

SPECIAL SESSION SUMMARY

Cognitive Mechanisms That Underlie Reference Price Effects

Manoj Thomas, New York University

SESSION OVERVIEW

It is widely accepted that price evaluations involve some form of comparisons. That is, when faced with a stimulus price, the consumer evaluates that price by comparing it with some form of comparison standard. This comparison standard is often referred to "reference price." Two basic forms of comparison standards have been proposed in the pricing literature: Internal reference price (IRP) and External reference price (ERP). When consumers evaluate a stimulus price by comparing it with an internal, memory based price standard, they are said to use an internal reference price. But when the comparison standard is a price observed in the shopping environment (e.g., advertised price or the regular price), then consumers are said to use an external reference price. Though scanner panel data based choice models and experiments have established beyond doubt that price evaluation often, if not always, entail a reference price, the underlying cognitive process is far from clear. The three papers presented in this session seek to delineate the cognitive processes that underlie reference price effects.

The Price Cognition Process

Pricing research has traditionally been a domain of economists. However, over the past three decades, consumer psychologists have unraveled substantive findings that augment (and sometimes challenge) the traditional perspective on pricing. In this special session, we have three papers that draw on findings in cognitive psychology and social psychology to explore how reference prices affect price encoding and the magnitude perceptions of a stimulus price. Given that price is one of the most important elements of the marketing mix, this is an interesting and potentially rewarding area for both practitioners and researchers in consumer behavior. The session synthesizes work employing different theoretical perspectives.

The first paper by Janiszewski and Lichtenstein examines the process by which advertised reference prices affect price evaluations. The extant models of ARP effects suggest that advertised reference prices actually shift the internal standards and thus affect price evaluations. Drawing on recent work in social cognition on semantic priming and selective accessibility, the authors suggest an alternative model to explain the effects of ARPs. They suggest that ARPs activate exemplars, which in turn serve as semantic anchors in subsequent judgments. Through three experiments they test the predictions of the semantic anchor model and the IRP shift model and find that data supports the former.

The second paper by Thomas and Menon argues that mental price comparison (i.e., stimulus price vs. internal standard) is a cognitive skill. As with any other skill, repeated mental comparisons lead to proceduralization of price knowledge. Based on this premise they suggest that for frequently purchased goods, consumers' can evaluate prices without explicitly recalling the internal price standards. Three different effects of repetition are presented to support this argument. First, repetition systematically reduces the time taken for price evaluation; response time for price evaluation follows the power law of learning. Second, the distance between the internal standard and response time affects experts' response time but does not affect novices' response time. Finally, experts are relatively more sensitive to price increases than novices.

The third paper by Adaval and Wyer proposes that contextual reference prices can have an assimilation effect or contrast effect on stimulus price judgments. Traditional pricing theory suggests that

a stimulus price is always contrasted with a contextual standard. Their experiments show that contextual anchors bias participants' estimates of actual price, but these assimilative effects of contextual prices vanish when people were asked to list all the thoughts they had about the product category.

The three papers address the same issue, namely—how external and internal reference prices affect price evaluations. The first one compares two alternative process explanations, the second one examines the effect of repetition on mental comparison process, and the third one examines situations when external reference prices lead to assimilation effects rather than contrast effects. Together, the three papers present a framework that facilitates a better understanding of the process by which reference prices affect price evaluations.

"Advertised Reference Prices as Semantic Anchors"

Chris Janiszewski, University of Florida

Donald Lichtenstein, University of Colorado

Julia Belavsky, University of Florida

Advertised reference prices (ARPs) are a popular sales promotion technique. Retailers often pair a high advertised reference price (e.g., "Regularly \$69.95") with a low offer price (e.g., "Sale Price \$29.99") to encourage the consumer to conclude that s/he is paying a lower than normal price for the advertised product. The use of ARPs is pervasive across merchant types, product and service categories, and media vehicles (e.g. newspapers, radio, direct mail, television, in-store signage). In fact, their use is even quite common in situations where consumers act as resellers. For example, sellers might include a price reduction (e.g., "price reduced \$20,000; now \$399,500") or an original list price (e.g., "original costs \$1,600; must sell \$500") in their price offer.

There is an abundance of evidence that ARPs positively influence a range of consumer price-related responses, including perceptions of the fair price, the normal price, the lowest available price in the market, potential savings, and purchase value (e.g., Ahmed and Gulas 1982; Bearden, Lichtenstein, and Teel 1984; Berkowitz and Walton 1980; Biswas and Blair 1991; Blair and Landon 1981; Burton, Lichtenstein, and Herr 1993; Grewal et al. 1998; Lichtenstein and Bearden 1988, 1989; Lichtenstein et al 1991; Urbany, Bearden, and Weilbaker 1988). The consistency of findings regarding the effect of ARPs across an array of consumer responses led Grewal et al. (1998, p. 54) to state "price comparison advertising is a widely used price promotion tactic. Although research investigating issues on the relative effectiveness of this tactic spans nearly 20 years, we are still trying to understand how and why it works."

At issue in the current investigation is not the influence of ARPs per se, but rather, the influence of implausible ARPs. That is, there is considerable research evidence that when consumers encounter ARPs that they disbelieve, they are none-the-less influenced by the ARPs (Blair and Landon 1981; Lichtenstein and Bearden 1989; Lichtenstein, Burton, and Karson 1991; Urbany et al. 1988). As noted by Blair and Landon (1981, p. 62), "consumers may understand that a reference price is inflated or be skeptical of it, yet may not completely discount the claim; that is, consumers may be influenced even if they are skeptical."

We find that people increase their estimate of a fair price as the advertised reference price (ARP) of a product increases from plausible to exaggerated to implausible (a linear relationship). We

also find that people decrease their purchase likelihood when the ARP of a product increases from plausible to exaggerated and increase their purchase likelihood when the ARP of a product increases from exaggerated to implausible (a U-shaped relationship). We investigate two reasons for increased purchase likelihood in the implausible ARP condition. First, people may consider the implausible price so outlandish, they do not believe it is exerting a bias on their fair price estimate. Second, people may consider the implausible price to be a signal of the quality of the product and recruit information consistent with this higher quality good, thus their fair price estimate and purchase likelihood response correlate. The data are consistent with the second explanation.

"Effects of Repetition on Price Comparison Process"

Manoj Thomas, New York University

Geeta Menon, New York University

It has been known for long that consumers' memory for past prices affects their evaluations of a stimulus price. For instance, Gabor (1988, p 236) suggests that the consumer "judges the prices of different goods and services by comparing them, more or less subconsciously, with some standard which may not, of course, be the same for all persons." The memory-based price standard that consumers' use to make such comparisons is often referred to as internal reference price (Monroe 2003, Winer 1986). Several econometric studies (Kalyanaram and Winer 1995, Mayhew and Winer 1992, Winer 1988) as well as experimental studies (Adaval and Monroe 2002, Janiszewski and Lichtenstein 1999) have demonstrated that internal price standards have significant effect on price evaluations.

While there is considerable empirical support for effects reference price on price evaluations, not much is known about the cognitive mechanisms that underlie these effects. In fact, the concept of a memory-based reference price itself has been brought into question by several price recall surveys. Data collected from several surveys indicate that consumers have very poor memory for prices. Dickson and Sawyer (1990) approached shoppers while they were in the supermarket and asked them to recall the prices of products that they had just put in the shopping cart. Less than half the respondents (47.1%) could accurately recall the prices of products that they had just put in the shopping cart. Krishna, Currim and Shoemaker (1991) found that only 34% of buyers were correct within 20 cents of the actual price. More recently, Vanhuele and Dreze (2002) observed that 21.3% of their respondents could recall prices within five percent of actual prices. The fact the consumers have poor recall for past prices has led some researchers to question consumers' ability to use memory-based price information in evaluating prices. Zeithaml (1988, p.10) observed that consumers' knowledge of prices "appear to be considerably lower than necessary for consumers to have accurate internal reference prices for many products." Contrary to the above findings, results from choice models suggest that consumers have brand-specific internal price standards for all major brands in most product categories that they frequently buy. Based on scanner panel data for peanut butter, coffee and tissue, Briesch et al (1997) inferred that consumers behave *as if* they remember the past prices of all the major brands in these categories.

How can consumers' brand choices be so sensitive to changes with respect to past prices when they are not able to accurately recall the past prices? Consistent with the views of Monroe and Lee (1999), we suggest that consumers learn to evaluate new prices without explicitly recalling past prices from memory. Drawing on findings in memory research, we examine the distinction between declarative and non-declarative price knowledge (Schacter and

Tulving 1994). When a consumer explicitly recalls an internal standard for the brand to evaluate the stimulus price, she is relying on her declarative price knowledge. We refer to such evaluations as analytical evaluations. However, repeated evaluations of same product substantively affect the underlying cognitive process (Anderson 1993). Consumers no longer have to verbally rehearse the past price to evaluate a new price. Rather, they learn to associatively evaluate the price. The hypotheses and the experimental designs presented in the paper are pivoted on two basic paradigms: (i) associative price evaluations do not depend on declarative price knowledge (ii) associative price evaluations do not involve an explicit comparison process.

Understanding the distinction between declarative and non-declarative price knowledge not only enables us to resolve the apparently contradicting findings in pricing literature but also addresses the implications of repetitive evaluations on price cognition process. While the effects of repetition of advertisements and persuasive claims have been studied in considerable detail (e.g., Janiszewski and Meyvis 2001), little is known about the effects of repeated evaluations of the same product's prices. There is a growing body of evidence in the numerical cognition literature, which shows that repetition makes many numerical cognition processes, like addition and multiplication, associative in nature (Dehaene 1992, 1997). However, not much work has been reported about the effect of repetition on magnitude comparison mechanisms per se. So our findings augment not only the theory of price cognition but also add to the literature in numerical cognition.

We present three experiments designed to examine the effects of frequent evaluations on the underlying cognitive processes. Study 1 shows the dissociation between response time for price recall and price evaluation. Participants who were given prior experience in price evaluations of the target products had significantly lower response time for evaluations than those who were evaluating the prices for the first time. However, response time for price recalls was unaffected by prior experience in price evaluations. This suggests that associative evaluations do not entail explicit recall of past prices. Study 2 shows that for infrequent buyers of a product, the distance between the stimulus price and internal price standard affects the ease of evaluations. The smaller the distance, the greater is the response time for evaluations. But for frequent buyers, the distance between stimulus price and the internal price standard does not affect response time. Study 3 shows that frequent buyers are relatively more sensitive to price increases and less influenced by contextual price information than infrequent buyers. Together, these results support the thesis that while infrequent buyers construct their evaluations at the point of purchase, frequent buyers retrieve pre-existing evaluations associated with price magnitudes.

"Assimilation and Contrast in Consumer Price Perceptions"

Rashmi Adaval, Hong Kong University of Science and Technology

Robert S. Wyer, Hong Kong University of Science and Technology

Research on price perception has identified two directionally different effects. First, when people are exposed to an external reference price (an anchor), their internal reference price (or price estimate) shifts in the direction of the anchor (Lichtenstein and Bearden 1989; see Briesch et al. 1997 for a review). Second, when a price is encountered in the context of others, the context prices are often used as a basis of comparison in evaluating it. Thus, a product might be judged as more expensive when people have been exposed to lower prices than when they have been exposed to higher prices

(Adaval and Monroe 2002). These effects are not only directionally different but appear inconsistent. Our research attempts to circumscribe the conditions under which the anchoring and the perspective effects are likely to occur.

Traditional explanations for the anchoring phenomenon have been based on adaptation-level theory (Helson 1964) and assimilation-contrast (Sherif and Hovland 1961). More recently, however, work by Mussweiler and Strack (1999) suggests that when people are asked to decide if a product's price is above or below a certain value (e.g., a high external reference price), they activate concepts about products whose values fall within the range of those implied by the anchor. As a consequence, their later estimates of the actual price of the product, which are based on these concepts, are biased toward the value they are asked to consider. Perspective effects, on the other hand, are based on social judgment theory and are believed to occur because the stimulus values to which people are exposed along a dimension influence the perspective they use to assign subjective values to stimuli along this dimension. Thus, for example, a particular product's price is judged as subjectively less expensive when it is considered in the context of other high-priced products than when it is considered in the context of low-priced products. Note, however, that the contrast effects that are produced by perspective shifts occur in the course of translating stimulus values that are defined in physical units (e.g., dollars) into subjective units (e.g., units of "expensiveness"). Moreover, their effects on actual behavior (e.g., purchase decisions) are likely to occur only when people actually report the subjective values along a scale, and then retrieve these judgments out of their original context for use as a basis for behavior decisions (Sherman, Ahlm, Berman, & Lynn, 1978).

We conducted five studies to demonstrate when anchoring effects (like those implied by Mussweiler and Strack's research) are likely to occur. In the first study, participants were asked to indicate "Is the average price of product A greater or less than X (high/low anchor)?" They were then asked to indicate the average price of the product (a price estimate). The first experiment showed that the anchor not only biased participants' estimates of the product's actual price, but also influenced the price that participants were willing to pay for a product of the type being described. (That is, even though the price estimates were higher in the presence of a high anchor, the willingness to pay was also higher, suggesting that the anchor might have activated thoughts about the type of product to which the anchor pertained.) The estimates did not depend on whether the judgments referred to a general type of product or to a specific brand and, in the latter case, did not depend on whether the brand had a good or bad reputation for quality.

In the second study participants were first asked to decide whether the typical price of a product is greater or less than a value that was either very low, average, plausibly high, or implausibly high. Then, some participants estimated the actual price of the product, followed by estimates of its subjective cost, its quality, and the average price they would be willing to pay for it. Other participants were asked to make the last three ratings without estimating the actual price of the product. Results showed that estimates of willingness to pay were assimilated towards the anchor in both conditions. However, the anchor had no effect on subjective perceptions of cost or quality (subjective judgments made on a rating scale). These results suggest that the anchor might have elicited anchor related thoughts and at the same time shifted people's perspective in the direction of the anchor leading the average price of the product to be judged the same in both low and high anchor conditions.

To validate the assumption that the anchor elicits anchor related thoughts and influences willingness to pay, we conducted a

third study in which people were asked to either list all the thoughts they had about the product category before exposure to the anchoring task or were given the anchoring task without the thought generation exercise. Activating a broader sample of thoughts about the category led to a significant reduction in the anchoring effect although it did not completely eliminate it. To determine if the anchoring effect was likely to occur even if the anchor related thoughts were unrelated to the judgment at hand, we conducted a fourth study in which we presented the anchoring question for one product category (e.g., high technology products) and asked participants to indicate how willing they were to pay for a second product category (e.g., articles of clothing). Four replications were selected for high tech products and four for clothing related articles. Results showed that when the anchoring question pertained to high tech products, estimates of willingness to pay for clothing articles were not affected. However, when the anchoring questions pertained to clothing articles, willingness to pay estimates for high tech products were affected. These cross category effects on willingness to pay have been found elsewhere (Nunes and Boatwright 2004). However, reasons for their occurrence as well as the asymmetry are unclear.

To determine whether types of thoughts were responsible for the asymmetry in cross-category effects, we conducted a fifth study where we gave people the anchoring question about one product category (e.g., a DVD player—a high tech product) and asked them to write down either experience related thoughts about that category or function related thoughts about that category. We then asked people to estimate willingness to pay for the second category (e.g., running shoes—an article of clothing). The two categories were counterbalanced so that participants sometimes wrote thoughts about a DVD player and at other times wrote about running shoes. The effects of anchors on willingness to pay were limited to conditions in which the thoughts were (a) the sort that were normally generated in the course of making the comparative judgment and (b) were applicable to the judgment that participants made subsequently. Specifically, when participants made comparative judgments pertaining to running shoes and then generated experience-related thoughts, comparison prices had a positive influence on the price they were willing to pay for a DVD player. When they had generated function-related thoughts about running shoes (which were irrelevant to judgments of a DVD player), this was not the case. When participants made comparative judgments of DVD players, the comparison price had little effect on judgments of running shoes regardless of the type of thoughts they had generated.

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