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Abstract

Traditional micro-economic theory assumes that consumer preferences are independent of market forces like supply, demand, and price. However, this assumption is inconsistent with psychological research on commodity theory (Brock 1968). This research has found that scarcity enhances the desirability of experiences and objects. Two studies were conducted to test the possibility that these scarcity effects on desirability are due to a tendency for people to assume that scarce things cost more. Consistent with this hypothesis, study 1 found that scarcity increased the desirability of art prints only when subjects had been primed to think about the expensiveness of art prints in general. Study 2 further supported the hypothesis by finding that scarcity enhanced the desirability of wine only when subjects did not know how much the wine cost. The economic, marketing and research implications of these results are discussed.

Keywords

scarcity, commodity theory, consumer preferences, desirability, marketing analysis, price

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Scarcity Effects on Desirability: Mediated by Assumed Expensiveness?

Michael Lynn, University of Missouri

Traditional micro-economic theory assumes that consumer preferences are independent of market forces like supply, demand, and price. However, this assumption is inconsistent with psychological research on commodity theory (Brock 1968). This research has found that scarcity enhances the desirability of experiences and objects. Two studies were conducted to test the possibility that these scarcity effects on desirability are due to a tendency for people to assume that scarce things cost more. Consistent with this hypothesis, study 1 found that scarcity increased the desirability of art prints only when subjects had been primed to think about the expensiveness of art prints in general. Study 2 further supported the hypothesis by finding that scarcity enhanced the desirability of wine only when subjects did not know how much the wine cost. The economic, marketing and research implications of these results are discussed.

Scarcity is a fundamental concept in economics. Economists are concerned with both the scarcity of means (represented by budget lines) and the scarcity of goods (represented by supply curves). According to the traditional micro-economic theories of price and demand, the scarcity of goods lead to higher prices which in turn combine with preferences and budget restrictions to reduce demand. In these theories, consumer preferences (reflecting the utilities of goods) are assumed to be independent of market factors such as supply, demand and price. However, this assumption is inconsistent with social psychological work on commodity theory.

Commodity theory (Brock 1968) deals with the effects of scarcity on the value of any things - such as messages, experiences, or objects - that are potentially possessable, useful to their possessors, and conveyable from one person to another. According to the theory, any commodity meeting these criteria 'will be valued to the extent that it is unavailable' (1968: 246). 'Unavailability refers to a commodity's scarcity. It may be operationalized as:

- (1) limits on the supply, or the number of suppliers, of a commodity;
- (2) costs of acquiring, or of providing, a commodity;
- (3) restrictions limiting possession of a commodity, and/or

(4) delays in providing a commodity.

Value refers to a commodity's potency for affecting attitudes and behavior. For material and experimental commodities, it has been equated with a commodity's desirability (or utility).

Empirical tests of commodity theory have supported its claim that scarcity enhances the desirability of commodities (see Lynn (1987) for a review). However, it is not clear what psychological process, or processes, underlie these scarcity effects. Brock (1968) and Fromkin (1968, 1970) suggested that people may value scarce things more than available ones because the possession of scarce commodities contributes to feelings of personal uniqueness. Consistent with this explanation, two studies have found that people with a high need-for-uniqueness show a stronger preference for scarce over available commodities than do people with a low need-for-uniqueness (Fromkin 1970; Powell 1974). However, both Brock (1968) and Fromkin (1968, 1970) suggested that other processes may also underlie scarcity's enhancement of desirability.

One other potential explanation for scarcity effects on desirability stems from two sets of observations. First, people associate scarcity with higher prices (Atlas and Snyder 1978; Fromkin et al. 1971; Worchel et al. 1975). Second, expensiveness enhances the desirability of goods because high priced goods are status symbols (Veblen 1899/1965) and because price is often used as a cue to product quality (Monroe and Petroschius 1981). These two observations suggest that assumed expensiveness may mediate scarcity's enhancement of desirability as follows:

Scarcity → Assumed Expensiveness → Desirability.

This is not to say that scarcity always leads to assumed expensiveness or that all scarcity effects on desirability are mediated by assumed expensiveness. All that is being suggested is that assumed expensiveness may mediate some scarcity effects on desirability. If this process does produce scarcity effects on desirability, then the following three hypotheses should be true.

Hypothesis I. Scarcity's enhancement of desirability should be greater when the scarcity is due to market forces than when it is due to some non-market accident. This hypothesis is based on the assumption that people are good enough economists to know that only market scarcity (and not accidental non-market scarcity) leads to higher prices. If this assumption is valid, then assumed expensiveness should mediate scarcity's enhancement of desirability only when the scarcity is caused by market forces. Consistent with this hypothesis, Verhallen (1982, 1984) found that subjects who valued recipe books preferred scarce recipe books over available ones when the scarcity was due to market forces, but not when the scarcity was due to an accident. Of course, market scarcity is more extensive

and long-lasting than accidental scarcity, so this data may merely reflect stronger effects for greater degrees of scarcity.

Hypothesis 2. Scarcity's enhancement of desirability should be strengthened by increasing people's tendency to think about the price implications of the scarcity. This hypothesis is based on the assumption that situational and individual differences influence the likelihood that people think about the price implications of scarcity. To the extent that people think about these price implications, they should assume that scarce commodities are more expensive than available ones and this should strengthen scarcity's enhancement of desirability. This hypothesis was tested in study 1 reported below.

Hypothesis 3. Scarcity's enhancement of desirability should be weakened when people know the commodity's price. This hypothesis is based on the idea that scarcity cannot lead to assumed expensiveness when people already know how much the commodity costs. This hypothesis was tested in study 2 reported below.

Study 1

In study 1, subjects were primed to think about either the expensiveness or the desirability of art prints in general. Then they saw and evaluated two specific prints - one scarce and the other available. Getting people to think about the general expensiveness of art prints should increase the likelihood that they would think about the price implications of a specific print's scarcity. Thus, consistent with hypothesis 2, a scarcity by prime interaction was expected. Subjects were expected to show a stronger preference for the scarce print over the available one under the expensiveness-prime condition.

Method

Subjects

The subjects in this study were 408 students in various behavioral sciences classes at the Ohio State University Newark and Columbus campuses. However, nine subjects did not complete all the rating scales requested of them and one subject reported having done one of the experimenter's other studies before. These subjects' data were omitted from this analysis. The data from 6 randomly selected subjects were also omitted in order to create equal cell sizes. Thus, the data from 392 subjects were analyzed in this study.

Experimental Materials

The stimulus materials for this experiment were contained in a 5-page booklet. The first page of the booklet told subjects the study concerned 'your perceptions of and attitudes toward art prints' and went on to instruct them about how to proceed.

Priming manipulation. The second page of the booklet contained a single question along with a 9-point unipolar scale on which to answer it. For half the subjects, the question asked: 'How expensive do you think art prints generally are'. For the remaining subjects, the question asked: 'How desirable do you think art prints generally are'. These questions created the expensiveness- and control-prime conditions respectively.

Commodities and scarcity manipulations. The third page of this booklet contained photocopies of two art prints used as the commodities in this study - i.e., 'The London Bootblack' by Jules Bastien-Lepage and 'The Print Collector' by Honore Daumier. The order of the art prints was counterbalanced - half the time 'The London Bootblack' was presented in the top portion of the page and half the time 'The Print Collector' was. Accompanying each photocopy was material identifying the print's title and painter along with false information about where the prints could be obtained. Half the time the first print (print A) was described as being available only from the French museum that owns the original painting while the second print (print B) was described as being available both from its French museum and from 'most stores that carry art prints'. The other half of the time the availability manipulation was reversed with print A being widely available and print B being scarce.

Dependent measures. The fourth page of the booklet contained the dependent measures. The primary measure asked subjects: 'How desirable do you think PRINT A(B) is'. The secondary measures asked: 'How willing would you be to trade PRINT A(B) for PRINT B(A)'. All of the queries were to be answered on 9-point unipolar scales with endpoints that were labeled 'not at all...' and 'extremely...'. Subjects were permitted to look back at the prints when making these ratings.

Manipulation checks. The final page of the booklet contained manipulation checks. These checks consisted of two questions asking: 'How available do you think PRINT A(B) is'. Subjects were asked to complete these scales without looking back in their booklets.

Procedure

The experimental sessions varied in size and location depending on the source of subjects for each session. Sometimes the experimenter went to the subjects' classroom and conducted the study during class time. Other times, the experimenter had subjects sign-up for the experiment and

participate in it at a different time and location. Sessions varied in size from less than 10 to over 150 subjects. All but one session of eight subjects were run by the same experimenter who passed out the randomly ordered booklets, read aloud the instructions on the front page, and let subjects complete the booklet at their own pace. When everyone in a session was finished, the experimenter explained what the study was about and thanked subjects for their participation.

Results

The subjects in this study were recruited from different courses on two campuses. However, separate analyses of variance on the two dependent variables using scarcity, scarcity-counterbalance, print-counterbalance, prime, and source-of-subjects as factors produced no significant interactions involving both the scarcity and source-of-subjects factors (all F 's < 1.64). Therefore, these data were collapsed across the source-of-subjects factor and were analyzed in 2 x 2 x 2 x 2 analyses of variance with scarcity as a within-subjects factor and scarcity-counterbalance, print-counterbalance, and prime as between-subjects factors.

Primes

Commodity theory stipulates that scarcity will enhance the value only of products with some intrinsic value to begin with. Half the subjects in this study rated the general desirability of art prints before seeing and evaluating the specific art prints used as commodities. This rating had a mean of 6.02 on a scale ranging from 1 ('not at all desirable') to 9 ('extremely desirable') indicating that art prints were intrinsically desirable commodities to the subjects. The other half of the subjects rated the expensiveness of art prints an average of 5.38 on a similar scale.

Availability Ratings

The effectiveness of the scarcity manipulation was examined in an analysis of variance on subjects' ratings of each print's availability. This analysis produced two significant effects. First, there was a scarcity main effect ($F(1,384) = 219.73, p < 0.0001$). Subjects thought that the print that could be obtained only from a French museum was less available than the print that could be obtained from a French museum and most print stores ($M = 3.66$ vs. 6.10). Second, there was a significant triple interaction between scarcity, scarcity-counterbalance, and print-counterbalance. This interaction reflected a stronger scarcity effect when Daumier's 'The Print Collector' was described as scarce ($M = 3.40$ vs. $6.32; F(1,384) = 158.50, p < 0.0001$) than when Bastien-Lepage's 'The London Bootblack' was

described as scarce ($M = 3.94$ vs. 5.88 ; $F(1,384) = 69.72$, $p < 0.0001$). Nevertheless, the scarcity-manipulation was effective in all conditions of the experiment.

Desirability Ratings

If scarcity's enhancement of desirability is mediated by assumed expensiveness, then priming thoughts about price should strengthened these scarcity effects by increasing the likelihood that subjects would think about the price implications of the scarcity. An analysis of variance on the desirability ratings tested this hypothesis. As predicted, scarcity enhanced the value of the art prints only under the expensiveness- prime conditions (see table 1). This scarcity by prime interaction was statistically significant ($F(1,384) = 7.68$, $p < 0.006$) and is consistent with the hypothesis that people prefer scarce objects because they assume scarce things cost more.

The analysis of the desirability ratings also produced three other significant effects - a prime main effect ($F(1,384) = 4.45$, $p < 0.04$) an interaction between the two counterbalance orders ($F(1,384) = 4.15$, $p < 0.05$), and a three-way interaction between scarcity and the two counterbalance orders ($J'(1,384) = 39.98$, $p < 0.0001$). The main effect reflects subjects' tendency to rate the prints as more desirable under the control condition than under the economic-prime condition ($A4 = 4.88$ vs. 4.58). The two-way interaction reflected a greater average desirability of the two prints when 'The London Bootblack' was scarce than when 'The Print Collector' was scarce ($M = 4.88$ vs. 4.59 ; $F(1,384) = 4.19$, $p < 0.05$). Finally, the significant three-way interaction reported above reflected subjects' preference for 'The London Bootblack' over 'The Print Collector' ($M = 5.01$ vs. 4.39 ; $F(1,384) = 39.93$, $p < 0.0001$).

Willingness-to-Trade Ratings

An analysis of subjects' willingness-to-trade ratings produced four significant effects. First, there was a significant scarcity by prime interaction ($F(1,384) = 4.42$, $p < 0.04$) similar to that for the desirability ratings. However, this interaction was qualified by a second significant effect - a three-way interaction between scarcity, prime, and print-counterbalance ($F(1,384) = 4.60$, $p < 0.04$). The scarcity by prime interaction was significant when 'The London Bootblack' was presented first ($F(1,384) = 8.93$, $p < 0.01$), but not when 'The Print Collector' was presented first ($F(1,384) = 0.00$, n.s.). This result only partially replicates the scarcity by prime interaction on the desirability ratings and no explanation for the partial failure to replicate is apparent.

The third significant effect on the willingness-to-trade ratings was an interaction between the two counterbalance conditions ($F(1,384) = 5.24$, $p < 0.03$). This interaction reflected a greater average willingness-to-trade the two prints when 'The London Bootblack' was scarce than when 'The Print

Collector' was scarce. Finally, there was a three-way interaction between scarcity and the two counterbalance orders ($F(1,384) = 6.03, p < 0.02$). This interaction reflected a greater willingness- to-trade 'The Print Collector' for 'The London Bootblack' than vice versa ($M = 4.44$ vs. 5.01 ; $F(1,384) = 6.16, p < 0.01$).

Table 1
Means of dependent measures by prime and scarcity conditions in study 1 (cell N 's = 196).

Measure ^a	Expensiveness prime		Desirability prime	
	Scarce print	Avail. print	Scarce print	Avail. print
Availability	3.60 ^b	6.10 ^c	3.73 ^b	6.10 ^c
Desirability	4.81 ^b	4.35 ^c	4.81 ^b	4.95 ^b
Willingness-to-trade	4.27 ^b	5.19 ^c	4.74 ^b	4.70 ^b

^a The greater the value the greater the availability, desirability and willingness-to-trade each print.

^{b,c} Pairs of means (in each row and prime condition) are significantly different at the 0.05 level.

Discussion

This study found that priming subjects to think about price increased scarcity's effects on the desirability of art prints. This result is consistent with the idea that assumed expensiveness mediates scarcity's enhancement of desirability. However, several issues concerning the interpretation of this data need to be addressed.

First, the scarcity by prime interaction on the desirability ratings reflects a lower desirability rating in one cell of the design - i.e., the available print in the expensiveness-prime condition was desired less than the others. This makes it look as though availability decreased the desirability of the print and not that scarcity increased it. However, this appearance is deceiving because the study provides no neutral condition against which to compare the scarce and the available conditions. The desirability-prime conditions are not appropriate baselines for comparison, because the desirability-prime may also have enhanced the desirability of the prints. This study simply does not permit an assessment of whether scarcity increased desirability or availability decreased it. Moreover, it is not clear that this distinction is meaningful because scarcity and availability are merely opposite ends of a single continuum.

Second, the desirability ratings in this study may appear ambiguous to some readers. Desirability could refer to the subjects' personal evaluations of the prints or to the subjects' estimates of society's evaluations of the prints. However, subjects were told that the study concerned 'your perceptions of and attitudes toward art prints' and subjects were asked 'How desirable do you think print A (B) is?'

(emphases added). This wording should have insured that subjects provided their own personal evaluations of the prints as intended.

Third, the expensiveness-prime manipulation might be viewed as a demand characteristic because it virtually required subjects to think about the prices of the scarce and available prints. However, that is precisely what the manipulation was intended to do. Moreover, subjects were not told what to think about the prices of the scarce and available prints. If subjects thought the scarce print was more expensive and, hence, more desirable than the available print, then that thought came from within themselves rather than from experimental demand.

Finally, the absence of an expensiveness rating raises questions about whether assumed expensiveness really underlied the scarcity effect in the expensiveness-prime condition of this study. However, no other process that could account for the scarcity by prime interaction is readily apparent. The consistency of this study's result with the mediating role of assumed expensiveness coupled with the difficulty of identifying plausible alternative explanations at least suggests that scarcity effects on desirability are mediated by assumed expensiveness. Nevertheless, an additional test of this explanatory process was conducted in study 2.

Study 2

In study 2, subjects read about a white wine that was described as either scarce or available depending on the experimental condition. In addition, subjects either were or were not informed about how much the wine cost. After reading the description of the wine, subjects evaluated it on a variety of measures. If people prefer scarce commodities over available ones because they assume that scarce commodities cost more, then the scarcity manipulation in this study should have increased both the perceived expensiveness and desirability of the wine, but only when subjects did not already know how much the wine cost. Thus, consistent with hypothesis 3, a scarcity by price-information interaction was expected.

Method

Subjects

The subjects in this study were 171 introductory psychology students at the University of Missouri-Columbia¹. These students participated in partial fulfillment of course requirements.

¹ One-hundred-forty-one of these subjects had also completed Snyder and Fromkin's (1980) need-for-uniqueness scale earlier in the semester, so several analyses involving this individual difference were performed. High and low need-for-uniqueness groups were identified by a median split on the scores and this factor was added to the

Experimental Materials

The stimulus materials for this experiment were contained in an 8-page booklet. The first page of the booklet told subjects that the experiment concerned ‘how people form attitudes toward products based on limited information about the products’. It also instructed them to proceed through the booklet one page at a time, in order. The second page of the booklet contained a consent form that requested students’ signatures, printed names, and student numbers.

Commodity and manipulations. The third page of the booklet described a fictitious white wine that was used as the stimulus commodity in this study. In all conditions, the wine was said to regularly win the ‘French National Gold Medal for Exquisite Wines’. This description was used to ensure the desirability of the commodity. The wine was further described as being made from a strain of ‘Seyval grapes that grow only in the Chateau Pierre vineyards’. This statement was intended to make subject think that there were no comparable, alternative brands of wine whose availability might differ from the stimulus wine’s

In addition, there were 2 descriptions of the wine that varied from subject to subject. One of these statements contained the scarcity manipulation. In the scarce condition, it read: ‘Because of small grape harvest, only 5,000 bottles of this wine have been made in each of the past several years.’ In the abundant condition this statement read: ‘Because of large grape harvests, over 50,000 bottles of this wine have been made in each of the past several years.’ The final statement describing the wine contained the price-information condition and served as a prime of price-oriented thoughts. In the no price condition, it read: ‘This wine can be purchased in Columbia at an attractive price.’ In the price condition, this statement read: ‘This wine can be purchased in Columbia at the attractive price of \$20 per bottle.’ The scarcity and the price-information manipulations were crossed in a factorial design.

Dependent measures. The fourth page of the experimental booklet contained 2 dependent measures. The first question asked subjects to rate the desirability of the wine on a 9-point scale ranging from 1 (‘not at all desirable’) to 9 (‘extremely desirable’). Half the time this question read: ‘How desirable do you think this wine is’ and half the time it read: ‘How desirable do you think this wine is as a gift.’ The second question asked subjects to rate their willingness to buy the wine on a 9-point scale

ANOVAs for the desirability and willingness-to-buy ratings. These analyses produced only one new interaction involving the scarcity manipulation and it was an uninterpretable higher order interaction between all four of the study’s factors on subjects’ willingness to buy the wine ($F(1,125) = 4.58, p < 0.04$). As in previous research (i.e., Atlas and Snyder 1978; Dutcher 1975; Lynn 1987; Okamoto 1983), there was no simple scarcity by need-for-uniqueness interaction on the desirability ratings ($F(1,125) = 0.02, \text{KS.}$) or on the willingness-to-buy ratings ($F(1,125) = 1.34, \text{n.s.}$).

ranging from 1 ('not at all willing') to 9 ('extremely willing'). Half the time this question read: 'How willing would you be to buy this wine for yourself' and half the time it read: 'How willing would you be to buy this wine as a gift for a friend.' The desirability and willingness-to-buy ratings were yoked so that subjects made both ratings of the wine either for themselves or as a gift. In addition, the self vs. gift rating was crossed with the scarcity and the price-information manipulations.

Cognitive responses. The fifth, sixth, and seventh pages of the booklet concerned subjects' cognitive responses to the wine. Subjects were asked to list their thoughts and feelings about the wine and then to rate the favorability of each thought on a 7-point scale ranging from -3 ('very unfavorable') to +3 ('very favorable').

Manipulation checks. The final page of the experimental booklet contained two manipulation checks. Subjects rated the expensiveness and the scarcity of the wine on 5-point scales ranging from 1 ('not at all...') to 5 ('extremely...'). Subjects were asked to make their ratings without looking back in their booklets.

Procedure

Subjects participated in 30-minute sessions of up to 40 people. The experimenter handed out the randomly ordered booklets, read aloud the instructions on the front page of the booklet, and told subjects to begin. Subjects were allowed to work at their own pace though the experimenter urged them to finish within about 20 minutes. When everyone was through, the experimenter collected the booklets, debriefed the subjects, and let them leave.

Results

The data from this study were analyzed in unequal-n, analyses of variance. There were 3 between-subjects factors - i.e., scarcity, presence or absence of price information, and self vs. gift ratings. The results of these analyses are presented and briefly discussed below.

Scarcity Ratings

The effectiveness of the scarcity manipulation was assessed in an analysis of variance on subjects' ratings of the wine's scarcity. The analysis produced only one significant effect. As intended, subjects thought the wine was scarcer when only 5,000 bottles a year were made than when over 50,000 bottles a year were made ($x = 3.57$ vs. 2.30 ; $F(1,163) = 58.32$, $p < 0.0001$). No other effects were significant (all F s < 1.2). Thus, the scarcity manipulation was successful and permitted further examinations of scarcity's effects.

Expensiveness Ratings

The price information presented to half the subjects in this study was intended to keep them from assuming that the wine was more expensive when it was scarce than when it was available. The effectiveness of this manipulation was examined in an analysis of variance on subjects' ratings on the wine's expensiveness. This analysis produced a marginal scarcity main effect ($F(1,163) = 3.80, p < 0.06$) and a significant price information main effect ($F(1,163) = 12.05, p < 0.0008$). Subjects considered the wine more expensive when it was scarce ($x = 3.15$ vs. 2.83) and when its price was unknown ($X = 3.30$ vs. 2.70). However, these main effects were qualified by significant scarcity by price information interaction ($F(1,163) = 10.41, p < 0.002$). As intended, scarcity increased the perceived expensiveness of the wine only when subjects did not know how much it cost (see table 2).

Table 2
Means of dependent measures by scarcity and price information conditions in study 2.

Measure	Price information		No price information	
	Scarce	Abundant	Scarce	Abundant
Scarcity	3.42 ^a	2.33 ^b	3.73 ^a	2.28 ^b
Expensiveness	2.60 ^a	2.81 ^a	3.70 ^b	2.85 ^a
Desirability	5.33 ^a	5.31 ^a	6.43 ^b	5.43 ^a
Willingness-to-buy	4.16 ^a	3.88 ^a	4.73 ^a	4.33 ^a
	(<i>n</i> = 40)	(<i>n</i> = 42)	(<i>n</i> = 44)	(<i>n</i> = 45)

^{a,b} Means are significantly different from one another at the 0.05 level.

Desirability Ratings

If assumed expensiveness mediates scarcity's enhancement of desirability, then scarcity should have increased the desirability of the wine in this study only when subjects did not already know how much it cost. This hypothesis was tested in an analysis of variance on subjects' ratings of the wine's desirability. This analysis produced significant scarcity ($F(1,163) = 4.47, p < 0.04$) and price information ($F(1, 163) = 6.10, p < 0.01$) main effects. Subjects considered the wine more desirable when it was scarce ($x = 5.88$ vs. 5.37) and when its price was unknown ($X = 5.95$ vs. 5.32). However, these main effects were also qualified by a significant scarcity by price information interaction ($F(1,163) = 3.99, p < 0.05$). As hypothesized, scarcity enhanced the desirability of the wine only when subjects did not know how much it cost (see table 2). These results suggest that it is the assumption that scarce commodities cost more than available ones that is responsible for scarcity's enhancement of desirability. When such assumptions were precluded by providing price information, scarcity's effect on the wine's desirability was eliminated.

Willingness-to-Buy Ratings

The mediating role of assumed expensiveness in scarcity's enhancement of desirability makes it difficult to predict scarcity's effects on purchase intentions. The assumed expensiveness of scarce commodities should have a positive effect on purchase intentions through its enhancement of desirability, but should also have a negative effect on purchase intentions through its enhancement of perceived costlines. It was not clear which of these two competing processes would be the stronger in this study. This issue was examined in an analysis of variance on subjects' willingness-to-buy ratings. This analysis produced significant main effects of price information ($F(1,163) = 4.14, p < 0.05$) and of self vs. gift rating ($F(1,163) = 8.91, p < 0.004$). Subjects were more willing to buy the wine when they did not know how much it cost ($x = 4.54$ vs. 4.02) and when the purchase was a gift for a friend ($x = 4.65$ vs. 3.89). However, there were no significant effects of scarcity or of its interactions with the other manipulations (all $F_s < 1.78$) on subjects' willingness to purchase the wine. Apparently, the competing effects of enhanced desirability and enhanced costlines on purchase intentions offset one another and left subjects' willingness to buy the wine unaffected.

Thought Listings

A multivariate analysis of variance (similar to the univariate ANOVAs above) was performed on the numbers of positive, negative, and neutral thoughts that subjects listed about the wine. This analysis produced no significant effects (all $F_s < 2.10, p > 0.10$).

Discussion

This study found that scarcity enhanced both the perceived expensiveness and desirability of a wine, but only when subjects did not know the wine's price. These results are consistent with the idea that scarcity's enhancement of desirability is mediated by assumed expensiveness. However, at least one alternative explanation must be addressed.

Price information may have eliminated the scarcity effect in this study not because it precluded assumptions about the wine's expensiveness, but because subjects used it *instead* of the scarcity information to evaluate the wine. Although possible, this explanation for the data seems implausible for several reasons. First, the scarcity manipulation check indicated that subjects paid attention to, and remembered, the scarcity information even when they were also given price information. This should not have occurred if price information made the scarcity information irrelevant. Second, the price information did not raise or lower the desirability of the wine enough for ceiling or floor effects to interfere with any potential scarcity effects. Finally, subjects were always told that the wine won the

'French National Gold Medal for Exquisite Wines'. This highly diagnostic information did not keep subjects from using the scarcity information, so it seems unlikely that the less diagnostic price information would do so.

General discussion

Summary

The results of these studies supported the idea that scarcity's enhancement of value is mediated by assumed expensiveness. Study 1 found that scarcity enhanced the desirability of art prints only when subjects had been primed to think about the prints' prices. Study 2 found that scarcity enhanced the perceived expensiveness and desirability of a wine only when subjects were not told how much it cost. These results suggested that a scarcity effect can be created by inducing people to think about the scarce commodity's price and that such an effect can be eliminated by prohibiting people from assuming that the commodity is more expensive when it is scarce. Although each study is inconclusive by itself, when combined with one another and with Verhallen's (1982, 1984) studies, they provide fairly strong evidence that scarcity effects on desirability are mediated by assumed expensiveness.

In the introduction, the mediating role of assumed expensiveness was presented as just one of potentially many explanations for scarcity's enhancement of desirability. Thus, it was expected that the experimental conditions conducive to the assumed expensiveness process would strengthen the scarcity effects produced by need-for-uniqueness and other processes. However, the studies reported here, and those of Verhallen (1982, 1984), found scarcity effects on desirability only under the conditions in which subjects were likely to think that the scarcity implied expensiveness. Moreover, study 2 joined several other studies in failing to replicate the scarcity by need-for-uniqueness interactions found by Fromkin (1970) and Powell (1974) (see fn. 1). While these results do not mean that assumed expensiveness is the only process underlying scarcity's enhancement of desirability, they do suggest that scarcity effects in the absence of assumed expensiveness are rare.

Economic and Marketing Implications

Traditional micro-economic theory assumes that market forces like supply, demand and price do not affect the perceived desirability (or utility) of goods. We know from previous research that this assumption is invalid. Both scarcity and price have been shown to affect the desirability of commodities (see Lynn (1987), and Monroe and Petroschius (1981) for reviews). The results of the studies reported here suggest that these scarcity and price effects are not always independent of one-another. Many

scarcity effects on desirability are mediated by assumed expensiveness and, thus, are indirect price effects.

The idea that assumed expensiveness mediates scarcity's enhancement of desirability has a number of marketing implications. First, it suggests that scarcity (either real or artificial) can be used to create expectations of high prices. These expectations may make higher prices more acceptable and/or may make actual prices that are just under the expectations seem like great deals. Second, this explanation for scarcity's enhancement of desirability suggests that scarcity claims in marketing communications to consumers should not be accompanied by price information because the price information would eliminate, or at least weaken, the effects of the scarcity information. Finally, this explanatory process suggests that scarcity claims are likely to be more effective in enhancing the desirability of product categories that have status implications - i.e., of high price and high visibility product categories. This is true because the assumed expensiveness of a scarce product should increase its status value only if the product category is used as a status symbol.

Implications for Future Research

The mediating role of assumed expensiveness in producing scarcity effects on desirability also has several implications for future research. Obviously, the marketing implications previously discussed need to be tested. Research is also needed to find out when assumed expensiveness will and will not enhance purchase intentions. However, the most important research implication of this explanatory process concerns research on other processes underlying scarcity's enhancement of desirability.

The effects of assumed expensiveness could hide other interesting processes that may underlie scarcity effects. For example, Atlas and Snyder (1978) may have failed to find a significant scarcity by need-for-uniqueness interaction because they made the price implications of the scarcity salient to subjects. Since low as well as high need-for uniqueness subjects should have assumed that the scarce commodity cost more, these price implications may have weakened the study's scarcity by need-for-uniqueness interaction. Similar processes may have also prevented other investigators from finding theoretically predicted interactions. Thus, it is important to know about the role of assumed expensiveness in scarcity's enhancement of desirability so that future research can control its effect in attempts to isolate and test any other processes that may underlie scarcity's enhancement of value.

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