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Many firms divide a product's price into two mandatory parts, such as the base price of a mail-order shirt and the surcharge for shipping and handling, rather than charging a combined, all-inclusive price. The authors call this strategy *partitioned pricing*. Although firms presumably use partitioned pricing to increase demand and profits, there is little clear empirical support that these prices increase demand or any theoretical explanation for why this should occur. The authors test hypotheses of how consumers process partitioned prices and how partitioned pricing affects consumers' processing and recall of total costs and their purchase intentions and certain types of demand. The results suggest that partitioned prices decrease consumers' recalled total costs and increase their demand. The manner in which the surcharge is presented and consumers' affect for the brand name also influence how they react to partitioned prices.

Divide and Prosper: Consumers' Reactions to Partitioned Prices

Many firms divide the prices they charge consumers into two mandatory parts, instead of charging one all-inclusive price. For example, a mail-order firm charges \$32 for a shirt, plus \$4.95 for shipping and handling. A restaurant's menu lists a price of \$34 for a prix fixe dinner and mentions that "a gratuity of 18% will be added automatically for parties of six or more," but customers are expected to add a tip for smaller parties. A travel agency lists a price of \$1,295 for a Caribbean cruise and charges an additional \$140 for mandatory "port charges." In each case, the firm could charge a single, all-inclusive price that combines the components—\$36.95 for the shirt, \$40 for the dinner, and \$1,435 for the cruise—but instead divides the price into two parts, a strategy we term *partitioned pricing*. Because we are interested

in cases in which one partitioned price component is much larger than the other, we call the larger the *base* price (e.g., \$32 for the shirt) and the smaller component the *surcharge* (e.g., \$4.95 for shipping and handling).¹

Firms presumably use partitioned pricing because they believe the strategy increases consumer demand for their products. If consumers attend to and process both base prices and surcharges with the same accuracy they use for equivalent combined prices, then partitioned prices should not increase demand. However, pricing research provides evidence that consumers do not always completely attend to, or accurately process, price information (Dickson and Sawyer 1990; Mazumdar and Monroe 1990, 1992; Stiving and Winer 1997). If consumers do not process base prices and surcharges completely and accurately, then partitioned pricing can potentially increase demand.

However, research in marketing has paid relatively little attention to how consumers react to partitioned prices, either cognitively or behaviorally, leaving unresolved for market-

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¹The partitioned prices we examine are distinct from price discrimination strategies that also include two different kinds of prices. In "two-part" price discrimination strategies, consumers pay a set "entry" fee, and then a separate "per use" fee each time they use the product or service. In the partitioned pricing we examine here, paying the two prices gives the consumer ownership. Nor is partitioned pricing the same as "product bundling," in which two or more distinct products or services are priced together (Yadav and Monroe 1993). In the partitioned pricing strategies we examine, the price of a single product or service is divided into two mandatory components. Partitioned pricing is also distinct from efforts by firms to change the temporal frame consumers use to process prices, such as motivating consumers to break down the loss from a relatively large total cost into many smaller losses, each of which are only "pennies per day" (Gourville 1998).

ing managers the important questions of how consumers process partitioned prices and whether these prices actually increase consumer demand compared with combined prices.² If these strategies are effective, then managers must understand why they affect consumer behavior in order to create partitioned pricing strategies that maximize their profits in an ethical manner. Because partitioned prices can potentially mislead consumers when they are not made salient (McDowell 1996; *Travel and Leisure* 1996), public policymakers also must understand how consumers perceive and react to partitioned prices.

The purpose of this article is to investigate these issues. We develop hypotheses of how consumers react to partitioned prices on the basis of the literature on cost/benefit trade-offs. We then test these hypotheses in two experiments. We find that consumers exposed to partitioned prices have higher demand in an auction, as indicated by their bids, than consumers exposed to all-inclusive, combined prices. Our results in a second experiment, in which subjects choose between two telephones, suggest this occurs because a large proportion of consumers do not account fully for surcharges and, therefore, underestimate the total product cost. We also identify two factors that affect how consumers process and react to partitioned prices: (1) the effort required and (2) consumers' motivation to process partitioned prices fully and accurately.

In the next section, we develop hypotheses regarding how consumers react to partitioned prices. We then describe two experiments that test these hypotheses in two different contexts in which partitioned pricing is used in practice. Finally, we discuss implications of our findings for firms using partitioned pricing strategies and for public policymakers, along with study limitations.

CONSUMER RESPONSE TO PARTITIONED PRICES

How Consumers Process Partitioned Prices: A Cost/Benefit Perspective.

When consumers process a partitioned price, they might combine price information from the base price and the surcharge to estimate the product's total cost. The manner in which they do this affects the "psychological price" stored in memory, which, in turn, affects demand (Dickson and Sawyer 1990; Monroe 1973). Thus, how consumers process partitioned prices has important implications for marketing practice.

We believe that, in a given situation, consumers can use different approaches to process partitioned prices and that the approach chosen will vary across consumers. Although there are several ways to conceptualize variations in how consumers process partitioned prices, we believe it is useful to examine these variations from the perspective of a cost/benefit framework (Beach and Mitchell 1978; Johnson and Payne 1985; Shugan 1980), wherein consumers can choose from among several different strategies for solving problems. Consumers select a strategy for a particular task by making trade-offs between the perceived benefits and the perceived costs of applying each strategy. In the partitioned

pricing context, a strategy's perceived benefit is the increase in utility that the consumer expects to realize, a priori, if he or she processes the partitioned price with a particular level of expected accuracy. A strategy's perceived cost is the time and cognitive effort that the consumer expects, a priori, the processing strategy to require. The strategy a consumer selects in a given partitioned price context will depend on his or her perceptions of these costs versus benefits (i.e., effort versus accuracy).

Therefore, we believe that a useful point of focus in studying how consumers process partitioned prices is to examine how various processing strategies differ in the effort they require and in how accurately they estimate total product cost, based on the weight each strategy places on the base price compared with the surcharge. Although we allow for the possibility that some consumers will weight each dollar of the base price and surcharge equally, we also believe that others may weight these components differently. In the latter case, even though a product presented with a combined price has the same total cost to the consumer as one presented with a partitioned price, the consumer may recall different total costs for the two products.

From this perspective, we can divide these processing strategies into three general types, depending on how the base price and surcharge are weighted and combined. Consistent with the cost/benefit framework discussed previously, these processing strategies differ in the amount of cognitive effort they require and the accuracy of the estimate of total product cost generated by the strategy. These processing strategies are as follows:

Calculate the total cost as the mathematical sum of the base price and the surcharge. When this addition is performed correctly, consumers' recalled total costs for partitioned prices and equivalent combined prices should be identical. In this case, therefore, partitioned pricing should have no impact on consumers' recalled total costs or demand. This process is assumed by theories that presume descriptive invariance (Tversky, Sattath, and Slovic 1988), such as classical economics. Although this strategy leads to the most accurate recalled total costs, it requires the highest cognitive effort.

Use an heuristic to combine the base price and surcharge. Consumers may regard the base price and surcharge as separate pieces of information or as separate attributes of the product. When consumers must integrate two or more pieces of product information to form an overall judgement, they sometimes use simplifying heuristics rather than engaging in more accurate, but more difficult, mental arithmetic (Hitch 1978). We cannot specify the exact nature of the combination heuristic that all consumers will use, and there are several possible heuristics that consumers could use to process partitioned prices. We also note that heuristic processing strategies can lead consumers to give the surcharge either greater or lesser weight than they would with a calculation strategy. For several reasons, however, we believe that, in the aggregate, consumers will tend to use heuristics that combine the base price and surcharge in a manner such that recalled total costs will be less than the mathematical sum of the two prices. In these cases, partitioned pricing will tend to reduce recalled total costs and increase demand, compared with an equivalent combined price.

²We note here that some firms also might use partitioned prices for objectives other than increasing demand, such as to discourage consumers from returning catalog merchandise when shipping and handling charges are not refunded (Hess, Chu, and Gerstner 1996).

One specific heuristic that many consumers might use to process partitioned prices is anchoring and adjustment, which has been identified as a method consumers can use to simplify the task of processing multiple pieces of information (Chapman and Johnson 1996; Tversky and Kahneman 1974). Decision makers often overweight the anchor information and make insufficient adjustments for the remaining information (Jacowitz and Kahneman 1995; Lichtenstein and Slovic 1971; Tversky and Kahneman 1974; Wilson et al. 1996).

In partitioned pricing, we believe that consumers are likely to anchor on the base price and then tend to adjust insufficiently upward to incorporate the surcharge, for the following reasons: First, decision makers often anchor a perception on the first piece of information they encounter and then adjust for later information (Hogarth and Einhorn 1992; Tversky and Kahneman 1974). In the context of partitioned prices, consumers generally are exposed to base prices prior to surcharges. For example, this occurs if consumers read base prices before surcharges. Second, there is evidence that people tend to anchor on the piece of information they perceive is most important and then adjust this perception for less important information (Yadav 1994). If consumers believe that surcharges are less important than the base price (e.g., because surcharges tend to be much less than base prices), they again will tend to anchor on the base price and adjust insufficiently for the surcharge.

Therefore, we believe that, when consumers do use anchoring and adjusting heuristics to process partitioned prices, they will tend to recall that the total cost is less than the mathematical sum of the two prices and, thus, underestimate the total product cost. If this is true, price partitioning will tend to reduce recalled total costs and increase demand, compared with a single, combined price. Consumers may justify using this simplifying heuristic, despite the downward bias it gives to recalled total cost, because it requires less cognitive effort than calculating the total cost.³

Ignore the surcharge completely. Consumers also may ignore the surcharge information, either by not noticing it at all or by noticing but not incorporating it when recalling total product costs. Consumers might not use enough cognitive effort to notice the surcharge at all. This may be especially true when it is presented in a manner that is physically or temporally distant from the base price, as marketers sometimes do, but also may occur when it is presented near the base price. Kahneman and Tversky (1979) suggest that eliminating information, even when it is readily available, is one of the editing operations people might use when evaluating prospects. Furthermore, consumers often use incomplete information searches and might not process information on some attributes, especially unimportant ones. For ex-

ample, Stiving and Winer (1997) find support for a model that assumes that consumers tend to process supermarket prices from the left-most digit to the right-most digit and that they often ignore the right-most (i.e., the pennies) digit when making brand choice decisions. They speculate that consumers weigh the cost of thinking about the pennies digit against the value inherent in the additional information it provides. Similarly, in the partitioned pricing context, consumers may believe that the extra thinking associated with processing the surcharge does not lead to significantly better decisions, and they therefore may decide to ignore the surcharge. When consumers completely ignore the surcharge, they recall the base price as the total cost. In such cases, partitioned pricing reduces recalled total costs, compared with using a single price, and does so by a greater amount than when consumers use heuristics that give any weight to the surcharge. The ignoring strategy requires less cognitive effort than either the mathematical calculation or heuristic strategies but provides less accuracy.

In conclusion, consumers who completely ignore the surcharge will, by definition, recall lower total costs than consumers who use a calculation strategy. Although the recalled total costs of consumers who use an heuristic can be less than the base price, between the base price and the sum of base plus surcharge, or greater than this sum, we expect that, in the aggregate, recalled total costs will be less than the sum but greater than the base alone. Overall, because we expect that some consumers will use heuristics to process partitioned prices, whereas others will ignore surcharges, even if some consumers use a calculation strategy, we expect that, on average, recalled total costs will be lower among consumers who see partitioned prices than among consumers who see combined prices with equivalent total cost.

Impact of Partitioned Price Strategies on Demand

Consumers' demand for most products increases as the total cost they recall for the product decreases, as long as this decrease occurs within consumers' latitude of price acceptance (Lichtenstein, Bloch, and Black 1988; Monroe 1971, 1973). In the context of partitioned pricing, this latitude implies that the combined price must be less than the high end of the latitude, which is the consumer's reservation price, whereas the base component of the partitioned price must be greater than the low end of this latitude, which represents the lowest price (or total cost) at which the consumer perceives the product still has adequate quality. In these situations (i.e., when the latitude of the price acceptance constraint is adhered to), the lower recalled total costs that are associated with partitioned pricing, as we discussed previously, also will lead to higher demand. Thus,

H₁: In the aggregate, consumers will have higher demand when a product has a partitioned price than when it has a single, combined price with the same total cost.

As we described previously, consumers will have higher demand when a product has a partitioned price, because some consumers will process partitioned prices in a manner that leads them to underweight the surcharge and, thus, underestimate the total product cost. Thus,

H₂: In the aggregate, consumers will recall a lower total cost when they see a partitioned price than when they see a single, combined price that results in the same total cost.

³Other heuristics are also likely to lead to lower recalled prices in this context. For example, Lynch and Srull (1982) find that consumers often devote less processing effort to less important attributes. If they believe that surcharges are less important attributes than base prices, they may underestimate total product cost by underweighting the surcharge. Furthermore, consumers often give more weight to information about extreme attributes, on which one product is very different from other products, compared with attributes on which it is similar to other products (Anderson 1971; Lynch 1979). Because, in practice, the base prices of products tend to vary more across firms or catalogs than do surcharges such as shipping and handling, consumers may give less weight to a dollar of surcharge than to a dollar of base price.

Next we discuss factors that we believe influence the impact of partitioned pricing on consumers' price processing, recalled total costs, and demand.

Impact of the Effort Required to Process Partitioned Prices on Processing Strategy, Recalled Total Costs, and Demand

The cost/benefit framework suggests that when the costs (i.e., the time and effort) associated with fully and accurately processing partitioned prices are high, consumers tend to use lower effort processing strategies. The effort required to process partitioned prices can be affected by how the firm presents the partitioned price information. In practice, firms present partitioned prices in several ways. Thus, an important question for marketers is whether the manner in which partitioned prices are presented, especially the surcharge, influences the strategy that consumers use to process them.

In practice, surcharges often are presented to consumers in dollar terms, such as \$32 for a mail-order shirt and \$4.95 for shipping and handling, but sometimes they are presented as a percentage of the base price, such as 15.5% for shipping and handling. Consumers must expend more cognitive effort to calculate the total cost mathematically if the surcharge is presented as a percentage, because this requires a multiplication operation (multiplying \$32 by 1.155) or both multiplication and addition (multiplying \$32 by .155 and then adding this to \$32). Both approaches demand more cognitive effort than adding \$32 and \$4.95, because multiplication operations typically require significantly more cognitive effort than addition operations (Bettman, Johnson, and Payne 1990; Chase 1978). Furthermore, variations in the cognitive difficulty of mathematical operations can lead consumers to use different processing strategies (Johnson, Payne, and Bettman 1988).

This suggests that consumers are more likely to use the lower effort heuristic or ignoring strategies to process partitioned prices when the surcharge is presented as a percentage than when it is presented as a dollar amount. Thus,

H_{3a}: When the surcharge is presented as a percentage of the base price, consumers are more likely to use an heuristic or ignoring strategy to process the partitioned price than when the surcharge is presented as a dollar amount.

When more consumers use an heuristic or ignoring strategy, we expect that, in the aggregate, this will lead to lower recalled total costs and increased demand. Thus,

H_{3b}: When the surcharge is presented as a percentage of the base price, consumers will recall lower total costs than when the surcharge is presented as a dollar amount.

H_{3c}: When the surcharge is presented as a percentage of the base price, consumers will have higher demand than when the surcharge is presented as a dollar amount.

Impact of Consumers' Motivation to Process Partitioned Prices on Processing Strategy, Recalled Total Costs, and Demand

The cost/benefit framework that motivates these hypotheses has another important implication: The strategy consumers choose to process partitioned price information will depend on their a priori perceived likelihood of purchasing the brand (as has been shown in pricing contexts such as bundling; Suri and Monroe 1995). For example, in a choice

context, if consumers believe they are unlikely to purchase one of the brands, they are unlikely to perceive much benefit from expending effort to process product information about this brand because the information is unlikely to make any difference; it is unlikely to change their predisposition not to buy this brand. Similarly, consumers who believe they are likely to buy one of the brands have little motivation to expend processing effort on information about it, because it is unlikely that the new information will change their decision to buy this brand. However, consumers who are relatively uncertain a priori whether they will choose a particular brand are more motivated to expend effort to process price information more fully and accurately because there is a greater chance that this more complete and accurate information will influence their purchase decision.

Although several factors can influence consumers' a priori perceived likelihood of purchasing a product, we examine one such factor that often plays a role in choice situations. This is consumers' affect for a product's brand name, relative to other brand names in the choice set, which we refer to as *relative brand name affect*. This factor is relevant because consumers' affect for the brand name can transfer to the product. Thus, consumers whose affect for one brand name is high or low, relative to their affect for other brands in the choice set, should be less motivated to use the higher effort calculation strategy to process partitioned prices for that brand, compared with consumers whose affect for that brand name is similar to their affect for other brand names. Therefore, we expect an inverted U relationship between consumers' relative brand name affect for a given brand and the probability that they use a calculation strategy for partitioned prices for that brand. Thus,

H_{4a}: In a choice situation in which at least one brand uses partitioned pricing, consumers with high or low relative brand name affect for that brand will be more likely to use an heuristic or ignoring strategy to process partitioned prices for the brand than consumers with moderate relative brand name affect.

As the proportion of consumers who use an ignoring or heuristic strategy to process partitioned prices increases, recalled total costs should decrease, as we discuss in H₂. Because, in H_{4a}, we hypothesize that relative affect for a brand name influences processing strategy, we expect this affect to influence the impact of partitioned pricing on recalled total costs also. Consequently, we expect an inverted U relationship between relative brand name affect and recalled total costs when partitioned prices are used. Thus,

H_{4b}: In a choice situation in which at least one brand uses partitioned pricing, consumers with high or low relative brand name affect for that brand will have lower recalled total costs for the brand than consumers with moderate relative brand name affect. This effect will be greater than any analogous effect that might occur with combined prices.

The second sentence in H_{4b} (and H_{4c} following) is added to check for the possibility that the effects of relative brand name affect, as we hypothesize in H_{4b} and H_{4c}, also might occur for combined prices, for reasons unrelated to the processing of partitioned prices. Thus, when testing H_{4b} and H_{4c}, we ensure that the effects in them are significantly greater for partitioned price subjects than for any analogous effect that might occur with combined price subjects.

Although H_{4b} predicts that partitioned pricing will be related to lower recalled total costs for consumers with low relative brand affect, compared with combined prices, we expect this change in recalled total costs to have little or no effect on these consumers' demand. Consumers are unlikely to purchase the brand, regardless of its recalled total cost, because they have low affect for this brand, relative to others in the choice set. By contrast, we expect that the lower recalled total costs, related to partitioned pricing for consumers with relatively high brand name affect, will significantly increase these consumers' demand because they already were more likely to purchase this brand than the other brands in the choice set, and partitioned pricing leads to even lower recalled total costs. Furthermore, we expect that the demand increase from partitioned prices will be greater for relatively high affect consumers than for moderate affect consumers, because H_{4a} predicts that recalled total costs decrease least for the latter. Thus,

H_{4c} : In a choice situation in which at least one brand uses partitioned pricing, the increase in demand associated with partitioned pricing will increase as consumers' relative brand name affect increases. This effect will be greater than any analogous effect that might occur with combined prices.

DESCRIPTION OF PARTITIONED PRICING EXPERIMENTS

We test these hypotheses in two experiments that involve different products and types of surcharges. This method reflects that, in practice, partitioned pricing strategies are used for different products and services and presented in different ways. We also design the experiments to examine different types of consumer decisions, rather than focusing on only one partitioned price scenario. Specifically, the first experiment tests whether partitioned prices increase demand (H_1) for one type of demand, namely, auction bids in an actual auction with real financial consequences for the participants. This is a purchasing context in which partitioned prices often are used. The second experiment examines consumers' decisions regarding which brand to choose between two competing telephones. It is designed to test why partitioned pricing affects demand (H_2) as well as factors that influence its effect (H_3 and H_4).

EXPERIMENT ONE: THE AUCTION EXPERIMENT

Design

Many auctioneers charge a buyer's premium, a percentage of the winning bid that the winning bidder must pay in addition to that bid. This premium is a partitioned pricing strategy. The auction experiment was designed to test H_1 by examining how the buyer's premium affects bids in an actual, sealed-bid auction for a jar full of pennies. Here, an appropriate measure of consumer demand is the ratio of the total cost of a consumer's bid compared with his or her perception of the monetary value of the pennies in the jar. This ratio should be less than one because consumers typically want to obtain the pennies for less than their perceived monetary value.⁴ Although this ratio is an appropriate measure of demand in an auction, other demand measures are need-

ed for other consumer purchase situations. We believe this experiment provides a strong test of H_1 because it examines the impact of partitioned pricing strategies on consumer demand when consumers make an actual purchase if their bid wins.

Subjects were 199 graduate business students who were told they would be participating in a sealed-bid auction for a jar of pennies. All subjects viewed the same quart jar full of pennies. Each subject received a sealed-bid form with written instructions, which they were told to read carefully, that informed them of the conditions of their bid and how to submit it. These instructions asked subjects to determine how much they would be willing to bid for the jar of pennies and to enter that bid on their form. Subjects were told that the winning bidder had the option of receiving the pennies or a check for their monetary value.

Subjects were assigned randomly to receive one of two paper forms for submitting their bids. One form mentioned that subjects must pay a buyer's premium of 15% in addition to their bid if they win. Specifically, these subjects were told, "If your bid is successful, the purchase price you must pay will be the sum of your bid plus a buyer's premium of 15% of that bid." Subjects receiving the other (control) form were told, "If your bid is successful, the purchase price you must pay will be the bid you indicate on the form." After writing down their bid, subjects in both conditions were asked how much they believed the pennies in the jar were worth.

Results

We test H_1 by first calculating the ratio of each subject's total cost (defined as the amount bid plus any buyer's premium) to his or her perception of the value of the jar of pennies. We then compare this ratio for subjects receiving the buyer's premium form versus the form with no buyer's premium. If partitioned pricing does not effect demand, we expect these ratios to be identical for the two groups. However, if partitioned pricing increases demand, then we expect consumers in the buyer's premium condition to be willing to pay a higher total cost (i.e., a higher percentage of their perceived value) for the jar of pennies.

The results support H_1 ; partitioned pricing increases demand. Subjects who received the buyer's premium form bid a total cost that was a significantly higher percentage of their perceived value (total cost/perceived value = .885, $n = 108$) than subjects in the control condition (total cost/perceived value = .787, $n = 91$; $r = .023$ [where r is the effect size; see Rosenthal 1991, pp. 14-20], $t_{194} = 2.17$, $p = .014$), based on a one-tailed test of two proportions.

These results demonstrate that partitioned pricing can increase aggregate demand for a product. The next experiment examines why partitioned pricing strategies increase demand (i.e., how partitioned prices affect recalled total costs and processing strategies) and investigates two factors that influence these effects.

EXPERIMENT TWO: THE TELEPHONE EXPERIMENT

Design

In the telephone experiment, we studied consumers' reactions to partitioned pricing for a product sold in a catalog when consumers could buy a similar product from a store instead. Many mail-order catalogs use a partitioned pricing

⁴Buyer's premiums are used both in open English auctions, in which bidders raise one another's bids, and in auctions in which each bidder submits a sealed bid. McAfee and McMillan (1987) discuss these auctions.

Thus, this context is appropriate for testing the impact of partitioned pricing on recalled total costs (H_2). Furthermore, though many catalogs state this surcharge as a dollar amount, such as \$6.95, others present it as a percentage of the base price, such as 12%. This provides an opportunity to test H_{3a-c} . In addition, many products sold in catalogs use well-known brand names for which consumers have existing affect, providing a good opportunity to test H_{4a-c} .

Subjects were 233 undergraduate business students who were asked to choose between two brands of telephones: a control telephone sold at a store and a target telephone sold through a catalog. In studying the hypotheses related to brand name affect, we believed it was desirable to use products with real and well-known brand names and, so, chose two brand names with high levels of awareness among the subject population. The control telephone was a Sony, described as having ten-number memory dialing, repeat dialing, built-in speaker, and one-year warranty, and available at a local store for \$64.95, including tax. The target telephone was an AT&T with these same features, except that the warranty lasted for three years, and it was available through mail order for \$69.95, including tax, plus \$12.95 for overnight shipping and handling.⁵

Subjects were assigned randomly to one of three experimental conditions. In all three, the store price of the control telephone (Sony) was presented as one all-inclusive price, whereas the target telephone's (AT&T) catalog price was presented in one of three different ways, all of which created the same total product cost: (1) combined price: "\$82.90, including shipping and handling;" (2) base price and surcharge in dollars: "\$69.95 plus \$12.95 for shipping and handling;" and (3) base price and surcharge in percentage terms: "\$69.95 plus 18.5% for shipping and handling."

Subjects first read descriptions and prices for the two telephones. To estimate the impact of partitioned pricing on demand, subjects indicated their choice intentions (i.e., their relative likelihood of choosing one telephone instead of another) using a ten-point bipolar scale with anchors labeled "I would definitely buy the Sony phone" (1) and "I would definitely buy the AT&T phone" (10). Note that, whereas the auction experiment measured demand using bids in an actual auction, the telephone experiment measures demand by asking subjects to report relative purchase intent in response to the paired choice, and subjects do not actually purchase a telephone. Subjects then were asked to recall the total cost, including shipping and handling, for the AT&T (target) telephone and specifically instructed to do so without turning back to the descriptions. Next, to measure relative brand name affect, subjects rated their general preference for Sony and AT&T products on a ten-point bipolar scale anchored at "I strongly prefer Sony" and "I strongly prefer AT&T."

Results

Testing the effect of partitioned pricing on recalled total costs (H_2). We test H_2 by comparing the recalled total product costs of subjects exposed to combined versus partitioned prices. Subjects who did not write down a recalled total cost (i.e., did not answer the question or wrote down

the base price and surcharge but did not provide a total cost, such as "\$69.95 plus \$12.95") were dropped from this analysis. The results support H_2 . Subjects exposed to partitioned prices recalled significantly lower total product costs (\$78.27, $n = 106$) than subjects exposed to combined prices (\$83.90, $n = 77$; $r = .18$, $t_{181} = 6.39$, $p < .0001$), based on a one-tailed t-test.

Classifying processing strategies for partitioned prices. We also used subjects' answers to the recalled total cost question to infer how frequently the consumers exposed to partitioned prices used each of the three processing strategies, as follows: Subjects reported their recalled total cost for the product without turning back to the page containing the prices. Although we cannot observe exactly how subjects process price and total costs, we can make inferences about their processing strategies on the basis of their answers to the recalled total cost question. We classified subjects as using a mathematical calculation strategy if they wrote down a single figure within 5% of the actual combined total cost, or if they wrote a calculation near their answer and solved it (e.g., "\$69.95 plus \$12.95 = \$82.90"), regardless of whether the calculation was correct. A range of $\pm 5\%$ for "accurate" recall has been used in previous research on the accuracy of price recall (Dickson and Sawyer 1990). This range accommodates the possibility that some consumers convert prices and total costs into approximate magnitude estimates before storing them in semantic memory and then correctly recall these stored magnitudes. For example, \$12.95 might be stored as \$13.00. We classified subjects as using an ignoring strategy if they wrote down a single figure that was within 5% of the base price of the product. In all other cases, we classified subjects as using an heuristic strategy.

On the basis of our classification rules, it appears that all three processing strategies are well represented and that consumers often use a strategy that does not produce the highest accuracy. We inferred that less than one-quarter of the subjects used mathematical calculations (21.9%), and a considerable proportion completely ignored the surcharge (23.2%). The most frequently used strategy appears to be the heuristic strategy (54.8%). These results suggest that strategies for processing partitioned prices do vary across consumers and that it is useful to examine factors that affect which strategy consumers use.

Testing the impact of dollar versus percentage surcharges (H_{3a-c}). We test H_{3a} by comparing the percentage of subjects whom we classify as using a calculation strategy when the surcharge is presented in a dollar versus a percentage format. The results are reported in the top portion of Table 1 and support H_{3a} . The proportion of subjects whom we classify as using a mathematical calculation strategy, as opposed to either an heuristic or ignoring strategy, is significantly lower when the surcharge is presented as a percentage (9.6%, $n = 73$) instead of in dollars (32.9%, $n = 82$; $r = .28$, $z = 3.52$, $p = .0002$), based on a one-tailed test of the two proportions.

The results in the middle portion of Table 1 report how presenting surcharges in dollar versus percentage terms affects recalled total costs. These results support H_{3b} . Subjects recalled significantly higher total costs for the target AT&T telephone when the surcharge was presented in a dollar (\$80.36, $n = 61$) rather than percentage format

⁵We used different warranty periods and prices for the Sony and AT&T telephones to differentiate the products so that subjects would not conclude that the study focused on brand preference for products with identical attributes.

Table 1
 TELEPHONE EXPERIMENT: THE IMPACT OF PARTITIONED PRICE PRESENTATION (DOLLARS VERSUS PERCENTAGE) ON PROCESSING STRATEGY, RECALLED TOTAL COST, AND DEMAND

Type of Processing Strategy	Surcharge presented in \$	Surcharge Presented in %	Effect Size	p-value
Inferred Processing Strategy—H _{3a}				
	(n = 82)	(n = 73)	r = .28	z = 3.52, p = .0002
Calculation	32.9%	9.6%		
Heuristic	54.9%	54.8%		
Ignoring	12.2%	35.6%		
Recalled Total Cost for Target Telephone—H _{3b}				
—	(n = 61)	(n = 45)	r = .11	t ₁₀₄ = 3.56, p = .0003
	\$80.36	\$75.43		
Choice Intentions—H _{3c} (score increases for higher intentions for target telephone)				
—	(n = 82)	(n = 73)	r = -.0098	t ₁₅₃ = -1.23, p > .5
	4.21	3.62		

(\$75.43, n = 45; r = .33, t₁₀₄ = 3.56, p = .0003), based on a one-tailed t-test.

The results in the bottom portion of Table 1 report how presenting surcharges in dollar versus percentage terms affects demand and do not support H_{3c}. Although we hypothesized higher demand for subjects exposed to a percentage surcharge, we observed no significant difference in demand for subjects exposed to a dollar surcharge for the target AT&T telephone (mean purchase rating = 4.21, n = 82) versus a percentage surcharge (3.62, n = 73; r = -.0099, t₁₅₃ = -1.23, p > .5, one-tailed).

Testing the impact of consumers' relative brand name affect (H_{4a-c}). We next test H_{4a}, which states that consumers exposed to partitioned prices who have comparatively low and high relative brand name affect for a product are less likely to use a calculation strategy than those with moderate levels of this affect. We tested for the inverted U relationship in H_{4a} by first recoding the affect scale to range from -4.5 to +4.5 to lower multicollinearity between the affect measure and the square of that measure, which we also use. We then estimated a logistic regression model in which the binary dependent variable was coded as 1 for subjects whom we classified as using a calculate strategy and 0 otherwise, and the independent variables were the recoded affect scores and the square of those scores. Because this hypothesis is only relevant for subjects exposed to partitioned prices, and not for those exposed to combined prices, we only estimate the model using data from the former group. The inverse U-shaped relationship in H_{4a} is supported if the coefficient for the square of recoded affect is negative and significant. However, the coefficient for this parameter is not significantly different from zero, and therefore, the results do not support H_{4a} (β = -.025; r = -.080, χ² = .81, p = .18, one-tailed). In addition, the coefficient for the linear recoded affect term was not significantly different from zero (β = -.041, r = -.044, χ² = .30, p = .58, two-tailed).⁶

⁶In the preceding analysis, we used a (binary) logistic regression model to test whether the recoded affect and affect-squared terms were associated with a subject's use of a calculation strategy versus either an heuristic or ignoring strategy. We did this because our interest was in whether they used the higher effort calculation strategy or one of the lower effort strategies. An alternative approach is to use a multinomial logit model to examine the relationship between the affect terms and the subject's choice among the three strategies. We also estimated this model and did not find a significant relationship between the linear (p = .1743) or quadratic (p = .6820) recoded affect terms and choice of strategy.

We next test H_{4b}, which states that partitioned prices will be related to a greater decrease in recalled total costs for consumers with comparatively low and high levels of relative brand name affect than for those with moderate levels of this affect, using the following procedure: We use a regression model in which the dependent variable is recalled total cost and the independent variables are the recoded affect and squared, recoded affect terms used to test H_{4a}. We estimate this model separately for subjects exposed to partitioned versus combined prices to test whether the relationship between relative brand name affect and recalled total costs is stronger for the latter. The inverted U relationship predicted in H_{4b} is supported if the parameter estimate for squared affect in the partitioned case is negative and significant and the corresponding effect size is greater for the partitioned than the combined case.

The results support H_{4b}. The squared, recoded affect parameter estimate had the hypothesized direction for partitioned price subjects (β = -.18; t₁₀₃ = 1.86, p = .032, one-tailed). This parameter was not significant for combined price subjects (β = .005; t₇₄ = .12, p = .91, two-tailed test because we have no hypothesis about this parameter's sign for these subjects). The linear affect terms were not significantly different from zero for partitioned price subjects (β = -.14; r = .055, t₁₀₃ = .56, p = .57, two-tailed) or combined price subjects (β = -.16; r = .18, t₇₄ = 1.54, p = .13, two-tailed). The parameter estimates for the combined price subjects were significantly different than those for the partitioned price subjects, according to a Chow test (F_{2,179} = 21.55, p < .00001). Consistent with H_{4b}, the effect size implied by the squared affect term for partitioned price subjects (r = .180) is also significantly greater than that for combined price subjects (r = -.014; z = 2.76, p = .0029, one-tailed).

Because we find support for H_{4b} but not H_{4a}, the question of why relative brand name affect influences the impact of partitioned pricing on recalled total costs remains. Two possible post hoc explanations are as follows: First, moderate affect subjects could be less likely to use an ignoring strategy than low and high affect subjects, even though the former are not more likely to use a calculation strategy (because H_{4a} is not supported). Second, some subjects who use heuristics may use more effortful and accurate heuristics than others. If moderate affect subjects who use heuristics employ strategies that are more effortful and accurate, they may recall higher total costs than low and high affect subjects using less accurate heuristics.

We tested the first explanation by using the same logistic regression model used to test H_{4a} , in which the binary dependent variable now indicates whether the subject is classified as using an ignoring strategy. The results do not support this explanation because the coefficient for the squared affect term was not significantly different from zero ($\beta = -.00088$; $r = .0024$, $\chi^2 = .0009$, $p = .98$, two-tailed). The coefficient for the linear affect term was also not significantly different from zero ($\beta = -.12$; $r = .13$, $\chi^2 = 2.42$, $p = .12$, two-tailed).

Although we cannot observe the specific type of heuristic each subject used, we can test the second explanation by examining how recalled total costs vary with affect among subjects who saw partitioned prices and were classified as using heuristics. We regressed recalled total costs on the recoded and the squared, recoded affect measure for all subjects exposed to partitioned prices and classified as using an heuristic strategy. The results, based on the coefficient for the recoded, squared affect term, provide greater support for this explanation ($\beta = -.26$; $r = .33$, $t_{33} = 2.00$, $p = .053$ two-tailed). Although it is not part of this post hoc explanation, we note that the coefficient for the linear affect term in this model is also negative and significant ($\beta = -.86$; $r = .40$, $t_{33} = 2.50$, $p = .017$, two-tailed). Together, these results suggest that relatively high affect subjects who use heuristics have lower recalled total costs than other subjects using heuristics.

We next test H_{4c} , which states that brand name affect moderates the influence of partitioned prices on demand, as measured by paired choice intent. This test compares two regression models for subjects who saw partitioned versus combined prices. Each model regressed subjects' choice intent for the target telephone on their brand affect. If the parameter estimate for affect from partitioned price subjects is significant, positive, and significantly greater than the corresponding estimate from combined price subjects, then H_{4c} is supported. Note that though we did not formally hypothesize a relationship between brand name affect and the demand measure, logically we expect them to be related positively and, therefore, use one-tailed tests for the affect parameters.

The results support H_{4c} . The parameter estimate for affect from the partitioned price subjects ($\beta = .48$; $t_{153} = 6.99$, $p < .0001$, one-tailed) is significantly greater than the estimate from the combined price subjects ($\beta = .23$; $t_{76} = 2.19$, $p = .015$, one-tailed) in a Chow test ($F_{1,231} = 4.28$, $p = .040$).⁷ The effect size from partitioned price subjects ($r = .49$) is al-

so significantly greater than that from combined price subjects ($r = .24$; $z = 3.02$, $p = .0013$, one-tailed).⁸

DISCUSSION AND IMPLICATIONS

The results of our experiments suggest that partitioned prices tend to increase consumers' product demand, as measured by bids in the auction experiment, compared with all-inclusive, combined prices. Our analysis of the telephone experiment also suggests that consumers use different approaches to process partitioned prices, so that the amount of weight the surcharge receives in determining recalled total costs and influencing demand varies across consumers. These results are also consistent with our theoretical framework, which proposes that one approach consumers use to select a method for processing partitioned prices is to make trade-offs between the benefits of higher accuracy and the costs of more time and cognitive effort, though we stress here that we have not tested formally for these trade-offs. Because consumers do not always process information about surcharges fully and accurately, partitioned prices tend to decrease consumers' recalled total costs in the aggregate.

We find that the strategy that we inferred consumers choose to process partitioned prices is influenced by whether the surcharge is presented in dollars or as a percentage of the base price. We also find that the increase in demand due to partitioned pricing in a paired choice situation increases with consumers' a priori likelihood of purchasing the brand, as is measured by their relative affect for one brand name compared with the other in the choice set. Although not part of an hypothesis, an ex post investigation suggests that this occurs because the recalled total costs of consumers who use an heuristic strategy has an inverted U-shaped relationship with relative brand name affect. Overall, the results suggest that partitioned pricing strategies can be effective in increasing demand for a product. Next, we describe some limitations of our research and then discuss the implications of our findings for consumer behavior theory, marketers, and public policymakers.

Limitations

The auction experiment examined how partitioned prices affect demand using a task that had real financial consequences for the subjects. However, the telephone experiment used hypothetical scenarios that did not require consumers to make an actual purchase in order to examine how consumers process partitioned prices and determine factors that moderate their effect on recalled total costs and demand. Because it is possible that subjects behave differently when making actual purchases instead of hypothetical choices, we recommend that further research in this area examine actual purchases and provide subjects with economic

⁷These results for H_{4c} establish that there is a different relationship between relative brand name affect and demand when subjects are exposed to partitioned versus combined prices. Note that, had we simply compared the demand for the target telephone for partitioned versus combined price subjects (as we did in H_1 in the auction experiment), we would have concluded that partitioned pricing does not affect demand. Specifically, if we aggregate across affect levels, we find that subjects exposed to partitioned prices have higher average demand (3.93, $n = 155$) than subjects exposed to combined prices (3.71, $n = 78$; $r = .0362$, $t_{231} = .55$, $p = .290$), based on a one-tailed t-test. However, this difference is not statistically significant. Thus, though we find that partitioned prices increase demand for relatively high affect consumers, we do not find a significant aggregate effect. Note too that the issue of relative brand name affect is not relevant to the auction experiment, because it uses a single target product (i.e., money), which is not offered under different brand names.

⁸In H_{4c} , we imply that demand for partitioned price subjects will be no lower than demand for combined price subjects at low levels of relative brand affect and that the demand increase due to partitioned pricing increases with this affect. Here, we note that, in the two regressions just described, the predicted values of affect are slightly lower for partitioned price subjects when this affect is low. However, these differences are not statistically significant, whereas the increase in demand from partitioned pricing is statistically significant. We determined this by comparing the explanatory power of these two regressions, if modeled as a single regression, with that of a model in which demand for the two groups is constrained to be the same at the lowest affect score (using a nested F-test: $F_{1,229} = 1.61$; $p = .206$).

incentives for making good decisions. We note, however, that studies of other price processing biases have used hypothetical decisions (e.g., Alba et al. 1994, on processing frequency versus magnitude information on price comparisons). Other biases of this type first were identified with hypothetical decisions, and these results later were verified with data from actual purchases. This includes latitude of price acceptance (Kalyanaram and Little 1994; Monroe 1971). Furthermore, we note that the number of units a person purchases can be an important component of purchase intentions and demand for products using partitioned pricing (such as articles of clothing or books purchased from catalogs), and our studies do not examine this.

We also note that the consumer task in the auction experiment, used to test the relationship between partitioned prices and demand, differs somewhat from the one in the telephone experiment, which was used to test relationships with processing, total cost recall, price presentation, and relative brand affect. In the partitioned price condition in the former, subjects first must decide how much they are willing to pay for the pennies in total and then decide whether and how much to modify their bid to compensate for the 15% buyer's premium. In the latter, subjects in this condition are given the price and surcharge for the target (AT&T) telephone and do not need to determine these themselves. These differences may lead subjects to frame prices, total costs, and responses to partitioned prices in a different manner.

The surcharges we used in our experiments, which varied from 15% to 18.5% of the base price, were chosen to be well within the typical range for these surcharges. This was desirable because the primary purpose of our hypotheses was to examine the impact of those partitioned price strategies that typically are found in actual practice. However, it also would be of considerable practical and theoretical interest for additional research to examine how consumers react to surcharges that are much smaller, or much larger, than this range. These reactions may differ from the results found here. They also may depend on the response measure used, such as actual purchase versus purchase intentions. Furthermore, consumers may not notice changes in surcharges until they exceed the threshold of a "just noticeable difference" (Monroe 1979, pp. 42-43).

In the telephone experiment, we measured recalled total costs by asking subjects to recall the total cost of the product in dollars. Although prior studies also have asked subjects to recall specific prices of products (Dickson and Sawyer 1990), there is evidence that consumers do not always encode prices (and presumably total costs) as specific dollar amounts and that, therefore, other types of recall measures also should be employed. For example, Mazumdar and Monroe (1990) find that consumers' processing goals (i.e., remembering the prices of brands versus choosing a brand) affected whether they could recall specific prices more accurately or instead could only rank order brands by price. In general, research has suggested that the probability that an item is recalled accurately from memory depends on the similarity between how the information was encoded originally in memory and the measure used to elicit recall (Tulving and Thompson 1973). Recall measures such as those employed in this study typically are used in situations in which the researcher assumes that people remember having been exposed to the information they are asked to recall.

However, other measures may be more appropriate for situations in which people may be affected by, but cannot specifically remember being exposed to, the information (for a discussion of some alternative measures, see Tulving 1983, 1993). In the partitioned pricing context, it is possible that consumers are influenced by partitioned prices without being able to recall any particular total dollar price, or cost, for the product. Therefore, future studies should consider using multiple measures to determine how partitioned price information is encoded and stored in memory.

The telephone experiment, used to study H_{4a-c} , asked subjects to choose between two competing alternatives. The impact of brand name affect may be different in situations in which consumers evaluate a single alternative. In such situations, consumers may show more willingness to process information, even when brand affect is low, because no higher affect alternatives compete for their attention.

We have used samples consisting of fairly young, well-educated undergraduate and graduate students. Reactions to partitioned pricing may depend on factors such as age or education. Thus, the proportion of consumers using each of the three methods to process partitioned prices in our experiments is not necessarily representative of the population as a whole. Future studies ideally could involve a greater cross section of respondent types and additional purchase situations. For example, researchers could conduct split sample, direct-mail experiments in which some catalogs use combined prices and others use partitioned prices, or split cable television advertisements with the same manipulation.

Implications for Marketing Theory

Our finding that partitioned pricing can increase demand runs counter to classical economic theory, which predicts that partitioned pricing will have no impact on demand. This stems from the principle that consumers' preferences are independent of the external description used to represent choices, which has been termed "descriptive invariance."

Our findings also add to a body of evidence that suggests that consumers do not always process price information completely and accurately (Dickson and Sawyer 1990). Rather, we provide further support for the notion that consumers make cost/benefit trade-offs when processing price information. Stiving and Winer (1997) suggest that it might be rational for consumers not to process the pennies (right-most) digit of prices if it is cognitively costly to do so and unlikely this method will lead to a mistake. Similarly, consumers might not be irrational when they underweight the surcharges in partitioned prices. They might be making a rational decision if they weigh the chances of making an incorrect decision against the cost of fully processing partitioned prices.

Finally, this research adds to growing literature on behavioral aspects of pricing. Whereas early pricing research focused on demonstrating that a particular consumer price response exists, this stream uses behavioral theories to understand why consumers respond in this manner. In this article, we both demonstrate how consumers react to partitioned prices and use a cost/benefit framework to identify factors that help explain why they react in these ways. Other theories might help identify additional factors that influence how consumers react to partitioned prices. For example, research on familiarity and learning suggests that in a choice context,

consumers who are moderately familiar with the product may be better at learning product-related information than low- or high-familiarity consumers (Johnson and Russo 1984). This might suggest that moderately familiar consumers have more accurate total cost recall than other consumers. However, other research has found that moderately familiar consumers are less confident in using price and brand name than in using other functional product attributes, as compared with high- or low-familiarity consumers (Park and Lessig 1981). We hope that additional research further examines the cognitive processes consumers use to process partitioned prices and how these processes affect how consumers store and retrieve price, total cost, and product-related thoughts in memory.

Implications for Marketing Practice

The results of our experiments suggest that marketers can use partitioned pricing as a strategy to increase demand. This helps explain why partitioned pricing is so prevalent in today's marketplace. Although the effect sizes for increased demand observed in the experiments were relatively small, these small increases can create a meaningful increase in firm profits, because the cost to the firm of replacing combined pricing with partitioned pricing is usually low.

Marketers should realize, however, that partitioned pricing is related not only to higher demand, but also to lower recalled total costs. Thus, partitioned pricing might not be effective when marketers want consumers to recall high prices that reinforce a target market positioning of high quality in a category in which price/quality relationships operate. For example, many furniture stores charge separately for shipping, but more expensive stores often include shipping in their prices.

Our results raise interesting questions for how marketers can design optimal partitioned pricing strategies. For example, the impact of these strategies on recalled total costs and demand depends partly on the proportion of consumers who use an heuristic or ignoring strategy instead of a calculation strategy to process partitioned prices. These proportions may depend on the size of the surcharge relative to the base price, as well as on the absolute size of the surcharge, because consumers have more motivation to employ a higher accuracy strategy as the surcharge increases in relative and absolute terms. This presents marketers with an interesting trade-off in setting the size of the surcharge relative to the base price. A small surcharge might motivate many consumers to use an heuristic or ignoring strategy but, at most, might decrease total cost recall only slightly, because the surcharge is small. Alternatively, a large surcharge might motivate more consumers to use a calculation strategy, but it will have a bigger impact on the recalled total costs and demand of those moderate-to-high affect consumers who still use an heuristic or ignoring strategy. This trade-off suggests that there may exist an optimal level of surcharge that maximizes firm profits. Identifying the factors that contribute to this trade-off and quantifying the optimal surcharge are areas for further research in partitioned prices. However, such research will need to investigate a larger range of surcharge sizes (as a percentage of the base price) than the range used in this article.

Consumer perceptions of a firm's fairness and honesty also may depend on the size of the surcharge. Small surcharges

may be viewed as fair, but not large ones. Furthermore, perceived fairness may depend on the stated purpose of the surcharge, just as perceived fairness of price increases depends on the purpose of that increase (Kahneman, Knetsch, and Thaler 1986). For example, consumers may perceive transportation or state tax surcharges on a new automobile as more fair than a surcharge for "dealer preparation." Examining how different partitioned price strategies affect fairness perceptions is another area for further research.

Implications for Public Policymakers

Partitioned pricing also presents a challenge for consumers and public policymakers. We discussed previously that partitioned pricing can become unethical when firms attempt to hide the surcharge, such as by using small type size or stating surcharges in a place where consumers are unlikely to notice them. One important issue that needs more investigation is how accurately consumers process different kinds of partitioned price presentations. This can help identify cases in which a low proportion of consumers are aware of the partitioned price and that lead to policy guidelines for the ethical use of partitioned pricing. The guidelines that emerge might be similar to those in advertising, where advertisements that mislead a considerable proportion of consumers can be challenged legally by government agencies or competitors. Policymakers also may want to formulate methods to educate consumers to pay more attention to surcharges, much in the same way that unit pricing labels help educate consumers about actual product costs.

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