; Brookshire and Coursey, 1987; Samuelson and Zeckhauser, 1988; Quattrone and Tversky, 1988; Donohue, 1989; Harless, 1989; Knetsch, 1989; Kahneman, Knetsch and Thaler, 1990; Ortona and Scacciati, 1992; Boyce et al., 1992; Shogren et al., 1994; Loewenstein and Adler, 1995; Sileo, 1995; Pratt and Zeckhauser, 1996, for evidence about, explanations of and implications of the endowment effect; Hoffman and Spitzer, 1993, offer an excellent summary of the results of both the empirical and theoretical research).

3. Format of the Experiments

The formats used these experiments follow a regular pattern. The experimental researchers randomly split the subjects into two groups. They give each of the members of one group some object - say a coffee mug or a candy bar - and then offer to buy the object back from them using some truth-revealing mechanism. The researchers then give the members of the other group money and then allow the subjects to purchase the object offered to the first group, again using a truth-revealing mechanism. (There are a large number of variations on the structure of the various experiments; see these studies or Hoffman and Spitzer, 1993, for more details of the different experiments.) The researchers report potentially conflicting evidence indicating (1) that the endowment effect is persistent and substantive, (2) that the endowment effect, while evident initially, tends to disappear over time and (3) that there is no difference in the WTP and the WTA.

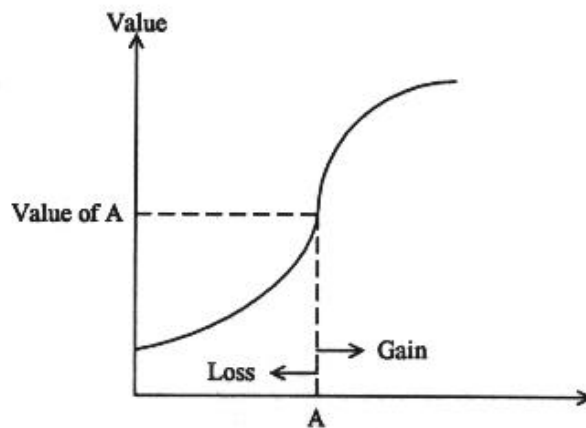
4. Preference for the Status Quo

Studies that find evidence of the endowment effect suggest that consumers may have a greater preference for the status quo than what the assumption of rationality implies. Several criticisms have been leveled at the studies that find evidence of an endowment effect. For instance, some authors reject the use of hypothetical questions and experiments involving small amounts of money as revealing little about a subject's actual behavior in the market place (see Hoffman and Spitzer, 1993, p. 69, n. 23). Other authors question whether the subjects really understand what they are being asked and whether the effect will remain after repeated experiments. Unfortunately, the evidence on these points is mixed; while some studies find evidence that the WTP is equal to the WTA in experiments involving simple securities (see Kahneman, Knetsch and Thaler, 1990, pp. 1329-1330; Harless, 1989), other studies reach the opposite conclusion for simple securities (see, for instance, Knez, Smith and Williams, 1985) and for more complicated securities involving risk (see, for instance, McClelland and Schulze, 1991).

5. Prospect Theory

The experimental evidence has generated several attempts to provide a theoretical explanation of the endowment effect. We briefly review two contrasting explanations here, referring the reader to Hoffman and Spitzer (1993, pp. 85-96), Radin (1982), Heiner (1983) and Thaler (1980) for examples of and a fuller discussion of the theoretical literature generated by the endowment effect. The first of these explanations - usually identified as a version of 'prospect theory' - assumes that individuals have a preference for the status quo. Originally, Kahneman and Tversky (1979) suggested this model to describe human behavior in risky circumstances. (Also, see Tversky and Kahneman, 1991; Tversky and Wakker, 1995.) Later, Thaler (1980) and Kahneman, Knetsch and Thaler (1990) use elements from prospect theory to explain the endowment effect. Kahneman and Tversky (1979) assume that consumers have a value function that is positively sloped, concave for gains and convex for losses, implying that individuals are risk-averse with respect to gains and risk-loving with respect to losses. Figure 1 illustrates the value function suggested by Kahneman and Tversky (1979).

Figure 1
The Value Function Proposed in Prospect Theory



6. Prospect Theory and the Endowment Effect

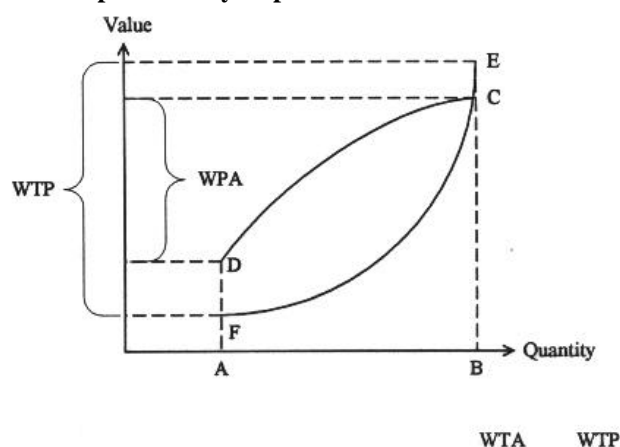
Figure 2 illustrates how prospect theory might explain the endowment effect. We start with an individual owning quantity A of some good and ask how much he would be willing to pay to acquire the larger quantity B . Thus, the vertical distance between points D and C represents the WTP of this individual to acquire $(B - A)$ units of the good. Now we compare this situation with the case where the individual already owns B units of the goods and is offered the opportunity to sell $(B - A)$ units of the good. Since the individual actually owns B units of the good, we begin at point E (shown in this case to be valued higher than when the individual did not actually own the good, though it is not necessarily of higher value) and move to point F . Thus, the vertical distance between E and F is the individual's WTA, which in this case is greater than his WTP. The key point is that potential losses have a greater impact on the individual's value than do potential gains.

7. A Neoclassical Explanation for the Endowment Effect

The second explanation of the endowment effect, developed by Hanemann (1991), implies that we do not need to scrap neoclassical economic theory to generate large gaps between an individual's WTP and his WTA. Figure 3, which illustrates Hanemann's contribution, shows two indifference curves for

some good X and wealth. Consider an individual's WTP to move from point A where he has X_0 of good X to point B where he has the same wealth and X_1 of good X.

Figure 2
A Prospect Theory Explanation of the Endowment Effect



Since the individual is indifferent between being at point A and point C, the vertical distance between points B and C measures how much this individual is willing to pay to move to point B. Now consider how much this individual is willing to accept to move from point B to point A. Since the individual is indifferent between being at points B and D, the vertical distance between A and D measures his willingness to accept the move from point B to A. Figure 3 shows the case where the individual's WTA is greater than his WTP. As Hanemann (1991) proves, the size of this difference depends on the elasticity of substitution of the indifference curves - the more inelastic the indifference curves are, the larger is the spread between the WTA and the WTP. Put another way, the less substitutable a good is with money, the larger will be the endowment effect. More importantly, if Hanemann's hypothesis is correct, the endowment effect observed by experimental economists does not imply that the neoclassical analysis of welfare economics is fatally flawed. Shogren et al. (1994) report the results of experiments that lend support to Hanemann's hypothesis.

8. Reception of the Endowment Effect in Law and Economics Scholarship

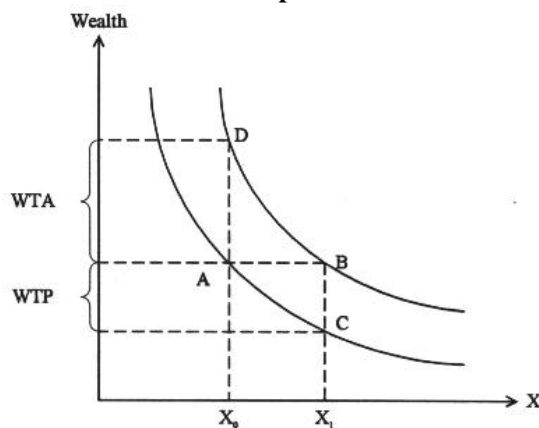
Scholars in law and economics have given the endowment effect a mixed reception. Some authors such as Knetsch and Borchering (1979), Hovenkamp (1991), Hoffman and Spitzer (1993) and Fischel (1995) accept the endowment effect as a real phenomena with serious implications for the study of legal issues while others such as Curran and Rubin (1995), while analyzing the implications of the endowment effect, seem to doubt its existence. A majority of legal scholars ignore the existence of an endowment effect.

9. The Hovenkamp Critique

Hovenkamp (1991) claims that the endowment effect has very significant implications for the study of law and economics because it potentially undermines the validity of traditional results from welfare economics. As Hovenkamp argues, the equality of WTP and WTA is central to the construction

of demand curves, the estimation of consumers' surplus, the use of cost-benefits analyses and the use of indifference curves. He carries the argument further when he suggests that, when the endowment effect exists, 'the person has no indifference curve'. (Hovenkamp, 1991, p. 226). Thus, he concludes that an endowment effect that is 'substantial and ubiquitous could make [the tools of welfare economics] virtually useless'. (Hovenkamp, 1991, p. 227).

Figure 3
Hanemann's Explanation of the Endowment Effect



10. On Using WTP or WTA Measures of Value

Having rejected the traditional tools of neoclassical welfare analysis as virtually useless, Hovenkamp tackles the problem of whether courts should continue use the market price, which is equal to the WTP, as a measure of the value of property in cases involving eminent domain, environmental regulation and torts. While Hovenkamp's reasoning differs from that used in earlier studies by Knetsch and Sinden (1984) and Kennedy (1981), he reaches the similar conclusion that courts should use WTA as a measure of value. Moreover, Hovenkamp argues that in the presence of a large endowment effect, 'the wealth-maximizing state may find it appropriate to intervene on behalf of the poor more often than under traditional efficiency models'. Hovenkamp (1991, p. 228)

11. The Superiority of the WTA Measure of Value

It is useful to review Hovenkamp's reasoning. Consider an entitlement in a world with significant differences in individuals' WTP and WTA. There is an individual who has the largest WTA if he owns the entitlement - say individual A. Additionally, there is an individual - say individual P - who has the largest WTP for this entitlement. In a competitive world with transacting being costless, ownership of the entitlement will end up with individual P unless it originally belongs to some individual with a WTA that is higher than the WTP of individual P. Hovenkamp argues that, while this outcome is Pareto optimal, there exist other arrangements where the total wealth of society is higher. In particular, social wealth is maximized if entitlements begin in the hands of those who have the largest WTA - person A in our example. Thus, Hovenkamp concludes that entitlements should be assigned to those with the highest WTA.

12. The WTA Measure of Value and the Distribution of Income

Hovenkamp connects his analysis to income redistribution by arguing that, while there are no systematic differences in individuals' WTA associated with income differences, there is good reason to believe that an individual's WTP is a positive function of income. Moreover, Hovenkamp argues that the WTA-to-WTP ratio is much higher for the poor than it is for the rich, a point that Curran and Rubin (1995) implicitly do not accept in their criticism of Hovenkamp. By Hovenkamp's logic, transferring endowments to the poor from the rich will increase the total amount of social value.

13. Overcoming Practical Problems

One of the practical difficulties of using WTA as a measure of value when the WTA and WTP measures differ is the fact that no one ever observes WTA. Clearly, market prices are an accurate measure of the WTP of the purchaser and the WTA of the seller; they provide little information about the buyer's WTA once he is the owner. This measurement problem is especially important in thin markets where there are few substitutes for the good or where a good cannot be bought and sold. A piece of land that has sentimental value for the current owner is an example of a good with few substitutes while environmental goods like clear air and water are examples of goods that have no recognizable markets. Hovenkamp (1991, pp. 238-243) recognizes this difficulty with using WTA as a measure of value. He suggests, however, the fact that economic theory offers policymakers little aid in measuring WTA does not mean that they cannot use the concept. He suggests that policymakers should turn to psychologists and sociologists for aid in measuring WTA. Researchers in these fields, Hovenkamp contends, have many tools - surveys, questionnaires, interviews and tests - that would help in the measurement of WTA. Gathering this information is costly. When costs become prohibitive, Hovenkamp suggests that policymakers resort to generalizations. As an example of such a generalization, Hovenkamp (1991, p. 243) suggests the fact that biological organisms have 'a common set of survival needs and perhaps a common set of minimal needs for social productivity' implies that policymakers can assume that goods such as these have a WTA that is systematically greater than their WTP. Economists aware of the problems of rent-seeking common to governments - and well-documented in the public choice literature - probably will not share Hovenkamp's faith in the ability of policymakers to correctly identify what goods belong to the 'common set of survival needs'.

14. A Logical Problem

The fact that Hovenkamp rejects neoclassical economic theory presents him with a logical problem - what, if any, parts of the economic model can he use in his analysis? Clearly, Hovenkamp offers a theory that purports to differentiate among the various Pareto optimal points. However, Hovenkamp (1991, p. 230) does not explain what he means by 'Pareto optimality' in a world where indifference curves do not exist. Hovenkamp does not resolve this logical problem by constructing a completely new model of human behavior to replace the neoclassical economic model. Instead, he assumes that consumers' WTA is larger than their WTP and then borrows concepts from the neoclassical model when he needs them. While Curran and Rubin (1995) temper their

analysis with expressions of concern, they also mix the results of neoclassical welfare economics in their criticism of Hovenkamp (for which Fischel, 1995, p. 200, criticizes them).

15. A Constitutional Solution to the WTP/WTA Disparity

Fischel attempts to skirt this problem by substituting 'constitutionalism' for welfare economics. Fischel argues that the participants at the Federal and the many state constitutional conventions knew about the endowment effect when they specified that the market price (WTP) and not the WTA was to be the measure of just compensation for eminent domain cases. Fischel argues that the participants of these constitutional conventions understood that using WTP as a measure of value would increase the ability of the government to exercise its eminent domain powers. Fischel suggests that one reason these individuals consistently choose to use the WTP measure of value is that they understood that using WTA as a measure of value would deter the development of the nation's infrastructure that is so important for economic growth. Moreover, he suggests that individuals may have an endowment effect when it comes to their earnings. Fischel posits that in resolving how to measure 'just' compensation in eminent domain constitution designers considered both (1) the public gain to society from the taking versus the private loss to the property owner and (2) the impact of the endowment effect on the property owner (of his land) and on the taxpayer (on his earnings). The resolution was to use WTP as a measure of value. Thus, since this resolution of the issue was by the conscience choice of the members of constitutional conventions, Fischel concludes that 'the offer/ask disparity may undermine welfare economics less than is usually supposed'. (Fischel, 1995, p. 187)

16. The Policymakers' Problem

Many may not find Fischel's assurances that the members of the various constitutional conventions considered and correctly solved the WTP/WTA disparity issue satisfactorily. The dilemma facing society is that in deciding whether to pursue a project, policymakers need to determine if the project is potentially Pareto improving. To make this determination, they have to estimate the costs of the project where these costs include the losses in value sustained by property owners affected by the project. Currently, in the United States courts use the market value of the property - that is, the WTP - plus some amount to cover any losses to the owner due to inconvenience. The advantage of using the WTP is that it is generally inexpensive to measure and avoids the

strategic problems inherent in convincing an individual to reveal his true WTA. As long as the property is a close substitute for wealth, using WTP has the additional advantage of closely approximating WTA. However, in cases where the property involved has a great deal of sentimental value - for instance, when one's ancestors are buried on the land that is to be flooded in order to build a dam - the use of WTP may substantially underestimate WTA and may lead to the completion of projects that are not Pareto improving.

17. Reflections from Public Choice Research

Public choice research suggests further complications in restricting government project to those that are Pareto improving. (For examples of public choice research on income distribution see Hochman and Peterson, 1974; Gaertner and Pattanaik, 1988; Lee and McKenzie, 1990; Olson, 1987; Rowley and Peacock, 1975; Stigler, 1970; Tullock, 1971, 1983, 1986.) Interest groups and politicians often have incentives to engage in rent-seeking activities that would cause them to systematically ignore WTA measures in favor of the lower WTP measures. For instance, de Alessi (1960) recounts the many distortions created by government officials in an effort to use cost-benefit analysis to justify public projects. Thus, the fact that the members of the federal and various state constitutional conventions generally were politicians who either were members of various interest groups or may have been readily influenced by representatives of these interest groups undermines Fischel's constitutional justification for measuring value with market prices. On the other hand, it would be surprising if economic scholars find Hovenkamp's conclusion that sociologists and psychologist have tools for accurately measuring WTA to be very convincing.

18. Conclusion

The obituary for neoclassical economics surely is premature. As Hanemann (1991), Shogren et al. (1994) and Calfee and Rubin (1992) demonstrate, neoclassical economic theory predicts that the ratio of WTA to WTP can take on any value, depending of the elasticity of substitution between a good and wealth: the lower the elasticity of substitution, the larger the ratio of WTA to WTP will be. Moreover, as the leading proponent of experimental economics, Smith (1991, p. 894), observes, for all its deficiencies standard models of economic behavior based on individual rational choice are excellent predictors of actual behavior observed 'in the social context of exchange institutions'. It

would seem rash to toss out all of neoclassical economic theory based solely on the evidence offered by the endowment effect.

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