



## Exchange asymmetry in experimental settings



Thomas C. Brown<sup>a,\*</sup>, Mark D. Morrison<sup>b</sup>, Jacob A. Benfield<sup>c</sup>,  
Gretchen Nurse Rainbolt<sup>d</sup>, Paul A. Bell<sup>d</sup>

<sup>a</sup> Rocky Mountain Research Station, U.S. Forest Service, Fort Collins, CO, United States

<sup>b</sup> Faculty of Business, Charles Sturt University, Bathurst, NSW, Australia

<sup>c</sup> Department of Psychological and Social Sciences, Pennsylvania State University – Abington, Abington, PA, United States

<sup>d</sup> Department of Psychology, Colorado State University, Fort Collins, CO, United States

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### ABSTRACT

We review past trading experiments and present 11 new experiments designed to show how the trading rate responds to alterations of the experimental procedure. In agreement with earlier studies, results show that if the trade decision is converted to one resembling a choice between goods the exchange asymmetry disappears, but otherwise the asymmetry is remarkably robust. Results also indicate that when trading is public herding can occur, which may have caused some of the more extreme examples of the exchange asymmetry, and that some of the lack of trade may result from preference indifference. Nevertheless, some form of status quo bias, which may consist of a combination of loss aversion, gain attraction, regret avoidance, and dislike of trading, and which may be enhanced by indifference between the goods offered, probably remains as an important influence on the trading rate.

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## 1. Introduction

In 1989, Jack Knetsch presented what seemed the most cogent evidence of loss aversion obtained in an economic setting (Knetsch, 1989). The beauty of his 1989 experiment was its simplicity, for it avoided altogether the need to decide on a price. Subjects were merely asked if they wanted to trade their item for an alternate item of roughly equal market value. Knetsch's experiment suggested loss aversion more cleanly than previous experiments of purchase and sale decisions (Knetsch and Sinden, 1984), or than subsequent experiments asking subjects for the prices at which they would be willing to buy or sell an item (e.g., Kahneman et al., 1990).

Knetsch's experiment demonstrated an extreme absence of trading, which led him to question the foundation of consumer theory. Using coffee mugs and large chocolate bars, Knetsch (1989) showed that when offered a choice between the two items about half of the subjects selected the mug and half the chocolate bar, but when subjects of another group were each given a chocolate bar and then offered the opportunity to trade it for a mug only about 10 percent did so. Similarly, when subjects of a third group were each given a mug and then offered the opportunity to trade it for a chocolate bar only

\* Corresponding author at: Rocky Mountain Research Station, 240 West Prospect Road, Fort Collins, CO, United States. Tel.: +1 9704982562.

E-mail addresses: [thomas.brown@colostate.edu](mailto:thomas.brown@colostate.edu) (T.C. Brown), [mmorrison@csu.edu.au](mailto:mmorrison@csu.edu.au) (M.D. Morrison), [jab908@psu.edu](mailto:jab908@psu.edu) (J.A. Benfield), [gretchen402@gmail.com](mailto:gretchen402@gmail.com) (G.N. Rainbolt), [paul.bell@colostate.edu](mailto:paul.bell@colostate.edu) (P.A. Bell).

about 10 percent did so. Of course, if the two goods were preferred about equally across the sample, as the choices of the first group indicated, we would expect about half of the subjects in the second and third groups to trade when given the opportunity. Knetsch not only argued that this lack of trading was evidence of loss aversion—the notion that a loss is of greater consequence than an equal-sized gain—but also proposed that the presence of loss aversion indicates that a single indifference curve is inadequate to depict the tradeoff between any two goods.

Knetsch's trading experiment went largely unchallenged during the 1990s but has subsequently received increasing interest. Recent experiments have replicated his findings, tested the effect of altering aspects of his experimental procedure, and questioned the loss aversion claim. These experiments reflect a growing understanding in economics that experimental details, even apparently inconsequential ones, may matter. As [Smith \(2010\)](#) stated, "Testing involves a blizzard of narrowly prescribed circumstances that are not part of the theory." In the spirit of this realization, the following question about Knetsch's experiment, also addressed by [Plott and Zeiler \(2007\)](#), arises: is the observed lack of trade a fundamental human tendency that transcends methodological details, or rather an artifact of the particular methods he used? A second pertinent question is: if the experimental result holds up to scrutiny, is loss aversion the indisputable source of the anomalous lack of trading?

We have two objectives for this paper. The first is to reach a better understanding of how the procedures of a trading experiment affect the trading rate. Although the exchange asymmetry<sup>1</sup> has been replicated in numerous experiments, including several reported for the first time here, none of the newer trading experiments has found as little trading as did Knetsch in his early experiments. We examine how changes in methodology have led to this narrowing of the exchange asymmetry. We find that the exchange asymmetry is remarkably robust—that the only experiments that have not resulted in a significant asymmetry use either exceptional subjects or methods that may dilute the sense of endowment that is thought to cause the lack of trade. However, the ultimate reason for the lack of trading remains a matter of conjecture.

Our second objective is to reconsider the reasons for the exchange asymmetry. We review the various explanations that have been offered for the exchange asymmetry—loss aversion, gain attraction, regret avoidance, and anti-trade bias—and show that preference indifference or imprecision can also contribute to the observed asymmetry.

## 2. Background

### 2.1. Review of past findings

[Knetsch's \(1989, 1992\)](#) early trading experiments prompted several others. We focus here on experiments that, like Knetsch's, involve subjects interacting with the experimenter.<sup>2</sup> Most of the experiments reported early on by Knetsch and in seven subsequent papers are summarized in [Table 1](#). The basic procedure used in these experiments is a simple split sample, where one group of subjects is endowed with good A and then offered the opportunity to trade it for good B, and another group of subjects is endowed with good B and then offered the opportunity to trade it for good A. Given finely tuned (i.e., complete) preferences and no aversion to trading, we would expect that both groups would end up with an equal proportion of subjects owning good A (and good B), and hence that the average of the trading rates of two groups of subjects would equal 50%.

In the first of the seven more recent studies, [Harbaugh et al. \(2001\)](#) randomly gave students in a room one or another good. The students then individually marked a form to indicate whether or not they wanted to trade their good for the alternate good (Knetsch had endowed all subjects in the room with the same good and had instructed them to raise their hand to trade). Across two separate groups of students about one-fourth traded (numbers 3 and 4, [Table 1](#)), compared with only about 10% in Knetsch's experiments.<sup>3</sup> Notably, the decision in this experiment was private. Further, the goods were randomly distributed so that some subjects received one good and others received the other good, which would help avoid the impression that the experimenter intended that subjects accept or prefer one good over the other. These changes diminished but did not eliminate the exchange asymmetry.

In the second study, using individual subjects in a field setting, in contrast to the more common approach of using groups of subjects in a more controlled setting, [List \(2003\)](#) enlisted participation of consumers and dealers at trade shows and asked them to complete a brief questionnaire. In return for obliging, the subject was given a small item. Upon completion of the questionnaire, the experimenter revealed an alternate item and presented it to the respondent for inspection. The respondent was then asked if he or she wanted to trade the original item for the alternate one. Interestingly, List found across several experiments that, although only about 20% of inexperienced consumers traded, over 40% of experienced consumers and dealers traded, whether or not the goods involved were relevant to the trade show (numbers 5 and 6,

<sup>1</sup> Authors have used several terms, including "reluctance to trade" and "endowment effect," to describe the unexpected lack of trading that has been observed in experiments like those described here (e.g., [Korobkin, 2003](#)). As [Plott and Zeiler \(2007\)](#) maintain, such terms tend to suggest a reason for the lack of trade. Plott and Zeiler favor the less suggestive term "exchange asymmetry." We use that term, or simply "lack of trade", and we use "trade" and "exchange" interchangeably.

<sup>2</sup> Other experiments (e.g., [van Kijk and van Knippenberg, 1998](#)) have allowed subjects to trade among themselves.

<sup>3</sup> [Chapman \(1998\)](#) was apparently the first to use a response form and randomly give subjects in the room one or another item. The study is not included in [Table 1](#) because the paper does not report key information required for the table. Across three experiments that each used different sets of items, roughly one-third of the 122 subjects traded, resulting in a significant exchange asymmetry ( $p < 0.01$ ).

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