

Status Quo or Decoy; An Experiment*

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Abstract

The classical choice theory assumes that an individual's choice does not depend on irrelevant alternatives or the way that alternatives are labeled; such as an endowment or a default. However, phenomena such as the "Status Quo Bias" and "Attraction Effect" which apparently imply violation of rationality, have been widely observed. Even though they exhibit similar pattern of choices, the relationship between these two phenomena has never been studied yet. This study (1) separates the influence of the endowment and the decoy option in people's choice behavior, and (2) investigates the determination of the reference point in situations where both an endowment and a decoy option are in the set of available alternatives. Our experimental data shows that a status quo has a stronger impact on individual choice behavior compared to a decoy option. Moreover, a status quo is a better candidate for reference point even in a choice set where there are both status quo and decoy options. These results increase our understanding of both reference dependence and the attraction effect.

JEL Classification: D11, D81.

Keywords: Revealed Preferences, Status Quo Bias, Endowment Effect, Loss Aversion, Attraction Effect, Decoy Option.

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1 Introduction

A sizable amount of experimental studies, both within economics and psychology, have established that individuals behave differently depending on a "reference" which could be an initial entitlement, endowment and/or default option. For example, an individual may prefer good \mathbf{x} to good \mathbf{y} if she is endowed with \mathbf{x} , prefer \mathbf{y} to \mathbf{x} if she is endowed with \mathbf{y} . It has been commonly observed that people will value an object more when they own it than when they don't, "*Endowment Effect*" (Thaler (1980)), and losses impact people's utility more than gains of the same magnitude, "*Loss Aversion*" (Kahneman and Tversky (1979)). Samuelson and Zeckhauser (1988) coin the term "*Status Quo Bias*" for the phenomenon that when people are faced with new options, they often stick with their status quo option.

The main findings in the reference-dependent preference literature are (i) people are more likely to stick with their status quo, (ii) a status quo point may alter one's choices even in cases when it is not actually chosen. For example, assume that when a decision maker is endowed with good \mathbf{r} , she chooses good \mathbf{x} among $\{\mathbf{x}, \mathbf{y}, \mathbf{r}\}$. But it is possible that there exists a good \mathbf{s} such that \mathbf{y} is preferred to \mathbf{x} and \mathbf{s} when \mathbf{s} is her endowment. That is, she will choose good \mathbf{y} among $\{\mathbf{x}, \mathbf{y}, \mathbf{s}\}$ when good \mathbf{s} is the endowment. So the likelihood of choosing \mathbf{y} might change if the endowment is switched between two inferior alternatives with respect to \mathbf{x} and \mathbf{y} .¹ Therefore, this violates the main principle of the rational choice theory so-called the "*independence of irrelevant alternatives, (IIA)*". That is, preference between options does not depend on the presence or absence of other options.

Of course, the observation that IIA is violated in reference-dependent models is not a bolt from the blue. We would like to point out that this behavior is very similar to the "*Attraction Effect*" in context-dependent choice literature. The attraction effect refers to a situation in which an inferior alternative influences the relative attractiveness of other alternatives in a choice set. The "*Decoy Effect*" (also called the "asymmetric dominance effect") is a special case of the attraction effect where the binary comparison of two objects, contrary to normative theory, is affected by the introduction of an asymmetrically dominated alternative to an existing choice set. An alternative is "*asymmetric*" if it is completely dominated by at least one candidate in the set, but not dominated by at least one other. Imagine a choice between two alternatives \mathbf{x} and \mathbf{y} , where \mathbf{x} is superior in price while \mathbf{y} is superior in quality. A third alternative, \mathbf{z} , is superior to \mathbf{y} in price and inferior to \mathbf{x} in both dimensions. Then we say that \mathbf{z} is asymmetrically dominated by the price-superior alternative, \mathbf{x} . Having \mathbf{z}

¹Bateman, Munro, Rhodes, Starmer and Sugden 1997, Bateman, Kahneman, Munro, Starmer and Sugden 2005, Herne 1998, and Masatlioglu and Uler (2006).

in the choice set makes it easy to compare \mathbf{x} and \mathbf{y} since \mathbf{x} obviously dominates \mathbf{z} while \mathbf{y} does not. In other words, \mathbf{z} becomes the reason to choose \mathbf{x} or not to choose \mathbf{y} . Therefore, \mathbf{z} makes the price-superior alternative, \mathbf{x} , more attractive than it was.²

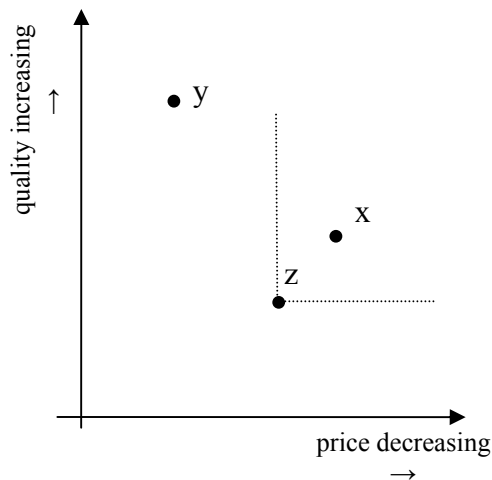


Figure 1: Asymmetric Dominance

One could argue that the experimental evidence reported in the reference-dependent literature has nothing to do with the ownership, but is rather an observation of the decoy effect. A much more convincing argument would be that in both examples the third alternative is used as a reference point and whether it is named as an endowment or not does not make any difference. Hence, we would like to investigate whether the influence of the status quo and the decoy option in people’s choice behavior are exactly same or not.

The reference-dependent theory could explain the attraction effect if decoys may have an effect on selection by setting a reference point. In other words, an inferior alternative in a choice set may serve the purpose of establishing a reference point. If this is the case, this would help us to identify the reference point in situations where there is no exogenously given reference point. But then we would like to know what the reference point would be in a situation where there are both an endowment and a decoy option in the choice set. If the decision maker doesn’t have a definite reference state, the reference-dependent model would be silent. To solve this problem, Tversky and Kahneman claims that the reference state corresponds to the decision maker’s current endowment. In both literatures, we observe the same type of behavior, that is, IIA is violated. The only difference is that the inferior alternative is introduced as an endowment in the reference-dependent models while it is just an additional alternative in the context-dependent models.

²Note that there is no way that the dominated alternative, \mathbf{z} , is predicted to be chosen.

The purpose of this paper is to (1) separate the influence of the endowment and the decoy option in people's choice behavior, (2) investigate the determination of the reference point in situations where both an endowment and a decoy option are in the set of available alternatives.

In order to study these issues, we conducted individual decision making experiments using two types of questions. First, subjects were asked to make a choice when they did not begin with an endowment, and then subjects were once again asked to choose between the same options when one of the alternatives is labeled as their endowment. Our experimental data show that a status quo has a stronger impact on individual choice behavior compared to a decoy option, and moreover a status quo is a better candidate for reference point even in choice sets where there is both a status quo and a decoy option. These results increase our understanding of both the reference dependence and the attraction effect, especially, in the endogenous determination of reference state and build a bridge between the reference-dependent and the context-dependent literatures. Our results suggest that when we are setting a default option, we should be careful since it may have quite sizeable effects on economic outcomes.

2 A Review

There is an enormous number of experiments which observed that initial holdings matter. These results are not confined to the experiments; these phenomena have also been observed in real markets by means of field studies, for instance, investment decisions, retirement plans (401k), car insurance, public goods, hunting licenses, organ donations, among others. Motivated by the substantial experimental and empirical evidence, Tversky and Kahneman (1991) provides a descriptive model which extends their prospect theory and some alternative models with theoretical foundation for these phenomena are presented in recent papers, Sugden (2003), Masatlioglu and Ok (2005, 2006), Houy (2006), and Sagi (2006). Therefore, in the last twenty-five years, the status quo bias, the endowment effect and the loss aversion have earned themselves a seat at the high-table of behavioral economics and decision theory.³

The fact that the dominated alternative affects choices between the original two al-

³Shogren et al. (1994), List (2003, 2004), and Plott and Zeiler (2005) show that the endowment effect disappears with market experience. List (2004, pp. 616) says "The endowment effect anomaly is not universal, however: consumers that have significant market experience do not exhibit behavior consistent with prospect theory..."

ternatives are well-documented and robust in behavioral research in marketing ⁴. These phenomena have also been observed in choice among monetary gambles (Wedell, 1991), political candidates (Pan et al., 1995, Herne, 1997), and job candidates (Highhouse, 1996), environmental issues (Bateman et al., 2005). Moreover, Shafir, Waite and Smith (2002) shows that honeybees and gray jays also exhibit this behavior. On the theory front, Tversky and Simonson (1993) has proposed the context-dependent model to account for the effects of decoys. The model assumes that the value of an alternative is an aggregation of advantages and disadvantages relative to *all* other alternatives in the choice set. Whereas the reference-dependent model assumes comparisons *only* with respect to the reference point.

3 Experimental Design

In order to test whether a status quo option affects the relative rankings of other alternatives more than a decoy option, we do the following experiment: First, we elicit each subject’s preferences over two chocolate-money bundles, \mathbf{x} and \mathbf{y} . If the option \mathbf{x} (\mathbf{y}) is preferred then in another question the third option, \mathbf{z} , which is dominated by the other alternative \mathbf{y} (\mathbf{x}), is introduced to the choice problem. The same set of options were asked once again in a different question where option \mathbf{z} is given as their endowment. If being endowed with an option has a bite in a choice problem, we expect to see that \mathbf{y} (\mathbf{x}) is chosen more when \mathbf{z} is the endowment.

We performed individual decision making experiments at the Center for Experimental Social Science (C.E.S.S.) at New York University in December 2004. There were a total of 99 subjects.⁵ The experiment was conducted using z-Tree software, and lasted approximately one half hour. Subjects got \$13 – 14 on average including the \$7 show-up fee, and also some Belgian chocolates. Each subject answered 16 questions, related to two different research projects, with only one of them randomly selected at the end of the experiment to determine the payoff. Among these 16 questions, on average 6 of them are relevant for this paper.

In the first 8 questions, subjects were required to make a decision between two or three options. Each option consisted of a combination of money and a number of Belgian chocolate

⁴Huber et al., 1982; Huber and Puto, 1983; Ratneshwar et al., 1987; Simonson, 1989; Simonson and Tversky, 1992; Shafir et al., 1993; Tversky and Simonson 1993; Lehmann and Pan, 1994; Heath and Chatterjee, 1995 and Herne, 1997, 1999; Doyle et al. 1999; Sedikides et al. 1999

⁵We eliminate 5 subjects from our data set since these subjects picked dominated options, which cannot be explained by any model.

boxes.⁶ The questions with three options had either a decoy or a status quo option or both. When subjects were provided with a status quo, they were asked whether to keep that or to change it for one of the two other alternatives.

Is the the decoy or the status quo the reference point? If the decoy option is the reference point, then choices should be the same between these two questions; however, if status quo is the reference point then we should observe more y chosen compared to the first choice.

Another interesting question is, what happens when there is both a decoy option and a status quo option at the same time. Consider the following scenario: First, an individual is asked to choose between $\{x, y, z\}$ where z is asymmetrically dominated by y . Second, she is endowed with y and asked to choose from the same set of alternatives.

Some questions that were asked in the experiment are given in the Appendix as an example. A graphical demonstration of a question is given below:

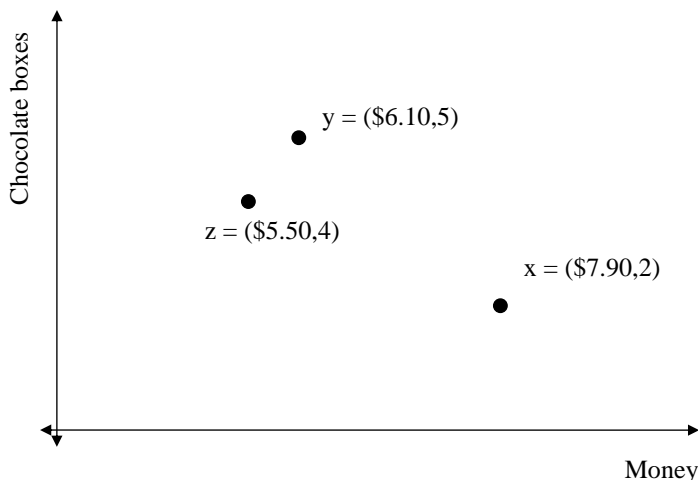


Figure 1: A question for the experiment

4 Results

Table 1 shows the number of switches from the preferred option when a decoy or a status quo option is introduced which is asymmetrically dominated by the alternative which was not chosen. Percentage of switches when a status quo is introduced is 28% compared to the 18% when a decoy option is introduced. We reject the hypothesis that both distributions

⁶Each box contained 3 chocolates.

are the same by using a Wilcoxon matched-pairs signed-ranks test ($p = 0.071$). Therefore, we observe significantly more switches with the decoy option now being the status quo.

	Total		Q1		Q2		Q3	
# of subjects	76		39		17		20	
	Decoy	SQ	Decoy	SQ	Decoy	SQ	Decoy	SQ
No Switch	62	55	30	26	13	10	19	19
Switch	14	21	9	13	4	7	1	1

Table 1: Decoy versus SQ

Now consider the set $\{\mathbf{x}, \mathbf{y}, \mathbf{z}\}$ where \mathbf{z} is asymmetrically dominated by \mathbf{y} . We investigate what happens when the alternative \mathbf{y} is assigned as the status quo option. Note that the status quo option dominates the decoy option. If being endowed with an option has no influence on choice behavior, i.e., decoy option is always the reference point, then the choice behavior should be same between these two questions. In Table 2, we see that this is not the case. 82 people did not change their decisions when they are endowed with \mathbf{y} . 12 people changed their decisions in favor of \mathbf{y} and only 2 individuals changed their decisions in favor of \mathbf{x} . When a status quo is introduced, participants are more likely to choose the alternative \mathbf{y} ($p = 0.008$, Wilcoxon matched-pairs signed-ranks test).

	# of Subjects		Q1	Q2	Total
No Switch	82	$\mathbf{x} \rightarrow \mathbf{x}$	28	4	32
		$\mathbf{y} \rightarrow \mathbf{y}$	6	44	50
Switch	14	$\mathbf{x} \rightarrow \mathbf{y}$	4	8	12
		$\mathbf{y} \rightarrow \mathbf{x}$	2	0	2

Table 2: Determination of reference point

Note that the status quo introduced here is very weak since they do not really own them. However, even in the presence of a weak entitlement we see the effect of status quo. In a setting where individuals actually own the status quo option, we expect to see even more striking change of behavior.

A Questions

1. You have an opportunity to choose between the following two alternatives. Please make your choice.

5 Guylian chocolate boxes and \$6.10

2 Guylian chocolate boxes and \$7.90

2. You have an opportunity to choose between the following three alternatives. Please make your choice.

4 Guylian chocolate boxes and \$5.50

5 Guylian chocolate boxes and \$6.10

2 Guylian chocolate boxes and \$7.90

3. Imagine that you have 4 Guylian chocolate boxes and \$5.50. You can keep them or change them for an alternative. Please make your choice.

I will keep them (4 Guylian chocolate boxes and \$5.50)

I will change them for 5 Guylian chocolate boxes and \$6.10

I will change them for 2 Guylian chocolate boxes and \$7.90

4. You have an opportunity to choose between the following three alternatives. Please make your choice.

1 Guylian chocolate box and \$8.90

3 Guylian chocolate boxes and \$7.60

\$8.30

5. Imagine that you have 1 Guylian chocolate box and \$8.90. You can keep them or change them for an alternative. Please make your choice.

I will keep them (1 Guylian chocolate box and \$8.90)

I will change them for 3 Guylian chocolate boxes and \$7.60

I will change them for \$8.30

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