USING ECONOMIC PRINCIPLES FOR GOING IN DEPTH FOR ACHIEVING RELATIVE HIGH MARKET SHARE: PSYCHOLOGICAL PRICING AN EMPIRICAL STUDY

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Abstract

Variations in the pricing approaches firms employ may partially explain why observed industry prices appear inconsistent with economic theory. Some firms may use principles developed from psychology that do not fit traditional economic models to enhance their profits beyond the basic solutions from economic theory. This paper describes more than fifty of these principles, dividing them into four categories: framing, congruency, context, and signaling. By studying these principles from psychology, researchers and policy makers can better understand the prices they observe in the marketplace. By following more of these principles, firms may be able to enhance their performance.

Keywords: Pricing, Economic Models, Principles.

INTRODUCTION

Li, Sexton, and Xia (2006) took an in-depth look at what is known about grocery retailer pricing and marketing behaviors. They concluded that economic models of competition and of market power were not consistent with most observations. Hosken and Reiffen (2004) also expressed concerns with the inability of economic models to explain retail pricing behaviors. Similar conclusions about prices could probably be reached in other sectors of the economy.

One reason that observed prices may not be consistent with economics is that some firms may be following pricing principles from psychology. This paper reviews more than fifty pricing psychology principles for existing products, some of which may be inconsistent with traditional economic theories. To the author’s knowledge, no other paper has collected these principles that may help firms enhance the results from their pricing decisions. To provide some structure, the principles will be grouped into four categories: framing, congruency,
context, and signaling. The paper concludes with a summary of how firms (with enough market power to affect price) could use these principles to improve their pricing decisions and enhance their profitability.

**FRAMING THE PRINCIPLES**

When product attributes are highlighted in ways perceived to be positive, customer preferences can change (Gamliel, 2010). Incorporating “free” into an offer or simply using it as the price usually helps sellers (Shampanier, Mazar & Ariely, 2007). Offering free units (e.g., buy one get one free or BOGO) tends to generate a greater response than providing an equivalent price discount (Munger & Grewal, 2001; Davis & Millner, 2005; Stibel, 2005; Chen et al., 2012). “Free” promotions do not produce the quality concerns that price discounts may stimulate (Chandran & Morwitz, 2006). An expensive product with a free gift tends to generate more sales than a price discount (Nicolau, 2012). However, adding a free gift with a high claimed value may create doubts about the primary item’s quality (Low & Lichtenstein, 1993; Kamins, Folkes & Fedorikhin, 2009). Visually emphasizing a free gift can also lower an item’s perceived value (Raghubir & Celly, 2011). BOGO promotions tend to be less effective when an item has a limited life (Sinha & Smith, 2000) or is consumed more slowly (Li, Sun & Wang, 2007).

Retailers often encourage multiple unit purchases. Multiple-unit pricing (e.g., two for a dollar instead of 50-cents each) can boost sales. A comparison of thirteen products in supermarkets found that sales gains from price promotions expressed in multiple units (e.g., buy 2, 3, or 4 for a specific price) averaged 165 percent while the sales gains from equivalent single-unit promotions averaged 125 percent (Wansink, Kent & Hoch, 1998). Multiple-unit pricing may be effective because it suggests how many items to purchase. A sign saying “Buy 18 for your freezer” without a price reduction produced larger sales gains than a sign saying “Buy some for your freezer” (Wansink, Kent & Hoch, 1998). The suggested quantity, or anchor, becomes a starting point from which individuals modify their purchases. The adjustment from the anchor tends to be smaller if the anchor is more precise (i.e., not rounded) (Janiszewski & Uy, 2008).

A related principle involves limits. Restricting the number of items purchased may increase both penetration (i.e., percentage of customers who buy) and buying rates (i.e., average number of items bought) (Wansink, Kent & Hoch, 1998). Supermarkets using limits increased sales an average of 544 percent, while the same price discounts without limits increased sales by 202 percent (Inman, Peter & Raghubir, 1997).
Suggesting that quantities are limited due to market conditions (e.g., while supplies last) can influence product perceptions (Verhallen & Robben, 1994). Research in Germany found that if an item is used for conspicuous consumption, limited supply is a positive signal (e.g., limited-edition products). Otherwise, high demand generated more favorable evaluations (Gierl, Plantsch & Schweidler, 2008; Gierl & Huettl, 2010). If people are promotion-focused (either from product attributes or marketing messages), supply-based scarcity (e.g., purchase limits) can motivate more purchases (Ku, Kuo & Kuo, 2012). Customers with a prevention-focus (e.g., avoid negative outcomes) are motivated by demand-based scarcity (e.g., high popularity). Several studies concluded that scarcity works best with relatively high-priced, high-quality products (Wu & Hsing, 2006; Suri, Kohli & Monroe, 2007; Wu et al., 2012).

The next framing principles involve price awareness or salience. When payments are less transparent (e.g., prepaid accounts), people are more willing to buy (Soman, 2003). Encouraging people to look at a credit card or think about paying with a card tends to raise willingness-to-pay (McCall & Belmont, 1996; Prelec & Simester, 2001). Raghubir and Srivastava (2008) found that gift cards had similar effects, suggesting that firms could boost sales by encouraging buyers use “plastic.” Monetary units can also affect preferences. The “spare change” effect, depicting a price as portions of a whole currency (e.g., four quarters), tends to make people more willing to buy compared to describing the price in whole units (e.g., one dollar) (Raghubir & Srivastava, 2002; Mishra, Mishra & Nayakankuppam, 2006; Raghubir & Srivastava, 2009).

Two similar framing options involve using other standards. “Pennies-a-day” pricing, where the price is described on a per-day basis, changes the temporal frame and can boost the demand for a good or service that is consumed over time (Gourville, 1998). Temporal reframing works best with high-priced products and with even-number price endings (Bambauer-Sachse & Grewal, 2011). The other option, explicit comparisons, uses common purchases such as a cup of coffee per day as a standard (Gourville, 1999).

The last framing principles involve two or more numbers such as a price in two currencies (e.g., dollars plus loyalty points), trade-ins, or the number of payments and payment schedule. Because some buyers may not calculate the total cost, adjusting the two numbers in opposite directions (multidimensional pricing) could lower the perceived cost and increase sales (Estelami, 2003; Dreze & Nunes, 2004). Although there is some controversy whether raising the trade-in value will increase offer attractiveness while keeping the net price the same, priming the customer to consider the trade-in value tends to make it more important to buyers than the net transaction price (Kim et al., 2011; Srivastava & Chakravarti, 2011). Emotional
pricing, where installment payments decrease over time, is another framing option (Peine, Heitmann & Herrmann, 2009). These framing options could boost sales without lowering actual prices.

**CONGRUENCY PRINCIPLES**

Price congruency refers to strategically adjusting the information communicated by a price with the messages from other sources so that the combination boosts willingness-to-pay. Buyers usually believe their purchases are good values and may react negatively if they learn that others paid different prices (perceived price unfairness). A direct mail consumer durable marketer found that when customers learned prices were lowered after they made their purchases, they tended to buy less in the future (Anderson & Simester, 2010). Even among customers who receive discounts, seeing others pay higher prices may lead them to buy less (Wang & Krishna, 2012).

The typeface and sound of a price can influence buyers. If messages communicated by the typeface are inconsistent with messages from the text or the illustrations in an advertisement, message memorability tends to decrease (Childers & Jass, 2002). Changing font sizes and using terms (e.g., high versus low) that are congruent or incongruent with the price magnitude (i.e., larger fonts and “high” suggest higher prices) can affect value perceptions and purchase likelihoods (Coulter & Coulter, 2005). For the sound of a price, when people gave prices extra thought, those products with sale prices containing front vowels and fricatives (e.g., $7.66 and $2.33) were perceived to have deeper discounts (Coulter & Coulter, 2010).

Packages usually communicate important, and sometimes surprising, marketing messages. For example, consumers associate heavier wine bottles with higher expected prices (Piqueras-Fiszman & Spence, 2012). Small variations in package height, in package shape, in label layout, in how the package and its contents are shown, and in a photo’s perspective can change the perceived volume and value (Yang & Rahubir, 2005; Krider, Rahubir & Krishna, 2001; Chandon & Ordabayeva, 2009; Garber, Hyatt & Boya, 2009; Van Rompay et al., 2012). If items have material attributes, letting customers touch the contents can change perceived valuations (McCabe & Nowlis, 2003; Peck & Childers, 2003; Peck & Shu, 2009). Therefore, achieving congruency between the packaging and other marketing messages may shift demand.

**CONTEXT PRINCIPLES**

The atmosphere and information that people see around an item and the sequence in which they see it can change willingness-to-pay. For example, a study in Hong Kong found that people expected products to be more expensive when they were shown on the right-hand
side of a display (Cai, Shen & Hui, 2012). A red background in a store may reduce buyer interest in expensive items (Bellizzi & Hite 1992), but a red background in an online auction may produce more aggressive bidding and higher prices (Bagchi & Cheema 2013). Other ways that the context of a price may affect prospective buyer reactions are described below.

When customers are given a choice between three items that they can rank, they often choose the middle option. The compromise effect suggests that adding a third option for buyers can boost the sales of the middle-priced item (Simonson & Tversky, 1992). The compromise effect may be stronger when consumers are focused on quality (Muller, Vogt & Kroll, 2012).

Consistently using the same price and providing a market value (e.g., manufacturer’s suggested retail price) can lead buyers to value a product at that retail price (Boothe, Schwartz & Chapman 2007). Providing a market value or reference price can also benefit promotions (Krishna et al., 2002; Chadrashkaran & Grewal, 2006). Listing a competitor’s price can boost sales, even if the competing price is slightly lower (Krishnan, Biswas & Netemeyer, 2006; Trifts, Huang & Haubl, 2013). Consumers tend to compare regular and sale prices using absolute differences and competitor and sale prices using percentage differences (Choi & Coulter 2012).

Price thresholds exist when price changes above or below a specific level result in large changes. In a toy store experiment, when the price of one item was just below $20, sales were high. Raising the price above $20 or lowering it significantly below $20 substantially reduced sales (Gaur & Fisher, 2005). Putler (1992) found that the response to an egg price increase was 2.4 times the response to a price decrease, suggesting a demand curve kink. A study that allowed for demand curve kinks found that 76 percent of the brands studied had kinks or thresholds at historical prices, competitor prices, or both (Pauwels, Srinivasan & Franses, 2007).

When showing two attractive items, the first one seen (on the left) tends to be chosen. This primacy bias may be enhanced by encouraging buyers to reject an option. If both are unattractive, the last one seen (on the right) tends to be chosen. This recency bias may be enhanced by encouraging buyers to choose an option (Englund & Hellstrom, 2012; Krishnamurthy & Nagpal, 2010). When people are presented with a multiple unit offer and it is hard to compute the cost per unit (e.g., $29 for 70 items), the first number becomes more salient. To reduce the focus on price, show units first (e.g., 70 Items for $29) (Bagchi & Davis, 2012).
For an individual product, exposing customers to a high price before a low price tends to raise perceived values more than a low-high sequence (Sitzia & Zizzo, 2012). Listing prices in descending order tends to boost sales of higher-priced products (Suk, Lee & Lichtenstein, 2012).

In laboratory experiments, people were exposed to low or high price information before or while they were reviewing household products. In higher-priced contexts, they believed the items were less expensive, and in lower-priced contexts, they believed the items were more expensive (Adaval & Monroe, 2002; Nunes & Boatwright, 2004; Adaval & Wyer, 2011). People did not need to consciously perceive the exposure for the effect to occur.

The variety of quality options presented to prospective buyers can influence their willingness-to-pay. Bertini, Wathieu, and Iyengar (2012) found that greater assortment increased willingness-to-pay for high-quality products and decreased it for low-quality products.

The layout and distance between the reference and sale prices can influence buyers (Coulter & Norberg, 2009). Showing the prices in a column (vertical) may lead customers to evaluate the percentage difference, whereas showing the reference and sale prices side-by-side (horizontal) may encourage customers to focus on the absolute difference (Choi & Coulter, 2012). DelVecchio, Lakshmanan, and Krishnan (2009) found that showing the magnitude of a price discount on the retail shelf rail next to the regular price instead of on the product tended to lower the perceived price. This effect was found for both cents-off and percent-off promotions.

Another context principle is product bundling. Bundles are sometimes perceived to be worth more than the individual parts because they reduce search effort, reduce ordering costs, or are featured and perceived to be a promotion (Harris & Blair, 2006; Sharpe & Staelin, 2010). Consumers are likely to spend more when initially offered a “loaded” model with the opportunity to delete some options opposed to when they are offered a base model with the opportunity to add some options (Levin et al., 2002). When using a bundle with a savings message (e.g., buy X at regular price and save $ on Y), Yadav (1995) recommended offering the savings on the preferred item. Janiszewski and Cunha (2004) concluded that the expected or reference price affects the response. If one item in a bundle is priced above a buyer’s reference price and the other is below, they recommended assigning the discount to the less-attractively-priced item. If both items have prices above the reference price, divide the discount and assign part to each. If both items have prices below the reference price, list the discount as a separate item. Khan and Dhar (2010) looked at cross-category bundles that
included both hedonic and utilitarian items and recommended listing the discount as savings on the hedonic item. Although bundling works in many situations, higher quality products may appear less attractive when bundled (Love, 2012). When offering a bundle with a large discount, sales would likely be larger if individual component prices were highlighted (Harris & Blair, 2012). Varying individual item prices to change bundle attractiveness (decoy pricing) can encourage people to buy a bundle and spend more than they would have without the bundle (Schwartz & Cohen, 1999).

If a firm provides shipping and handling or other services to customers, it may be profitable to separate the charges for these services from the list price. Offering free shipping can be a good temporary promotion, but the partitioned pricing principle suggests that sales usually will be higher when charges (e.g., port charges, mandatory gratuities, surcharges etc.) are listed separately (Morwitz, Greenleaf & Johnson, 1998). Partitioning may not appeal to all buyers (Schindler, Morrin & Bechwati, 2005). Three exceptions may exist for the partitioning principle. First, including charges in lower-quality product prices may be beneficial (Love, 2012). Second, if perceived price-quality relationships are low, such as for very familiar brands, partitioning may be less helpful (Volckner, Ruhle & Spann, 2012). Third, partitioning may encourage customers to review secondary attributes of the offer. If the benefits from these attributes are not strong, partitioning could lower sales (Bertini & Wathieu, 2008).

One benefit of being perceived as having high quality relative to others in the category is that asymmetries may exist in the cross-price elasticities. When premium tier products are promoted, they often attract many buyers away from lower tier items. However, when lower tier products are promoted, they usually attract few buyers from the top tier (Blattberg & Wisniewski, 1989; Sivakumar & Raj, 1997). This asymmetry relies on buyer perceptions of category price and quality differences (Bronnenberg & Wathieu, 1996). This price context effect, often referred to as asymmetric competition, implies that higher-tier products should use deep, infrequent price promotions while lower-tier brands should use shallow, frequent promotions (Sivakumar, 2000).

**SIGNALING PRINCIPLES**

The last group considers the messages people receive from prices. Small price changes can influence both produce and price perceptions. Price signaling principles are described below.

Odd-ending pricing involves using odd numbers, especially nines, on the right-hand side of prices. In many cases, prices that ended in nines and, to some extent, fives produced higher
sales than prices that were slightly higher or slightly lower (Schindler & Kibarian, 1996; Coulter, 2001; Anderson & Simester, 2003; Bizer & Schindler, 2005). For inexpensive products, price endings of “95” may be less effective than endings of “99” and, for expensive products (e.g., $50), price endings of “95” may be more effective (Gendall, Fox & Wilton, 1998; Schindler, 2006). For real estate, pricing just below a whole number (“charm pricing”) appears to suggest careful pricing and “firmness” and tends to raise willingness-to-pay (Allen & Dare, 2004; Allen & Dare, 2006; Thomas, Simon & Kadiyali, 2007). Therefore, demand functions may contain positively-sloped segments. Sales can be further enhanced if nine-ending prices are shown to the left of the text in an advertisement (Coulter, 2002) and if an offer uses a positive or gain frame (e.g., “Save” or “Enjoy” instead of “Don’t lose out”) (Choi, Lee & Ji, 2012). Benefits from “nines” may be smaller for premium brands, for established products, for high-share products, for items promoted with other “sale” cues, and for marketers who use them on many products (Anderson & Simester, 2003; Mace, 2012). Research in Europe concluded that some buyer segments (e.g., women) were more sensitive to nine-ending prices (Harris & Bray, 2007; Baumgartner & Steiner, 2007). Odd prices could signal lower product quality and may backfire in some countries (Schindler & Kibarian, 2001; Mace, 2012; Balan, 2012). This tactic is often used in the U.S. to boost sales as long as shoppers do not perceive significant negative quality signals.

The color, symmetry, preciseness, and length of a price can also influence choice. Men tend to perceive greater savings when a price is shown in red instead of black (Puccinelli et al., 2013). Houses with prices that were slightly higher and symmetric (e.g., $810,018) tended to be chosen over houses with non-symmetric prices (Dobson, Gorman & Moore, 2010). Thomas, Simon, and Kadiyali (2010) found that people tend to perceive prices with many non-zero digits (e.g., $395,425) as lower than prices that end with zeros ($395,000). They also analyzed real estate transactions and found that higher prices were paid when the list prices were more precise. Coulter, Choi, and Monroe (2012) found that adding a comma between the thousand’s digit and the hundred’s digit and including a decimal and cents tend to raise the perceived cost of a product. When prices are shown on restaurant menus, “shortening” the price by dropping the dollar sign can boost customer spending (Yang, Kimes & Sessarego, 2009).

Price deals may be more effective if they are less consistent or predictable (Alba et al., 1999; Krishna et al., 2002). A range of relative price insensitivity exists around the expected price for each buyer that creates a nearly vertical demand segment (Kalwani & Yim, 1992; Kalyanaram & Little, 1994). Therefore, a small price increase inside most buyer’s
insensitivity ranges may not be detected while a price promotion must move price below the ranges to be noticed. In some categories, discounts of 20 to 30 percent may be needed to attract customer attention (Gupta & Cooper, 1992). In many circumstances, brands and stores with shallow, noticeable, frequent discounts will be perceived to have lower average prices than brands and stores with deep, infrequent discounts (Buyukkurt, 1986).

Many consumers do not remember prices after they make purchases (Dickson & Sawyer, 1990). About 40 to 50 percent of grocery purchases are made based on expected prices rather than on posted prices (Murthi & Rao, 2012). Buyer estimates of their market basket’s total cost are influenced by product type and the number of syllables in the prices (Luna & Kim, 2009). Each extra syllable in a price tends to decrease the chance of it being recalled by 20 percent (Vanhuele, Laurent & Dreze, 2006).

The difficulty buyers have processing information can influence their response to prices (Thomas & Morwitz, 2009; Suri, Monroe & Koc, 2013). When a product offers superior features or a lower price than competitors, it can help if buyers do not get cognitively busy when evaluating options. If a product is not superior, making buyers cognitively busy could boost sales (Sivaramakrishnan & Manchanda, 2003). Some individuals are more likely to buy when shown a list price and a percentage discount because the complexity tends to change the salience of the price (Kim & Kramer, 2006). The cognitive cost of processing single percentage discounts can lead to less revision of price expectations and greater sales when promotions end (DelVecchio, Krishnan & Smith, 2007). Generally, lower-priced products should have discounts described in percentage terms to emphasize the savings, particularly if the discount is large (Chen, Monroe & Lou, 1998; Lowry, Charles & Lane, 2005; McKechnie et al., 2012). Because people have difficulty processing percentages, a sequence of percentage discounts (e.g., “30% Off Plus Another 20% Off”) can boost sales and profits (Chen & Rao, 2007).

Weber’s law and its cousin, the Weber-Fechner law, imply that buyer responses to price changes are influenced by the magnitude of the price (Grewal & Marmorstein 1994; Chang & Chiou, 2007; Sirvanci, 2011). When comparing prices for substitute products, Azar (2011) suggests that shoppers focus more on percentage differences than absolute differences.

Prestige pricing refers to quality or distinctiveness signals from high prices. In a study on the ketchup category, higher prices provided stronger quality signals than advertising (Erdem, Keane & Sun, 2008). A higher real estate listing price tended to raise appraised values (Northcraft & Neale, 1987). Plassmann et al. (2008) conducted taste tests with identical wines and told people that they varied in price. Subjects said the more expensive wines tasted better.
and brain scans showed more activity in an area of the brain associated with pleasantness. In categories where conspicuous consumption is important, prestige pricing can create upward-sloping demand curves (Amaldoss & Jain, 2005). Bornemann and Homburg (2011) found that when people consider purchases in the future, they are more likely to use price as a quality signal.

The final psychological principle for pricing is called the price placebo effect. Shiv, Camron, and Ariely (2005) found that consumers who purchased energy drinks (thought to increase mental acuity) at a discount solved fewer puzzles than those who purchased the same drinks at full price. Wright et al. (2012) replicated the first study and also found that the placebo effect occurred when a beverage had limited availability. Another study used two placebo pills. Those who were told that the pill was more expensive responded in ways suggesting that the pill was more effective (Waber et al., 2008). Therefore, higher prices can be linked with higher product quality and with perceived superior performance when buyers desire and expect it.

CONCLUSIONS AND IMPLICATIONS

When firms incorporate findings from psychology and consumer behavior research into their pricing strategy, they may boost their profitability, even beyond the “profit maximizing” results from economic theory. Some of the framing, congruency, context, and signaling principles described in this paper suggest that demand may have kinks, vertical parts, and sections with positive slopes, making it difficult to define demand as a simple equation. Many of the variables mentioned in these pricing principles appear to influence the traditional demand relationship and could be incorporated into analytical models to help researchers and policy makers better understand firm and buyer behaviors.

TABLE 1 PSYCHOLOGICAL PRINCIPLES FOR PRICING

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<th>Framing Principles</th>
<th>Example Tactics/Recommendations</th>
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<td>“Save” instead of “Spend Less”</td>
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<td>Free Product</td>
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<td>Multiple Unit Pricing</td>
<td>“$3 for 3 Units” instead of “$1 Each”</td>
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<td>Phonetic Symbolism</td>
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Table 1 lists more than twenty principles for the marketing and pricing established products discussed in this paper along with some example applications and recommendations. Most of these principles appear to enhance the willingness of buyers to pay. Although only a few exceptions have been found, specific principles may be more useful in some product or service categories than in others. While firms may not be able to incorporate all of the principles in their pricing decisions, employing several at the same time is likely to be beneficial. If firms are not currently using these principles, incorporating more of them into their marketing plans may help enhance the profitability of their existing products and services.
REFERENCES