Opportunities for Action in Consumer Markets

**Profit Parabolas: Bringing Science to the Art of Pricing**

**The Boston Consulting Group**
Pricing is rapidly becoming more science than art. But because the science is complex, most managers still rely far too heavily on art—or instinct. As a result, they almost always miss the pricing sweet spot and leave millions of dollars of profit and several points of share on the table. Learning and applying the science of pricing are opportunities to create a new kind of competitive advantage.

Pricing scientifically begins with asking two simple questions:

- If I increase my product’s price by 1 percent, what will happen to profits?
- If I decrease my product’s price by 1 percent, what will happen to profits?

If the answer to both questions is that profit declines, you’ve reached the point of maximum profit. In our experience, however, fewer than 10 percent of managers responsible for pricing decisions can answer either question with any degree of confidence. A powerful, fact-driven tool called the profit parabola can help.

**What Is the Profit Parabola?**

The profit parabola, which takes its name from its shape, shows the total profit pool available at a given price. The goal of managing price is to reach the peak of the parabola—the point of maximum profit. (See Exhibit 1.) Failure to understand how pricing affects profits along the parabola can lead to serious
mistakes. For example, the three major competitors in the fast-food industry were locked in a lethal price war not long ago—all attempting to improve their consumer value propositions with price cuts. However, they hadn’t understood the full implications of the profit parabola. The price reductions increased volume—but not enough to offset margin decreases. The corporate parents continued to earn their fee royalties, but the franchisees suffered considerable declines in margins. Those results could have been avoided if the participants had used the profit parabola correctly and selectively applied pricing stimuli to the right products and value packages.

Profit parabolas are the next frontier of pricing science. Applied appropriately, they can boost profits and devastate competitors. To create a first-generation profit parabola, you will need specific analytical and testing capabilities and a comprehensive database for five key inputs:

1. Current price and volume

2. A range of historical prices and corresponding volumes to determine elasticity, or consumer demand
3. Cost and margin per unit at a range of different volumes to calculate profit by price point

4. A range of competitive prices and your corresponding volumes

5. A calculation of the entire value chain’s economics, including both suppliers’ and retailers’ costs

The first three inputs provide the most basic profit parabola. Adding the fourth input creates a cross-brand profit parabola that allows you to factor in the competition. Incorporating the fifth makes it possible to analyze the profits of the full set of value chain partners so that you can optimize prices across all of the partners. (See Exhibit 2.)

![Exhibit 2. Basic and Complex Profit Parabolas](source: BCG analysis.)
Using the Profit Parabola

The effective use of the profit parabola requires a deep understanding of consumer demand, competitors’ prices, the profit pool, and the profit pool split.

**Consumer Demand.** Consumer demand for a product at a range of price points is expressed through elasticity. Elasticity is simply the change in volume for a 1 percent change in price, everything else being constant. What is difficult about measuring elasticity is holding everything else constant. Merchandising conditions, competitors’ prices, holidays, and a variety of other factors can influence consumers’ purchases and confound the impact of price alone. Retailers use various methods to work around such problems.

A leading food retailer, for example, calculated elasticity for a portion of its product line and found products with demand curves like the one in Exhibit 3. When prices fell by 50 percent, volume increased more than six times. Other products were much

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**Exhibit 3. A Typical Pricing-Elasticity Demand Curve**

- **Source:** BCG analysis.
less elastic. Using these elasticities, the retailer was able to segment its products into different families. Products that had high elasticities and brought people into the store were candidates for decreases in price. Products that had low elasticities but were likely to be bought once someone was in the store (impulse purchases, for example) were candidates for fewer promotions and could even be considered for price increases. In the past, the retailer’s approach to price promotions had been sporadic and unsystematic. Now, armed with this new knowledge, it was able to unlock potential increases of $650 million in sales and $100 million in profits. What’s more, the changes that would bring such gains were easier to execute and test than many other opportunities of comparable size.

**Competitors’ Prices.** Cross-price elasticity (or the impact of competitors’ prices on a product’s sales) is probably the most poorly managed element of the pricing parabola. Managers, salespeople, and Wall Street analysts all keep an eye on competitive price gaps, yet few companies understand their own products’ cross-price elasticities. Is cross-price elasticity constant across a wide range of price gaps? Or can a brand sustain its market share as long as it doesn’t allow the gap to exceed a certain threshold? How, and against which competitors, should price gaps be measured?

Most managers answer these questions with a combination of instinct and company folklore. Even when companies have studied these issues, the answers tend to come back so buried in statistical arcana that the organizations aren’t able to act on them.

Exhibit 4 shows what one packaged-goods company found when we analyzed the cross-price elasticity between its own brand and a private-label offering.
Each time the price gap between its brand and its competitor’s private label increased, the company’s sales fell sharply. The correlation was unmistakable. Many brands have an equally direct relationship between price gaps and sales. The key is to develop the data that can allow these relationships to be seen.

**The Profit Pool.** The profit for the entire value chain is simply the sum of the manufacturer’s profits and the retailer’s profits. This pool is probably the easiest element of the profit parabola to understand and calculate. Understanding the total profit pool at every price point can help manufacturers and retailers determine whether certain price points (a two-for-one promotion, for example) are worth contemplating.

**The Profit Pool Split.** Once managers understand how volume and profitability vary by price point, they can begin to take control of one of the most contentious aspects of price changes: renegotiating the manufacturer/retailer margin split. Many brand managers, when trying to change prices, find themselves...
beholden either to retailers directly or to their sales force’s claims about retailers. The profit parabola cannot in itself change this dynamic. It can, however, illustrate how much value is created by a price change and thus make clear how much money a manufacturer is giving away by keeping the retailer’s margin, or penny profit, fixed.

Our experience with a packaged-goods supplier illustrates how powerful this approach can be. The manufacturer analyzed its primary brands at a leading retailer and discovered that it was on the far side of the peak for both its own profit parabola and the profit parabola of the manufacturer and retailer combined. Most strikingly, the manufacturer found that the price elasticity for consumers at that particular retailer was nearly three times higher than at other retailers. As a result, there was a much greater opportunity to drive profits with lower consumer pricing.

The manufacturer developed a new consumer-pricing and promotion strategy for a selection of its products, giving up some margin per unit in order to drive greater overall profitability and share. More important, the retailer recognized the value of the opportunity and also agreed to take a lower margin per unit in the interest of increasing overall profits. Working together, the manufacturer and the retailer were able to achieve consumer price reductions of approximately 10 percent, with total profit increases of 20 to 30 percent.

Once the database of price points, volumes, revenues, and profits is established, the profit parabola can generate many opportunities for discussions founded on facts rather than opinions. The parabola allows managers to be much more explicit, scientific, and precise about the share and profit tradeoffs that a price change entails.
Dealing with Value Chain Partners: Retailers, Distributors, and Suppliers

When a company understands the impact of price changes in a concrete way, it can dramatically alter the competitive landscape of an entire industry. The profit parabola can help manufacturers both in negotiations with their suppliers and distributors and in discussions with retailers about how the profit pool is split.

One of the most frequent reasons manufacturers give for not raising prices is that Wal-Mart won’t accept a price increase. As noted above, a profit parabola for the entire value chain—one that calculates the whole profit pool, not just the manufacturer’s share—can demonstrate to retailers the overwhelming impact on profits of a small price change. In some cases, this information alone can help persuade retailers to increase prices. For retailers that remain philosophically opposed to price increases, using profit parabolas to reset pricing across a product line can create a powerful argument for change: “If we raise the price of product A by 3 percent, we can afford to lower the price of product B by 4 percent. We’ll make more money and improve our consumer value proposition.” Since profit parabolas foster fact-based discussions, they counter the need for aggressive, one-sided negotiations.

What about decreasing prices? We often hear the following complaint: “The trade would love it, but we would reduce our profits.” Again, the profit parabola for the entire value chain can demonstrate the profit potential of a lower price point. Sales forces can then use the profit parabola in a discussion about changing the distribution of profits at that new point. For example, a promotion that drops the price at the expense of the manufacturer (while maintaining the
retailer’s margin) will likely drive substantial volume but not the manufacturer’s profit. Manufacturers, however, can use the profit parabola to persuade retailers to share the burden. By demonstrating the volume potential of the promotion, a manufacturer can show that a decrease in price will be profitable for both parties, even with a lower margin for the retailer.

Understanding the Impact of Competitive Response

Profit parabolas and cross-price elasticity can also be used to help you understand what kind of impact competitors’ reactions to price changes have on your shares and profits. One of the most frequent reasons that retailers give for not increasing price is, “What will our competitors do?” A profit parabola that tracks cross-price elasticity can help you calculate the impact on your market share and profits when a competitor responds—or doesn’t respond—to your price change. Although the profit parabola cannot predict the likelihood of a competitive reaction (it takes a thorough competitive analysis to do that), it does lead to a more informed understanding of the consequences of a reaction.

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A company with a strong pricing capability can sharpen its customer segmentation and use its deeper knowledge of each segment to fine-tune prices. It can monitor competitors’ prices and learn how their pricing affects its own position, enabling it to respond intelligently to competitors’ moves or ignore them. It can test incrementally new or radically different pricing offers. It can bundle—or unbundle—products and services.
Most important, a company with a strong pricing capability can orchestrate the implementation of pricing policies and strategies throughout the organization in a disciplined, timely fashion.

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