ORGANIZATIONAL BEHAVIOR AND HUMAN DECISION PROCESSES 58, 457–476 (1994)

Disentangling Status Quo and Omission Effects: An Experimental Analysis

MAURICE SCHWEITZER

Department of Operations and Information Management, The Wharton School, University of Pennsylvania

The status quo bias as described by Samuelson and Zeckhauser (1988) can be decomposed into two primary effects—an exaggerated preference for the current or previous state of affairs and an exaggerated preference for inaction. We describe an experiment designed to disentangle these effects. Analysis of results shows that both effects can occur, they appear to be additive, and subjects exhibit these effects unknowingly. These effects relate to and may interact with loss aversion, ambiguity, and regret.

INTRODUCTION

The status quo bias as discussed by Samuelson and Zeckhauser (1988) accounts for the exaggerated preference for maintaining the current state of affairs. Ritov and Baron (1990) carefully isolate what are in fact two biases. The first entails an exaggerated preference for inaction, the *omission bias*, and the second involves an exaggerated preference for the current state of affairs. In this paper we reserve the term *status quo bias* to denote this second effect.

The two effects can be difficult to disentangle since much of the time the default state (omission) *is* the current state (status quo). That is, most of the time, the two effects occur in tandem. When this is not the case, the two effects can lead to different decisions. Ritov and Baron's (1990) work found that subjects exhibited strong omission effects, but no status quo effects.

Consider, for example, the breakup of AT&T and the consequent random reassignment of long distance carriers. Do people omit action and retain their randomly assigned carrier or do people prefer the previous status quo and choose AT&T?

RELEVANT PHENOMENA

There are several reasons why decision makers prefer the status quo. In fact, it is so frequently the case that *good* reasons exist for rechoosing

This research was supported by NSF Grant SES 88-09299. I thank Jon Baron, Howard Kunreuther, Colin Camerer, Eric Johnson, Frances Frei, Jeff Casey, Paul Schoemaker, and two anonymous reviewers for their helpful comments. I extend special thanks to Jack Hershey. Please address reprint requests to Maurice Schweitzer, Department of Decision Sciences, The Wharton School, University of Pennsylvania, Philadelphia, PA 19104.

0749-5978/94 $6.00

an alternative, that most people have developed a heuristic rule that dictates rechoosing their past choice. Much of the time this heuristic leads to good decisions; in certain cases however, when there are no good reasons to prefer the status quo, this same heuristic can lead to bad decisions.

Within a framework of utility maximization, "rational" reasons for preferring the status quo describe both when the status quo should be preferred and why most people find it natural to retain the status quo in general.

Typically, switching entails transaction costs. Defined broadly, these can include broker's fees, search costs for identifying alternatives, learning costs associated with familiarizing oneself with alternatives, and activity costs involved in motivating a change.

Similar factors that advantage the status quo are the efficiencies generated from not switching[1] and the constrained option set that the consumer faces. Consumers are less likely to know of other alternatives, and even when they do, are likely to face unequal information as they are much more familiar with the product they have had in the past.

There is more ambiguity and risk involved in switching than in maintaining the status quo. This relates to Carpenter and Nakamoto's (1989) notion that preferences are endogenous. As consumers become more familiar with an option their preferences shift to prefer products more similar to their status quo.

In addition, past alternatives may have been chosen wisely. If the current conditions are similar to those of the previous choice, and the past decision maker (including oneself) knew more about the decision then than the current decision maker knows now, retaining an option is a good idea.

Several explanations cannot be defended as rational within an expected utility framework. For example, the endowment effect (Kahneman, Knetsch, & Thaler, 1990; Knetsch, 1989) describes preferences as endogenous to one's endowment. That is, people evaluate the same bundle of goods differently from different reference points.

Tversky and Kahneman's (1991) work on loss aversion offers an explanation of this effect. According to loss aversion, attributes are weighted more heavily as losses than they are as gains. Since a change from the current state usually entails gains and losses across different dimensions, heavily weighted losses in some dimensions can eclipse oth-

[1] Consider two supermarket customers. One analyzes each product category, compares each brand, and then selects a quantity; the other customer merely repurchases last week's brands at last week's quantities.

erwise equivalent gains in other dimensions. Knetsch (1989) describes how these effects lead to irreversible indifference curves.

These effects suggest that the reference point that a decision maker adopts may significantly affect evaluation of alternatives. Possible candidates for reference point adoption include endowment, status quo, and omission points—points which may or may not be the same.

The availability bias (Tversky & Kahneman 1973) may exacerbate endowment effects. Since the availability bias favors recent and vivid memories, the status quo is more likely to be recalled as not only a viable alternative, but also a reference point for comparing alternatives.

Fear of how decisions may be remembered in the future is described by regret aversion (Loomes & Sugden, 1982). Ex post facto losses and regret are probably more salient when individuals switch from their original choice. In the extreme case, regret aversion may even freeze a decision maker's ability to make a decision. This would be a severe case of an omission bias.

Ego involvement (Landman, 1987) may also make switching decisions more difficult. When people feel self-involved or identified with a past decision, they may persist irrationally with a past course of action. Ego involvement is likely to be greater in cases where individuals have made expensive and high-profile decisions.

The sunk cost fallacy (Arkes & Blumer 1985) relates to ego involvement as decision makers confine themselves to pursuing a singular course of action. With the sunk cost fallacy, marginal cost-benefit analysis becomes mired in sunk cost emotions.

Related to these causal factors are several phenomena that interact with, contribute to, and affect the status quo bias. Kahneman & Miller's (1986) norm theory describes the development of counterfactuals in terms of the relative difficulty of conjuring up alternative mental constructs. Roughly, the easier it is to imagine an outcome, the more likely that outcome will be taken as the reference point. That is, if the omission or status quo is more readily imaginable than other alternatives, those alternatives are likely to become endowment points.[2]

In a similar way, framing of alternatives will influence the perceived endowment position. Reference effects (Viscusi, Magat, & Huber, 1987) and willingness to pay and accept differences (Knetsch & Sinden 1984) articulate the significance of endowment perception to valuation decisions.

[2] The imaginability effect for a status quo alternative will increase with the size of the option set. That is, the more alternatives there are, the easier it is to imagine rechoosing the status quo. For this reason our questionnaire contained as many as four alternatives for each choice.

EXPERIMENT

No research thus far has identified the existence of the status quo bias beyond the omission bias. This research investigates both status quo and omission effects, where they are most likely to be found, their relative strengths, their interactions, and their existence beyond loss aversion.

Subjects

Sixty subjects completed a questionnaire in the psychology laboratory at the University of Pennsylvania. Subjects were solicited from undergraduate psychology courses and undergraduate and graduate business courses with a sign displayed on a prominent walkway at the university. The ages of subjects ranged from 18 to 40. Subjects took from 25 to 60 minutes to complete the questionnaire and they were paid $5 an hour.

Design

The questionnaire consisted of two similar versions including five vignettes about health care insurance, medical treatments, car options, damage control at a dam, and care for an infection. These scenarios are described in the Appendix. Within each vignette subjects responded to multiple treatment conditions including status quo and omission treatments. In each case, subjects rated four options.

For the health care vignette the base paragraph read as follows:

> Suppose you have just started a new job in a new city. Your employer offers four alternative health plans. All four cover full medical exams and hospital expenses, but differ with regard to the average wait for an appointment and the degree of choice of physicians. The plans all cost your employer the same and he is completely indifferent as to which plan you choose. You must decide within a few days. After you make your choice, you cannot switch plans for 1 year.

Subjects were then asked to rate four alternatives. For each alternative, subjects were asked how likely they would be to either accept or choose the option on a seven-point scale. For this vignette, the options were the following:

	Average wait	Choice of physicians
A	14 days	Always your choice
B	7 days	Mostly your choice
C	3 days	Sometimes your choice
D	1 day	Never your choice

Treatment conditions were added to this neutral base. These treatment conditions described one of the options as a status quo or omission alter-

native. For the status quo treatment condition, the following paragraph was added to the base paragraph:

> This is the first time you have been offered a choice of plans. In the past all of your employers gave you a plan very much like plan A. That is, the average wait was 14 days and you always had your choice of physicians.

In place of the status quo paragraph, the omission treatment contained this paragraph:

> As a matter of policy your employer randomly assigns ¼ of all new employees to each of the policies. This way all employees will automatically get health insurance even if they fail to choose a policy. Your default option happens to be plan A, with an average wait of 14 days and always your choice of physicians. That is, you must either choose B, C, or D within the next few days or accept A as your plan.

The experimental design is depicted in Table 1. The first letter denotes the vignette: H for health care, T for treatment, C for car, D for damage control, and I for infection. The second letter denotes the status quo treatment, and the third letter denotes the omission treatment 0 for no treatment, A when option A was treated, and D when option D was treated.

For example, H-A represents the vignette that has the base paragraph for health care, no status quo treatment, and a treatment of option A as the omission.

The first treatment condition for each vignette was neutral and contained only a base paragraph. Each subsequent treatment condition included the base paragraph and added additional treatment paragraphs. To emphasize the distinctions between treatment conditions the added paragraphs were highlighted in bold print.

For a combined treatment condition (Questions 4, 12, and 20), both the status quo and omission paragraphs were added to the base paragraph. For an additional combined treatment condition (Questions 5, 13, and 21) option D was treated in one of the paragraphs.

These combined treatment conditions created multiple levels of treatments, and allowed us to test hypotheses regarding interactions between effects. For example, for the health care scenario in questionnaire version 1, we have a within-subjects, three-level omission treatment with: HAD, HA-, and HAA. While all other stimuli remain the same, the omission treatment changes from treating option D, to treating no option, to treating option A.

To reduce the possibility of subject fatigue only three of the five vignettes contained combined treatment conditions, and each questionnaire version treated option D in only one position.

For each question, subjects responded with preference ratings for each

TABLE 1
QUESTIONNAIRE DESIGN

Question	Version 1	Version 2
1.	H--	H--
2.	H-A	HA-
3.	HA-	H-A
4.	HAA	HAA
5.	HAD	HDA
6.	T--	T--
7.	T-A	TA-
8.	TA-	T-A
9.	C--	C--
10.	C-A	CA-
11.	CA-	C-A
12.	CAA	CAA
13.	CAD	CDA
14.	D--	D--
15.	D-A	DA-
16.	DA-	D-A
17.	I--	I--
18.	I-A	IA-
19.	IA-	I-A
20.	IAA	IAA
21.	IAD	IDA

Note. Each subject saw only one of the two versions of this questionnaire. Both versions were similar, but differed with respect to order and a few treatment conditions. These versions were generated to counter order effects as well as subject fatigue. This table represents the design of the two versions. Both questionnaires contained 21 questions about five vignettes. The first letter denotes the vignette: H for health care, T for treatment, C for car, D for damage control at a dam, and I for infection. The second and third letters denote the treatment conditions within a vignette. No option was treated, denoted by "-"; option A was treated, denoted by "A"; or option D was treated, denoted by "D". The second letter denotes the status quo treatment, and the third letter denotes the omission treatment. For example, Question 2 in version 1 is "H-A." This question concerned the health care vignette, had no status quo treatment, and treated option A as the omission.

alternative. We used seven-point likert-type scales to solicit the likelihood that subjects would choose or accept each of the four alternatives.

The questionnaire concluded with questions that elicited background information on each subject and posed the following four questions:

1. In the scenarios did the past state of affairs influence your decision?
2. Should the past state of affairs influence your decision?
3. In the scenarios did the default option influence your decision?
4. Should the default option influence your decision?

Design

Each treatment condition within a vignette generated four preference ratings—a preference rate for A, B, C, and D on the seven-point scale—and the debriefing questions were all coded as binary variables (e.g., yes or no, male or female). Although the responses were all recorded on a seven-point scale, in reality these decisions are binary. People either will choose an alternative or will not. However, the seven-point scale affords two advantages. It lends statistical power to the results, and it allows subjects to express gradations of preference.

For statistical analysis we construct a preference measure from subject's ratings. To do this we transform the four preference ratings into proportional measures. The scored preferences are defined with Greek letters: α denotes the preference for A, β for B, γ for C, and δ for D. The preference score for alternative A was then compared in a proportion to the other alternatives. That is, this measure represents how favorably option A was rated relative to all of the alternatives. This measure was computed for each treatment condition, and each scored preference is subscripted by its treatment condition shown in Table 1.

For example, the proportion for the neutral case would be represented as

$$\frac{\alpha_{--}}{\alpha_{--} + \beta_{--} + \gamma_{--} + \delta_{--}}.$$

The proportion for the case when A was the status quo would be represented as

$$\frac{\alpha_{A-}}{\alpha_{A-} + \beta_{A-} + \gamma_{A-} + \delta_{A-}}.$$

The proportion for the case when A was the omission would be represented as

$$\frac{\alpha_{-A}}{\alpha_{-A} + \beta_{-A} + \gamma_{-A} + \delta_{-A}}.$$

A similar construction was used for the remaining three conditions: AA, AD, and DA.

From these proportions, proportional difference statistics were created by subtracting the neutral case proportion from each of the other proportions. For example, the status quo proportional difference measure is:

$$\frac{\alpha_{A-}}{\alpha_{A-} + \beta_{A-} + \gamma_{A-} + \delta_{A-}} - \frac{\alpha_{--}}{\alpha_{--} + \beta_{--} + \gamma_{--} + \delta_{--}} \qquad (1)$$

Equation 1 now gives a concise measure of how the relative preference for option A changed from the neutral case to the case for which option A was the status quo. The larger the score, the more a subject changed to prefer option A when it became a status quo alternative. This scoring procedure provides a powerful and consistent measure for detecting preference changes, and was chosen over alternative methods of analysis.[3]

The base proportions from Eq. (1) can range from .0455 (option A receives a 1, and B, C, and D receive 7's) to .7 (option A receives a 7, and B, C, and D receive 1's). Thus, the proportional differences (Eq. (1)) can range from $-.655$ to .655.[4] Also, these proportional difference constructs are sensitive to both relative and absolute rates of preferences.

Note that these measures are all *within* subjects, and that they are conservative measures of bias. All subjects were forced to define their preferences in a neutral condition immediately prior to defining their preferences in each of the treated conditions.

RESULTS

Aggregate Results

The first statistical tests examine the entire set of responses (proportional difference measures) to ascertain the existence of status quo and omission effects. The first test modeled response as a function of questionnaire version, scenario, status quo treatment, omission treatment, both treatments, and subject in a Generalized Linear Model (GLM) using SAS.

Since each response measure corresponds to a unique treatment condition, these six variables completely identify each response. In this first set of tests, the treatment conditions involving option D were not included. This allows the status quo and omission treatments to be represented as two-level variables: either option A was treated or no option was treated. To test interaction effects, the variable, both treatments, was added to measure any sub- or super-additive effects the status quo and omission treatments might have when they were combined. There were

[3] Kruskal–Wallis tests were not used because they would detect rank order changes, but would analyze this data very coarsely. Other constructs such as (Max value–Treated value)/(Max value–Min value) provide alternative approaches to data analysis, but similarly lack powers to detect subtle differences.

[4] A score of .655 is extreme since this would represent a complete preference reversal. Recall that subjects rated each of the four alternatives on a 7-point scale. A .655 could be obtained if a subject rated 1 for A, 1 for B, 1 for C, and 1 for D under the neutral condition, and rated these same alternatives with 7 for A, 1 for B, 1 for C, and 1 for D when A was treated as the status quo.

TABLE 2
AGGREGATE ANALYSIS

Source	p Value
Questionnaire version	.2273
Scenario	.0001
Status quo treatment	.0001
Omission treatment	.0020
Both treatment	.5219
Subject (version)	.0001

Note. Each response measure was modeled in a GLM as a function of subject, scenario, and treatment condition. The 60 subjects were divided evenly between two questionnaire versions, and the treatment conditions were denoted by the two-level presence or absence of treatments: status quo, omission, and a combined treatment (both treatments). The combined-treatments variable tests for interaction effects between the status quo and omission.

60 levels of subjects, 2 levels of questionnaire versions, and 5 levels of scenarios.

Modeling the response measures as a function of these variables yielded the type III sum of squares table found in Table 2. The variable, questionnaire version, captures differences in responses due to the presentation difference between the two questionnaire versions. Recall that the primary difference between these versions is order, although three questions also contain treatment differences. Since the questionnaire version variable was not significant (p value = .2273), we did not conduct separate analyses for the two questionnaire versions.

The status quo treatment was statistically significant (p value = .0001). This implies that the status quo treatment consistently and systematically affected subject responses and that a status quo bias may operate separately from an omission bias. That is, subjects preferred the current option even when that option would not be obtained through inaction. In addition, the omission treatment was also highly significant (p value = .002).

While significant, these effects are not very strong. The mean response difference resulting from the status quo treatment is about .014, and the mean difference resulting from the omission treatment is about .01.[5] That is, most subjects did not radically alter their preference ratings in response to the treatment conditions.

These measures of bias, however, are conservative. These measures

[5] Recall that these measures range from .655 to − .655, and at a minimum a value of .037 would be needed to alter the rank ordering of preferences. (That is, if subjects rated A, B, C, and D as 6,7,7, and 7 under one condition, and then rated these same options as 7,6,7,7 under another condition, this would generate a proportional difference measure of .037.)

probably understate the true magnitude of bias for several reasons that relate to the design of this experiment. For example, the design was within subject. Each subject faced each treatment condition sequentially, and any response difference represents a change in preference rating from one page to the next. In addition, subjects were asked to *imagine* both status quo and omission conditions. Were subjects to face omission conditions requiring little or no effort or status quo alternatives with personal histories, their decisions regarding these alternatives may have been more significantly affected. Our further weakness of the design is the presentation order. For each vignette the neutral case was always presented first. This may anchor subjects' responses when they evaluate the same alternatives in subsequent treatment conditions. The existence and pervasive preference differences that were elicited in a setting as transparent as this one may portend more serious effects in other settings.

From these results it appears that the status quo and omission effects may be additive. The status quo effect alone was .01356, and the omission effect alone was .01687. For both treatments combined the effect was .02706. From a simple t test, the combined effect was not significantly less than the simple sum of the individual effects (.03043).

A t test comparing the relative strengths of the biases revealed that neither effect was significantly stronger than the other.[6] On average the status quo effect was slightly stronger than the omission effect, but neither consistently nor substantially.

To test further the relationship between these effects we constructed a correlation measure. This analysis investigates whether subjects who react positively (negatively) to the status quo treatment also react positively (negatively) to the omission treatment. For each subject the five vignettes were evaluated for reactions to the status quo and omission treatments. Positive reactions to the treatment conditions were scored as a $+1$, negative reactions to these treatments were scored as a -1, and no reactions to the treatments were scored as 0. Sums were then computed across the five scenarios so that each subject received a two-dimensional reaction score. For example, a subject with three positive and two negative reactions to the status quo treatment, and four positive and one zero reaction to the omission treatment, would earn the vector (1,4) [from $(3 - 2, 4 + 0)$].

Correlation analysis revealed a Pearson correlation coefficient on .34 (p value = .008). Subjects who reacted positively (negatively) to one treatment did tend to react positively (negatively) to the other treatment. This implies that subjects who were prone to exhibit one bias were more likely

[6] The mean difference between the effects was only .003 with a p value of .4349.

TABLE 3
SCENARIO ANALYSIS

Scenario	Status quo	Omission	Subject	Version
Health	.0003	.0023	.0010	.9595
Treatment	.1179	.9335	.0002	.3114
Car	.6829	.4283	.0014	.6423
Dam	.0078	.2082	.0004	.2093
Infection	.1643	.0026	.0380	.9053

Note. These results (in p values) represent five separate GLM analyses for each of the scenarios. Responses were modeled as a function of the same subject, status quo, omission variables, and version variables as in Table 2. The sample size in each model is 180.

to exhibit the other. This result, however, is separate from the lack of interaction *between* the biases. That is, while subjects may react more or less strongly to each of the treatments, their reaction to the combined treatment condition need not display an interaction.[7]

In every section of the aggregate analysis subject and scenario differences were highly significant. That is, responses varied substantially from subject to subject and from scenario to scenario. This consistent result motivates a second level of analysis examining questions at the scenario and subject level.

Results by Scenario

Scenario analysis may suggest specific conditions and settings that interact with these biases. As a caveat to this approach, the experimental design was not specifically constructed to address these questions, and conjectures from these data should be regarded as future hypotheses to be tested. For example, order effects were not controlled and no attempt was made in the construction of these scenarios for similarity or isolation of certain factors.

For each scenario, a GLM modeled response as a function of questionnaire version, status quo treatment, omission treatment, and subject. The combined treatment responses were excluded from the analysis since they were not balanced across vignettes. Table 3 lists the p values of each variable for each scenario. Interestingly, the significance of omission and status quo effects varies across vignettes.

An additional set of five t tests compared the relative strengths of the status quo and omission effects directly within each scenario. These di-

[7] For example, suppose a subject exhibited reaction "s" to the status quo treatment, "o" to the omission treatment, and "c" to the combined treatment condition. While s and o may be related, s + o may be roughly equal to c (without an interaction).

rect comparisons of the relative strengths of these effects did not reveal a statistically significant difference at the 5% level.

A third set of tests examined the response changes from the combined treatment conditions. Recall that only three of the scenarios had combined treatment conditions, and that these sets of conditions created three levels of treatments. Two separate models were constructed for each questionnaire version; version 1 contained a three-level within-subject omission treatment, and version 2 contained a three-level within-subject status quo treatment.

The first model represented responses to the three levels of omission treatments as a function of scenario, subject, and the three levels of treatments. The second model similarly modeled responses to the three levels of status quo treatments as a function of scenario, subject, and the three levels of treatments. Of the three scenarios, only the infection vignette revealed a statistically significant effect from the omission treatments, and only the health care vignette revealed a statistically significant effect from the status quo treatment. Table 4 depicts the p values of these treatments for each of the three scenarios. Possible explanations for these differences are discussed in the discussion section.

Debriefing Questions

The final section of the questionnaire solicited subject responses to belief questions concerning the role of the treatment effects as well as a gender question. Responses to these five questions were compared both to each other and to the actual preferences they expressed under the treatment conditions.

To measure subject's reactions under the treatment conditions we constructed three aggregate measures of effects. To do this, we summed the

TABLE 4
THREE-LEVEL ANALYSIS

Scenario	Status quo	Omission
Health	.0101	.559
	(149)	(150)
Car	.626	.824
	(150)	(150)
Infection	.1568	.03
	(150)	(150)

Note. These results analyze the effects of the combined treatment conditions. These treatment conditions created three-level within-subject status quo and omission treatments that are analyzed separately between questionnaire version. The status quo results represent data from version 2, and the omission results represent data from version 1. The top number represents the p value, the bottom number represents the number of participants.

proportional difference measures for each vignette across all subjects and created total-status-quo-effect, total-omission-effect, and total-all-effect measures.

Correlation analysis, depicted in Table 5, related responses from each of the debriefing questions to each other and to the total effects variables. Surprisingly, this analysis revealed only one statistically significant correlation: did and should the omission treatment matter (r = .69, p value = .0001). This implies that subjects were not well calibrated to realize when they had or had not been affected by the treatment conditions.

Regression analysis corroborated these results. One regression model regressed total-status-quo-effect against the five debriefing variables. The r statistic was only .41 and the only significant variable in the model was gender. With a p value of .0357 these data suggest that females are slightly more likely to commit a status quo bias.

The second model regressed the total-omission-effect on the five debriefing variables for an r statistic of .48. Here only the question concerning whether the omission treatment affects responses was significant, with a p value of .0089.

In general, the low r statistics suggest that subjects are poorly calibrated to realize when they were or were not affected by the treatments.

TABLE 5
CORRELATION TABLE

	Did SQ matter	Should SQ matter	Did OM matter	Should OM matter	Gender
Did SQ	1.00000	.22109	.24460	−.23338	−.10006
	.0	.0924	.0596	.0727	.4469
	60	59	60	60	60
Should SQ	.22109	1.00000	−.17710	.06343	−.23422
	.0924	.0	.1796	.6331	.0742
	59	59	59	59	59
Did OM	.24460	−.17710	1.00000	.47462	.01049
	.0596	.1796	.0	.0001	.9366
	60	59	60	60	60
Should OM	−.23338	.06343	.47462	1.00000	.12610
	.0727	.6331	.0001	.0	.3370
	60	59	60	60	60
Gender	−.10006	−.23422	.01049	.12610	1.00000
	.4469	.0742	.9366	.3370	.0
	60	59	60	60	60

Note. The five responses to should/did the status quo/omission treatment matter and what is your gender were coded as binary variables (yes or no, male or female). From these responses a correlation matrix was constructed representing how likely any of these responses were to covary with each other. The top number represents the correlation, the middle represents the p value, and the bottom number represents the sample size.

In addition, subject opinions of what should matter did not reflect their choices well. For instance, subjects who expressed that the status quo treatment should matter were not any more likely to have reacted to the status quo treatment than those who claimed that it should not matter.

Table 6 represents the general proportions of responses to the debriefing questions. The proportions suggest that most of the subjects perceived the omission effect to be a bias. However, a majority of subjects viewed the status quo bias as legitimate.

TABLE 6
DEBRIEFING QUESTIONS

Those responding yes, the (status quo/omission) (should/did) matter . . .		
	Should matter	*Did matter*
SQ	59% (35)	50% (30)
OM	15% (9)	35% (21)

Note. In addition to the correlation analysis in Table 5, these results represent the raw percentages of how subjects responded to the debriefing questions. Thirty-one of 60 subjects were male. Numbers in parentheses represent sample size (n).

DISCUSSION

The existence of the status quo bias in this experiment demonstrates that Samuelson and Zeckhauser's (1988) original bias does decompose into separate contributing factors. These findings replicate those of Ritov and Baron (1992) concerning the existence of the omission bias, but contradict their dismissal of the status quo bias beyond the omission.

The positive correlation between these effects suggests that the status quo and omission biases are related. This relationship, however, is likely to be complex as these biases appear to be committed unknowingly, and our results do not support either a super- or sub-additive interaction when these treatments are combined. Perhaps an interaction between them does exist and we have simply not evidenced it here.

Ex post facto analysis of the different aspects that interact with these biases can only be suggestive. Possible explanations for these effects include ambiguity, authority, trust, and saliency. In the car scenario, where neither treatment was significant, the options were clearly presented and easy to image. This lack of ambiguity might lead to less biased decision making. The health care choice involves a great deal of ambiguity. Here the difficulty of constructing concrete images might have contributed to the significance of the status quo effect.

In the infection scenario subjects were asked to imagine themselves ill and visiting a physician. Subjects might favor the omission in this case if they automatically relieve themselves of making decisions in medical con-

texts. One subject even claimed that "in the medication [decision] it relieved me of the decision making responsibility." Another factor that might make a difference is for whom the decision is made. In the infection scenario a decision for one's self is made; this might also favor the omission.

In the damage control scenario subjects were asked to imagine themselves operating a dam. Here they were forced to make a decision for others. The omission bias was not present here. In addition, subjects were faced with involvement in a large loss. The status quo may serve as a viable reference or defendable position if subjects envision having to account for these losses later. This result is particularly important as subjects display the status quo bias in a stochastically dominated situation.

In the dam scenario both status quo and omission options were dominated alternatives. In this case, the alternative presented immediately following the status quo or omission choice was better, along both dimensions, than the treated alternative. The result that many subjects preferred the status quo alternative in this case suggests that the status quo bias exists beyond loss aversion.

According to the loss aversion explanation for the status quo bias, losses along one dimension can outweigh gains along other dimensions. When there are no losses to switching to a new alternative, this rationale cannot explain status quo behavior.

In a pilot questionnaire one subject explained how he switched to favor the omission in a stochastically dominated alternative in the dam scenario: "Because it is a default valve. I don't want to take a risk to change the default valve."

At the level of individual analysis it appears that subjects who commit one of the biases are more likely to commit the other. They are not, however, likely to realize when they have committed either of the biases. Subjects are only more likely to believe that they *have not* committed the omission bias if they believe that they *should not* commit the bias.

Figure 1 is a graphical representation of proportional difference data. Points represent the map of the (status quo response, omission response) for each scenario for each subject. The preponderance of points lies in the first quadrant and along the axes. Points contained in the first quadrant represent positive effects from both the status quo and the omission treatments, and points along the axes represent a zero effect from one of the treatment conditions. This view of the data relates to several of the statistical results. For example, most of the points off the axes lie in quadrants I and III instead of quadrants II and IV. This suggests that subjects who reacted positively (negatively) to one treatment condition within a vignette also reacted positively (negatively) to the other treatment in that

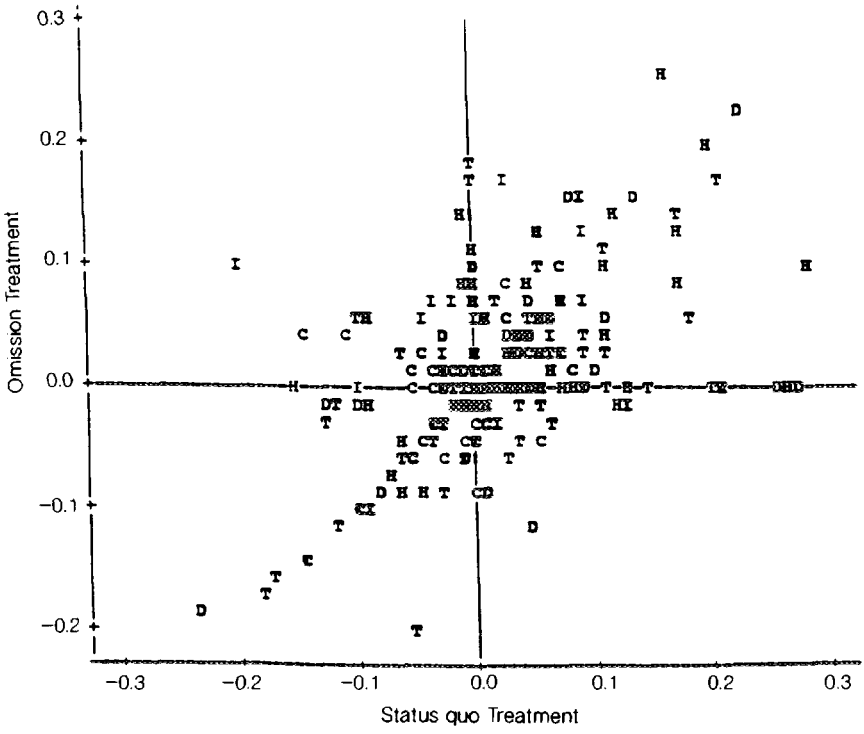

FIG. 1. Proportional changes: Proportional difference measure for each subject for each vignette across both treatment conditions. Most points lie in the first quadrant implying that most subjects favored the alternative when it was the status quo or the omission. Responses along the axes represent an identical preference for the treated alternative in both the neutral and treatment condition. H represents the health care scenario, T the treatment scenario, C the car, D the dam, and I the infection.

vignette. These negative reactions may be representative of a systematic adverse reaction to these treatments. For example, some subjects may be distrustful of defaults or variety seeking with status quo options.

IMPLICATIONS AND FUTURE RESEARCH

The status quo bias operates within a context of several phenomena that include framing, losses, regret, ambiguity, and endowment effects. In addition to these, the status quo and omission biases possess a special relationship. They often operate in tandem since a failure to act usually leads to the persistence of the status quo, but it might also be the case that these biases possess other underlying similarities.

The relationship between the status quo bias and the endowment effect

is also particularly close and significant. The endowment effect describes the endogenous nature of preference formation as individuals shift their preference orderings to reflect an increased preference for their endowment. Once an endowment position becomes internalized, other contributing factors such as loss aversion, regret aversion, ambiguity aversion, and risk aversion might operate to develop preference orderings around the endowment.

If the status quo *becomes* the point of reference, the status quo alternative will be favored relative to other choices. While the status quo alternative is one possible reference point, other points such as the endowment or omission may be perceived as the reference. In fact, the entire process of identifying a reference position is itself an important issue. These perception issues relate to framing and availability effects as decision makers formulate and categorize their decisions.

Since all of these phenomena are so interrelated, it is probably also the case that significant interactions between them exist. The precise relationship between these phenomena is a natural extension of this research.

These issues also relate directly to those of marketing. Keeping and attracting customers are fundamental to marketing, and the relationship between brand loyalty and the status quo bias should be investigated closely.

More broadly, results from this research impact a wide range of fields. These include business strategy, political science, and public policy. Knowledge of when individuals are likely to be docile decision makers and when switching costs are more or less likely to have an effect will help policy makers forecast and plan more effectively.

APPENDIX

Questionnaire Vignettes

Subjects were presented with five vignettes concerning health care insurance, medical treatments, car options, damage control at a dam, and care for an infection. For each vignette subjects responded to several treatment conditions by rating four alternative options.

The base paragraphs and the four alternatives for each vignette are presented here.

1. Health Care Insurance

> Suppose you have just started a new job in a new city. Your employer offers four alternative health plans. All four cover full medical exams and hospital expenses, but differ with regard to the average wait for an appointment and the degree of choice of physicians. The plans all cost your employer the same and he is completely indifferent as to which plan you choose. You must decide within a few days. After you make your choice, you cannot switch plans for one year.

	Average wait	Choice of physicians
A	14 days	Always your choice
B	7 days	Mostly your choice
C	3 days	Sometimes your choice
D	1 day	Never your choice

2. Medical Treatments

Suppose you have just been assigned to the post of health administrator. One of your decisions involves choosing a policy for treating a particular disease. There are four alternative treatments available to you, and unfortunately they all can lead to side effects causing physical deformities and mental illness. These side effects are similar for all four treatments, but the size of the population at risk and severity of these side effects are different. All four risk groups share the same base of 7% of the population. This means that the same 7% of the population would be affected by any of the treatments available.

Treatment	Percentage of population at risk	Severity of deformities and illness
1	10%	Bad physical and psychological
2	7%	Bad physical and psychological
3	16%	Bad psychological
4	20%	Bad physical

3. Car Options

Suppose a local dealer is having a sale on the car you have been waiting to purchase. In addition to the low price of the car, the dealer is giving away promotional packages for the next week. There are four package deals combining different amounts of optional equipment (upgrading the car stereo, sunroof, etc.) and an extended warranty (beyond the standard 3 years). The costs to the dealer are the same and she is indifferent as to which package you choose. The following are the packages the dealer offers:

	Dollar amount of optional equipment (additional features)	Dollar amount of extended warranty (additional time)
A	$1,000 (sunroof, air cond.)	$150 (3 more months)
B	$ 750 (power windows, air cond.)	$400 (6 more months)
C	$ 500 (air conditioning)	$650 (12 more months)
D	$ 250 (stereo)	$900 (18 more months)

4. Damage Control at a Dam

Suppose you have just been appointed as administrative director of a large dam. Recently there have been extremely heavy rains that have brought the water level to unsafe heights. This puts a pressure on the dam that will destroy it within 24 h

unless you channel excess water into the river bed. Because the dam's valves were not constructed well, you cannot channel some of the water through each of the valves, but rather must pick one of them. These valves will channel different amounts of water at different speeds down the same river bed, and you will do certain damage to the environment and personal property. These costs, however, still remain much lower than the severe damage that would be done if the dam were to collapse. Aside from the difference in estimated damage these valves are nearly identical.

Valve	Estimated damage to the environment	Estimated damage to personal property
A	$700,000	$ 900,000
B	$600,000	$ 800,000
C	$400,000	$1,000,000
D	$200,000	$1,300,000

5. Care for an Infection

Suppose you have just contracted a severe infection. After visiting your doctor he informs you of four alternative medications that are available to you. All four of the medications cost the same and come as capsules you must swallow twice a day for 5 days. With all four there is a possibility of side effects which include dizziness and nausea. While the side effects are the same for all four medications, they differ with regard to the likelihood of getting them and their duration. You must choose a form of medication immediately or else the infection will worsen, and after making your choice you cannot switch medication.

	Likelihood of side effects (% of cases reporting side effects)	Expected duration of side effects (in days)
A	Very high (90)	2
B	High (75)	5
C	Moderate (40)	10
D	Low (20)	20

REFERENCES

Arkes, H., & Blumer, C. (1985). The psychology of sunk costs. *Organizational Behavior and Decision Processes*, **35**, 124–140.

Bennett, J. (1966). Whatever the consequences. *Analysis*, **26**, 83–102. Reprinted in B. Steinbeck (Ed.), *Killing and letting die* (pp. 109–127). Englewood Cliffs, NJ: Prentice-Hall.

Carpenter, G., & Nakamoto, K. (1989). Consumer preference formation and pioneering advantage. *Journal of Marketing Research*, **26**, 285–298.

Ellsberg, D. (1961). Risk, ambiguity, and the savage axioms. *Quarterly Journal of Economics*, **75**, 643–669.

Frisch, D., & Baron, J. (1988). Ambiguity and rationality. *Journal of Behavioral Decision Making*, **1**, 149–157.

Hartman, R., Doane, M., & Woo, C. (1991). Consumer rationality and the status quo. *Quarterly Journal of Economics*, 141–162.

Kahneman, D., Knetsch, J., & Thaler, R. (1990). Experimental tests of the endowment effect and the Coarse Theorem. *Journal of Political Economy*, **98**(61), 1325–1348.

Kahneman, D., & Miller, D. (1986). Norm theory: Comparing reality to its alternatives. *Psychological Review*, **93**, 136–153.

Kahneman, D., & Tversky, A. (1979). Prospect theory: An analysis of decisions under risk. *Econometrica*, **47**, 263–291.

Kahneman, D., & Tversky, A. (1982). The stimulation heuristic. In D. Kahneman, P. Slovic, & A. Tversky (Eds.), *Judgment under uncertainty: Heuristics and biases* (pp. 201–208). New York: Cambridge University Press.

Knetsch, J. L. (December 1989). The endowment effect and evidence of non-reversible indifference curves. *American Economic Review*, **79**, 1277–1288.

Knetsch, J. L., & Sinden, J. A. (1984). Willingness to pay and compensation: Experimental evidence of an unexpected disparity in measures of value. *Quarterly Journal of Economics*, **99**, 508–521.

Landman, J. (1987). Regret and elation following action and inaction: Affective responses to positive versus negative outcomes. *Personality and Social Psychology Bulletin*, **13**, 524–536

Loomes, G., & Sugden, R. (1982). Regret theory: An alternative theory of rational choice under uncertainty. *Economic Journal*, **92**, 805–824.

Ritov, I., & Baron, J. (1992). Status quo and omission bias. *Journal of Risk and Uncertainty*, **5**, 49–62.

Ritov, I., & Baron, J. (1990). Reluctance to vaccinate: Commission bias and ambiguity. *Journal of Behavioral Decision Making*, **3**, 263–277.

Ritov, I., Hodes, J., and Baron, J. Biases in Decisions about Compensation for Misfortune. Unpublished manuscript. University of Pennsylvania, Philadelphia.

Samuelson, W., & Zeckhauser, R. (1988). Status quo bias in decision making. *Journal of Risk and Uncertainty*, **1**, 7–59.

Spranca, M., Minsk, E., & Baron, J. (1991). Omission and commission in judgment and choice. *Journal of Experimental Social Psychology*, **27**(1), 76–105.

Thaler, R. (1980). Toward a positive theory of consumer choice. *Journal of Economic Behavior and Organization*, **1**, 39–60.

Tversky, A., & Kahneman, D. (1981). The framing of decisions and the rationality of choice. *Science*, **211**, 453–458.

Tversky, A., & Kahneman, D. (1973). Availability: A heuristic for judging frequency and probability. *Cognitive Psychology*, **5**, 207–232.

Tversky, A., & Kahneman, D. (1991). Loss aversion in risky and riskless choice: A reference-dependant model. *Quarterly Journal of Economics*, **106**, 1039–1061.

Viscusi, W. K., Magat, W. A., & Huber, J. (1987). An investigation of the rationality of consumer valuation of multiple health risks. *Rand Journal of Economics*, **18**, 465–479.

RECEIVED: May 5, 1992