Economics Letters 149 (2016) 38–43

Contents lists available at ScienceDirect

Economics Letters

journal homepage: www.elsevier.com/locate/ecolet

# A monetary measure of the strength and robustness of the attraction effect

Paolo Crosetto [a,*], Alexia Gaudeul [b]

[a] GAEL, INRA, CNRS, Grenoble INP, Univ. Grenoble-Alpes, 38000, Grenoble, France

[b] Georg-August-Universität Göttingen, Göttingen, Germany

ARTICLE INFO

*Article history:*
Received 8 March 2016
Received in revised form
15 September 2016
Accepted 30 September 2016
Available online 17 October 2016

*JEL classification:*
C91
D12
D83

*Keywords:*
Asymmetric dominance
Attraction effect
Psychometrics
Induced preferences
Experimental economics

ABSTRACT

The Attraction Effect has been studied in conditions of indifference among options and measured at the aggregate level. We introduce a new within-subjects design based on induced preferences and psychometrics. Our method yields two individual-level measures: the traditional, *frequency* measure and a new, *monetary* indicator. The monetary indicator measures the robustness of the effect to decreases in the relative utility of the target with respect to the competitor. We find choice frequencies consistent with the literature. Our monetary measure shows that subjects still prefer the target up to the point where it is 8% more expensive than the competitor.



## 1. Introduction

The *Attraction* or *Asymmetric Dominance* effect (ADE) is a violation of a basic axiom of decision theory, whereby choice is Independent of Irrelevant Alternatives. The ADE was first documented by Huber et al. (1982). Consumers who are subject to the ADE are more likely to choose a *target* product rather than its *competitor* if the target is presented along with a *decoy* product that is clearly dominated by the target, than if it is presented against the competitor only.

The ADE has been widely replicated in consumer research (Huber and Puto, 1983; Simonson, 1989; Park and Kim, 2005; Malkoc et al., 2013), experimental economics (Herne, 1999; Sonsino, 2010; Kroll and Vogt, 2012), cognitive psychology (Trueblood et al., 2013), and even in biology, in studies of birds (Schuck-Paim et al., 2004) and bees (Shafir et al., 2002). The ADE "*may be one of the biggest exports from marketing research to other fields*" (Huber et al., 2014).

The robustness of the ADE has recently been put into question (Frederick et al., 2014; Yang and Lynn, 2014; Huber et al., 2014; Simonson, 2014). One clear limitation of the ADE literature is that it has studied only situations in which the decision maker is close to indifference between the alternatives proposed. In the words of Huber et al. (2014),

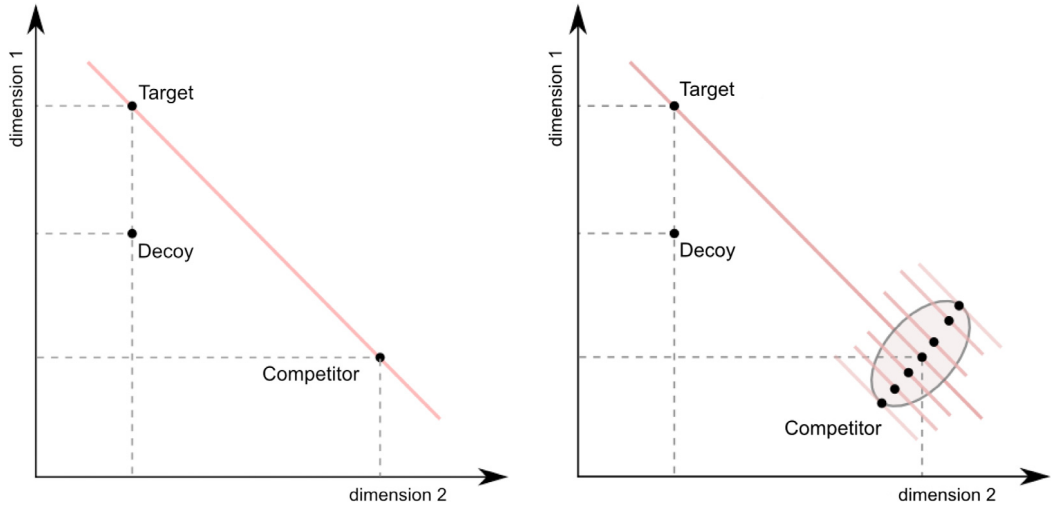
> [t]o the extent that a decision maker has clear preferences between the target and the competitor, the effect of adding an undesired decoy will be muted. [...] However, when prior preferences are weak, stemming either from unfamiliarity or indifference, [...] context will matter.

It is no surprise then that most of the literature relies on hypothetical choices,[1] meaning that money-oriented subjects are indifferent across options. Even the few incentivized experiments (Herne, 1999; Doyle et al., 1999; Lichters et al., 2015) study situations in which subjects should be indifferent between target and competitor.

* Corresponding author.
*E-mail addresses:* paolo.crosetto@grenoble.inra.fr (P. Crosetto), a.gaudeul@gmail.com (A. Gaudeul).

http://dx.doi.org/10.1016/j.econlet.2016.09.031
0165-1765/

[1] Out of 52 studies listed in Lichters et al. (2015) only one uses an incentive-compatible design.




(a) Standard design: indifference. (b) Our design: varying preference for competitor.

**Fig. 1.** Experimental design of ADE experiments: standard *vs.* our design.

The ADE literature shows that preferences are context-dependent: choices can be influenced by careful engineering of the choice set. However, this has only been shown in contexts of indifference—when *any* external cue might affect choice, and the effect matters the least. As (Frederick et al., 2014) puts it, "*the boundary conditions for the effect seem to be so restrictive that its practical validity should be questioned*".

Virtually all studies on asymmetric dominance rely on a *between-subjects* experimental design. Choices from a set with two options, target and competitor, which vary in two unrelated dimensions (e.g., quality and price) but *sit on the same indifference curve*, are compared with choices from the same set but with an added decoy, an option that is strictly dominated by the target in one dimension (Fig. 1, left). The ADE is measured as the difference in choice frequency of the target across those two sets.

In this paper we introduce an experimental method to explore the strength of the attraction effect when options differ in utility. We let the competitor sit not only on the same but also on higher or lower indifference curves compared to the target (Fig. 1, right). By varying *within subjects* the induced value of the target, our design allows us to evaluate the monetary cost of being subject to the ADE.

Compared with the traditional design, which offers only an aggregate frequency measure, our method provides an individual measure expressed in monetary terms. This is a step beyond proof-of-concept studies and towards real-world applicability.

## 2. Materials and methods

In the ADE literature, the options in a choice set usually vary along two not readily comparable dimensions: quality *vs* price or size *vs* location for apartments (see the list in Frederick et al., 2014, appendix A). In a recent paper (Trueblood et al., 2013) employ an unincentivized visual perception task in order to test if the ADE can be considered a fundamental trait of human perception. Subjects must repeatedly indicate the largest of three rectangles, target, competitor and decoy. Target and competitor have the same area, but different length/width ratios. The ADE results are replicated.

We implement a visual perception task similar to Trueblood et al. (2013), but crucially adding incentives. Subjects are asked to imagine to have to buy paint in order to cover a fixed, square area. They face three options: target, competitor and decoy. Subjects are not given unit prices (price/$m^2$ painted) but rather a price per bucket. Buckets differ in terms of the surface they can cover, which is shown to subjects.

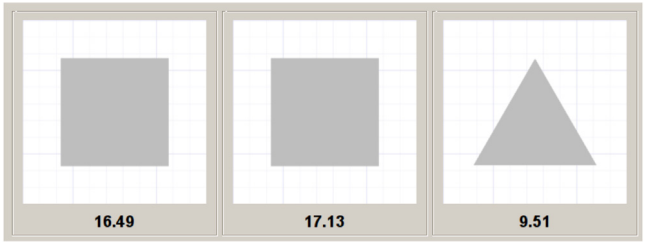



**Fig. 2.** A task. The decoy is the central square, identical but more expensive than the left one.

The task is conceptually simple but perceptually difficult. To find the best deal, subjects must compare prices and surface areas across options. Subjects are incentivized to minimize expenditure: they are given an endowment to buy a fixed amount of (fictitious) paint, and earn the money they have not spent. Subjects repeat the task several times, with different shapes, sizes and prices.

Our design replicates most features of the standard ADE task while at the same time introducing an objective standard to evaluate outcomes—unit prices. Relying on induced preferences allows us to manipulate the relative utility of the target with respect to the competitor.

### 2.1. Task details

Subjects faced 18 different choice tasks. Within and across tasks we varied the shape and size of the options, and the relative utility of the target with respect to the competitor.

Shapes could be circles, squares, or equilateral triangles (Krider et al., 2001).

Size normalizing the total area to be painted to 100 $m^2$, size took one of 12 possible values ranging from 10 $m^2$ to 43 $m^2$, in steps of 3 $m^2$, yielding small but still noticeable size differences.

Unit prices (price per $m^2$) were randomly drawn, half from $\sim N(0.5, 0.01)$, half from $\sim N(0.5, 0.05)$. No price was allowed to be so high as to result in a potential loss for the subject.

The options were displayed as a gray shape centered on a white background representing the total area to be painted. The decoy