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Resolving Differences in Willingness to Pay and Willingness to Accept: Reply

Jason F. Shogren  
*University of Wyoming*

Dermot J. Hayes  
*Iowa State University, dhayes@iastate.edu*

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Abstract
Gwendolyn C. Morrison (1997) raises a logical point regarding our experimental test of the divergence between willingness to pay (WTP) and willingness to accept (WTA) measures of economic value (Shogren et al., 1994). She argues that our design does not provide a true test of the existence of a fundamental endowment effect since we did not control for the potential of a pivoting indifference map (Daniel Kahneman et al., 1990). She concludes that even though our evidence shows that the mean WTP and WTA bids for market goods with close substitutes (e.g., candy bars and coffee mugs) converge after market experience, the endowment effect might still be alive and well, albeit at statistically insignificant levels.

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Comments
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Resolving Differences in Willingness to Pay and Willingness to Accept: Reply

By Jason F. Shogren and Dermot J. Hayes *

Gwendolyn C. Morrison (1997) raises a logical point regarding our experimental test of the divergence between willingness to pay (WTP) and willingness to accept (WTA) measures of economic value (Shogren et al., 1994). She argues that our design does not provide a true test of the existence of a fundamental endowment effect since we did not control for the potential of a pivoting indifference map (Daniel Kahneman et al., 1990). She concludes that even though our evidence shows that the mean WTP and WTA bids for market goods with close substitutes (e.g., candy bars and coffee mugs) converge after market experience, the endowment effect might still be alive and well, albeit at statistically insignificant levels.

We have two problems with this argument. Our first doubt rests on the seemingly arbitrary way Morrison drew the figures to support the contention that the WTA/WTP difference is larger for a good with imperfect substitutes than for a good with perfect substitutes. Morrison’s Figures 2 and 3 show that the WTA/WTP difference for the good with imperfect substitutes (WTA−WTP) is greater than the WTA/WTP difference if no pivoting occurs ($1 - 0$). But the figures also show that the WTA/WTP difference for the good with close substitutes (WTA−WTP) is greater than ($1 - 0$). If this were her only argument, then our finding that (WTA−WTP) equaled ($1 - 0$) is sufficient to refute the pivoting hypothesis. To get around this problem she argues that the WTA/WTP difference for goods with imperfect substitutes must be greater than for goods with close substitutes, holding the “degrees pivoted” constant at some unspecified point. Using this logic, she argues that “we failed to pick up the lesser of the two effects because the difference was not statistically significant.”

Figure 1 below redraws Morrison’s Figures 2 and 3 to show that the WTA/WTP differences for goods with close substitutes are exactly equal to the difference for goods with imperfect substitutes, that is WTA−WTP = WTA−WTP. All we have to do to get this result is to pivot both indifference curves by the same amount at point q0 in Figure 1 (a) and at q1 in Figure 1 (b). This version of the pivoting indifference curves does not show a WTA/WTP difference based on the degree of substitution and, therefore, refutes Morrison’s argument that WTA−WTP should be more detectable than WTA−WTP. Without a more formal or convincing demonstration that WTA/WTP difference is larger for goods with imperfect substitutes, Morrison’s argument is that the endowment effect is lurking behind the substitution effect and refuses to show its head separately from the substitution effect. If this is truly the case, why not call what is left of the endowment effect argument a substitution effect and be done with it?

Second, it seems impulsive to argue that a set of experiments did not pick up an effect that is said to exist without at least proposing a more sensitive way to detect this elusive effect. As an example, regulatory agencies have long ago given up on attempting to prove that a particular food is safe. Instead, they act when a food is shown not to be safe and otherwise

* Shogren: Department of Economics and Finance, University of Wyoming, Laramie, WY 82071 and Council of Economic Advisers, Executive Office of the President, Washington, DC 20502; Hayes: Department of Economics, Iowa State University, Ames, IA 50011. All views remain our own.
let the preponderance of evidence suggest that a food is safe. Our experiments did not reject a WTA/WTP divergence for the goods with close substitutes, but we can never prove that such a divergence does not exist. It always has been, and remains, an experimental impossibility to reject an alternative hypothesis.

But even if we reject Morrison's argument, there is still the empirical evidence that an endowment effect seems to exist in some lab experiments but not in ours. Kahneman et al. (1990), for example, observed a persistent WTP/WTA divergence with a Becker-DeGroot-Marschak (BDM) auction for goods with readily available substitutes (Gordon Becker et al., 1964). Perhaps the endowment effect lurks undetected due to the temperament of the auction institution used in Shogren et al. (1994)—the sealed-bid, second price Vickrey auction repeated over several market trials (William Vickrey, 1961). A conceivable shortcoming of the Vickrey auction is that the repeated signals sent by the endogenous market price contaminate individual bids into unreliable and unreasonable beacons of true preference (for example, see Kahneman et al., 1996). Unfortunately, there are too many differences in design parameters in the Shogren et al. (1994) and Kahneman et al. (1990) studies to determine clearly why WTP and WTA should converge in one incentive compatible auction and not the other.

To remedy this, Shogren et al. (1996) retested both auction institutions holding all other design elements constant (e.g., identical goods, ten trials, voluntary subjects, a fixed monetary endowment, and the same monitors). The new evidence suggests that while a WTA/WTP disparity exists in the first trial for both auctions, the gap closed quickly in the Vickrey auction, but remained in the BDM auction. Mean and median WTA/WTP ratios decreased from 1.4 in trial 1 to 0.88 in trial 9 for the candy bar, and decreased from 2.5 in trial 1 to 1.04 in trial 10 for the coffee mug. The ratio of WTA/WTP in the BDM auction, however, ranged from 1.5 to 1.9 for a candy bar and 1.4 to 2 for a coffee mug over all trials.

If an endowment effect exists at a level sufficiently weighty to affect economic efficiency, we should have observed a persistent disparity under both auction institutions—we did not. The significant WTA/WTP disparity existing in the first trial in both auctions disappeared quickly in the Vickrey auction but persisted in the BDM auction. This suggests that the disparity might not be due to a fundamental endowment effect but rather to the contrasting market dynamics of the two auctions. The BDM auction provides little active involvement and market learning. Market price is randomly determined, exogenous, asocial, and as such, the bidders have no opportunity to interact in a market setting that rewards good trades and punishes bad ones. The lack of competition with other buyers or sellers prevents the market from imposing any discipline on their bidding behavior (also see Peter Bohm et al., 1995).
In contrast, the Vickrey auction creates a market with meaningful feedback from an endogenous market price that provides the opportunity to learn from market experience that does not reward strategically high WTA offers and low WTP bids. This suggests that the WTP–W TA disparity depends on the auction institution, not on a deviation from neoclassical rationality as suggested by the endowment effect. The persistent value disparity appears to be an artifact of the relative levels of useful market feedback in the two auctions.

One might counter that the Vickrey auction with repeated market trials generates too much competition, propelling the WTP/WTA convergence because the auction overheats—too much competition drives WTP up beyond the true market value and WTA down below the true market value as bidders try to outdo one another to win for winning’s sake. The winner receives extra benefit from being the “top dog” among his or her peer group. If the top dog hypothesis is legitimate, a subject’s bid, \( b_i \), in the Vickrey auction equals his or her private value, \( v_i \), for the good plus the extra benefit, \( u_i \), from winning the auction, \( b_i = v_i + u_i \). Shogren et al. (1996) tested and rejected this top dog hypothesis in an induced valuation treatment. The evidence was that nearly 90 percent of all bids in all trials were less than or equal to a bidder’s private value, \( v_i \). The mean ratio of a subject’s actual bid to his or her private induced value, the BPV ratio, was slightly less than unity for the majority of 15 trials; the median BPV ratio generally equaled, and never exceeded, unity. Bids generally were less than or equal to the predicted bid. The fear that the Vickrey auction overheats and generates unreliable and unreasonable bids is not universally supported (for an alternative view, see John Kagel et al., 1987).

Is the endowment effect a fundamental part of choice or simply an artifact of a weak exchange environment? The weaker the exchange institution, the weaker the socialization of rational behavior and the stronger the potential hold of asocial anomalies on choice. If the objective is to elicit values for commodities in market-like settings that punish mistakes and reward good decisions, an exchange institution such as the Vickrey auction with repeated trials is appropriate. These auctions mimic an institutional structure that reinforces rational choices under the gravity of market dynamics. Consequently, disparities in WTP and WTA measures of value disappear for commodities with many substitutes given repeated experience. Robust market exchange straightens the arch of indifference curves through intermediate monetary exchange; perhaps this robust exchange also humbles the hold of pivoting indifference curves. If the endowment effect is a substantive phenomenon, the effect should prevent a convergence of values across economic institutions. The claim that highly active exchange institutions are too crude to sniff out a statistically significant endowment effect suggests the effect might not be of economic significance in these contexts. All this may change, however, as we consider goods in thin or nonexistent markets where the opportunities for arbitrage are few and far between. Opportunities for endowment-like effects to persist and go unpunished by market discipline imply that such behavior may play a role in the valuation and exchange of nonmarket goods.

**REFERENCES**


