Store Brands and Category Management

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A key benefit to the adoption of any formal category management process is that retailers must explicitly define the role that each category plays in the overall store portfolio. Having to be clear about category roles – be it traffic builder, transaction builder, cash generator, profit contributor, image or excitement creator – leads to a disciplined approach to space management, everyday pricing policy, and promotion tactics. Category management also requires the retailer to define roles for their store brands, both at the chain level and within any specific category.

Since store brands can by definition only be sold by the retailer that carries them, some retailers may attempt to utilize this measure of exclusivity to differentiate themselves from the competition. Although in the U.S. there is wide variation in the performance of different retailers' private label programs (Dhar & Hoch 1997), with the decline of Sears' commitment to the Kenmore brand name one is hard pressed to think of any mainstream retailer who is defined by their store brand program. The U.K. is a different story, however, where about 35% of grocery store volume (compared to 18% in the U.S.) is private label. Several large chains (e.g., Tesco, Sainsbury, Marks & Spencer) do utilize their store brands as a key point of distinction, as does Canadian grocer Loblaw's with their President's Choice line. Our experience suggests that U.S. store brands should be recognized as a vehicle for the retailer to leverage their installed base of current shoppers. In category management parlance, this means that the store brand is foremost a profit contributor, taking advantage of the built-in lower variable cost structure and attendant higher gross margins. The store brand can also play an important secondary role, that of an image creator, where the image to be conveyed is one of best available quality for the money – i.e., a good value for those customers who want it.

The rest of this report is organized as follows. First, we briefly review previous research that supports our contention that the most appropriate category management roles for the store brand program are first as profit contributor and second as value creator. Next, we outline the primary purpose of the paper, which is to investigate the optimal price gap between national brands (NB's) and store brands (SB's) using the internal analgesics category as a detailed case study . Then we report the results of four studies – two consumer studies and two in-market pricing tests – that provide evidence on the optimal price gap issue. Our bottom-line recommendation is that most U.S. retailers could significantly improve the profit contribution from analgesics and other categories by maintaining national brand pricing and closing the price gap by raising store brand prices. Our data and analysis suggest that with too big a price gap retailers leave profit on the table and get little if any positive benefit in return in terms of price image or traffic building.

What We Know About Store Brand Success Factors

In the last few years a number of studies have investigated the factors that lead to successful store brands. For example, Hoch and Banerji (1993) analyzed across-category differences in private label market share. They localized the drivers of store brand performance with the three parties that make up the retail channel: consumers, retailers and manufacturers. In a cross-sectional analysis of 185 grocery categories, they found that six variables could explain 70% of the variance in market shares. Store brands obtained higher market share when:

- quality relative to the national brands was high,
- quality variability of store brands was low,
- the product category was large in absolute terms ($ sales),
- percent gross margins were high,

- there were fewer national manufacturers operating in the category,
- national advertising expenditures were low.

The first two variables show that, all else equal, consumers are more likely to buy private labels that provide parity quality. The middle two factors reflect the retailer's scarce resource allocation problem. Because retailers must draw on internal funds for the branding, packaging, production, and advertising of their store brands, they invest more heavily in large categories offering high profit margins so as to maximize their return. The last two variables demonstrate the influence of manufacturers and show that private labels can be crowded out of the market when national brand competition is high and when those brands invest advertising resources into the consumer franchise.

Raju, Sethuramen, and Dhar (1995) studied the factors that influence the retailer's decision to introduce a store brand into a category. They showed that: (1) store brands are more likely to be introduced into categories where price competition between the national brands is low (because margins will tend to be higher); and (2) the number of national brands is high (which implies that introducing a store brand will have less impact on margins).

More recently Dhar and Hoch (1997) undertook a large scale study of how store brand penetration varies across U.S. retailers. They argued that store brands are the only brand for which the retailer must take on all responsibility – from development, sourcing, and warehousing to merchandising and marketing. Unlike decisions retailers take about national brands which in large measure are driven by the manufacturer's actions, the retailer plays a more determinant role in the success or failure of its own label. Based on data from 34 food categories for 106 major supermarket chains operating in the largest 50 retail markets in the U.S., they showed that:

1. Overall chain strategy in terms of commitment to quality, breadth of private label offerings, use of own name for private label, a premium brand offering, and number of stores consistently enhance the retailer's store brand performance in all categories. Also, the extent to which the retailer serves a customer base containing less wealthy and more elderly households and operates in less competitive markets improves the performance of the store brand.

2. The EDLP positioning benefits the store brand but only in lower quality categories where the value positioning of the store may be better aligned with the price advantage of the store brand.

3. Retailer promotional support can significantly enhance private label performance.

4. Retailers often use national brands to draw customers to their stores. Retailers who pursue this traffic building strategy usually carry more national brands, deeper assortments, and offer better everyday (lower price gap) and promotional prices on national brands. Each of these actions work against the retailer's own brands, highlighting the important balancing act the retailer must perform to profitably manage the sales revenue and margin mix in each category. At the same time, adding a higher quality premium store brand program may mitigate this trade-off.

5. When retailers obtain more than their fair share of a category (high category development index, CDI), they also do much better with private labels.

6. From the national brand's perspective, encouraging the retailer to carry more brands and deeper assortments may be the most effective way to keep store brands in check. The importance of these variables, however, may depend on the national brand's market position. For

example, a category leader may be glad to see a rise in store brand share if it comes at the expense of one of its secondary national brand competitors.

7. The exact impact of most of the variables depends on the underlying quality of store brands in a category. When store brand quality is high, competition at the retail and brand level are more important, as are variables capturing economies of scale and scope enjoyed by the retailer. In contrast, demographics associated with consumer price sensitivity and EDLP pricing matter more in low quality categories.

8. Finally, premium store brands offer the retailer an avenue for responding to the national brand's ability to cater to heterogeneous preferences. This appears more likely in categories where store brands already offer high quality comparable to the national brands.

In summary, prior research shows that there are three parties who influence the performance of store brands: consumers, national brand manufacturers, and most importantly the retailers who sell them. The prior research also shows that although store brand pricing has a substantial impact on store brand market share, it is only one of many factors that make for a successful and profitable private label program. Our focus in the current report is on getting a better handle on how to determine the optimal price gap between national and store brands. We know that if the retailer maintains a large price gap between the two, then they will sell more store brand units than if the gap is smaller. The key question, however, remains as to what the optimal gap should be in terms of maximizing category profitability. Dhar and Hoch (1997) in their across retailer study found that on average every 1% increase in the price gap led to a 0.8% increase in store brand share. This less than one-to-one correspondence between sales and prices

suggests that there is a limit to what retailers can expect from aggressive store brand pricing and that there exists a natural point of diminishing returns to gaps which are too big or too small.

Understanding the Optimal Price Gap Between National and Store Brand

The key issue addressed by this research is to better understand the "optimal" price gap between national brands and private labels. The word optimal is in quotes because it is safe to say that there is no one optimal gap appropriate to all retailers for all categories. A simpler task is to understand the optimal gap with respect to a particular category management role assigned to the store brand and then apply that knowledge to a particular category, in this case internal analgesics.

Based on IRI pricing data, the current price gap across all U.S. retailers is about 45% in the analgesics category. This compares to an average gap of about 25-30% in all categories. There is wide variation in the price gap across retailers and formats; for example, mass merchandisers typically maintain the largest gaps. There is also wide variation across markets. The food store price gap associated with Tylenol 50 ct is 25% in Tampa and 56% in Houston. Finally, there is wide variation in the price gap within a retailer across brands/sizes, typically ranging from a low of 15% for some skus to 67% for others. We suspect that this large within retailer variation in the gap results from the application of a simple cost-plus pricing rule to SKUs that differ in terms of their underlying scale economies. The wide variation in price gaps across retailers/markets and the inconsistency in the price gap within retailers across brand/sizes suggests to us that many retailers have not explicitly defined the role of the store brand in the analgesic category management process.

If the retailer has the ambitious goal of using the store brand as a key differentiator, then the appropriate model probably comes from the U.K.retailers − like Loblaw's very successful premium President's Choice, store brand as differentiator implies very high quality product that is fairly priced relative to comparable national brands, that is a relatively small gap consistent with the product's intrinsic value. Optimal with respect to the goal of store brand as differentiator would be achieved when consumers view the store brand as a key reason for shopping the retailer, a condition rarely met in U.S. consumer surveys of the most important attributes of store patronage (Arnold, Oum, & Tigert 1983).

Earlier we asserted that the most appropriate and achievable category management goal for the store brand was as profit contributor with a secondary emphasis on value creator. If the sole role of the store brand is profit contributor, then the appropriate price gap is that which maximizes category profit. For a given cost of goods sold, the optimal gap depends on three things: the price sensitivity of the national brands; the price sensitivity of the store brands; and the effect of national and store brand prices on each other. Retailers, however, rarely can afford to focus solely on maximizing category profits; they must also attend to long term concerns about price image and future store traffic. Therefore, we pose the following research question:

> What is the short and long term impact of changes in the price gap between
> leading national brands and their relevant store brand counterparts on unit sales,
> dollar sales revenue, and dollar profit of individual brands, the category in
> aggregate, and store price image?

Specifically, assuming that retailers are not interested in raising national brand prices due to competitive pressures and attendant effects on price image, what is the impact of reducing the currently large gap in analgesics (typically in the range of 40-50%) between national and store brands by raising private label prices to levels consistent with other categories in the store (i.e.

25-30%)? Our conjecture is that price gaps in the analgesics category currently are too big relative to the optimal level. Too big a gap not only reduces national brand sales and profits to some degree, it also reduces private label profits because with too big a gap retailers are leaving private label money on the table and getting nothing in return in terms of a favorable long-term price image or store traffic increases.

Research Strategy

In order to get a more complete handle on customer behavior and to address the very tricky issue of the long term impact of a price change on a retailer's overall price image, we pursued a two-pronged research attack utilizing both: (1) large scale consumer surveys to measure customer knowledge, perceptions, and attitudes; and (2) in-market tests in two different retail formats utilizing pre-post true experiments. We view these methodologies as complementary in that together they can convincingly demonstrate not only what is likely to happen if the price gap is reduced, but also reveal the underlying causes of changes in performance. Moreover, pursuing two different methods simultaneously increases confidence that short term response to changes in the price gap hold up in the longer term vis a vis store price image effects.

Study 1
Customer Knowledge and Perceptions of Price Gaps

The first study examined two related questions. First, how accurate are consumers in estimating the prices of national brands, store brands, and the resultant price gaps? Are there differences in price knowledge accuracy across consumer groups, for example are there identifiable segments of consumers that are significantly more or less accurate? Second, how

does the price gap affect consumers judgments of the value of the store brand? In others words, with a bigger and bigger price gap, do consumers continue to think that they are getting a better deal with the store brand or at some point do they begin to question the product's underlying quality?

Methodology

In this first study we investigate consumer knowledge of the NB-SB price in different categories in grocery, drug, and mass merchant retail formats. The questions we ask are: What do consumers think are the prices and price gaps? How do they vary by retail format and type of category? How accurate are their estimates and does accuracy vary by category? We also examine consumers' value perceptions (quality level for the money) of private labels at different gap levels and whether these perceptions vary depending on the actual quality differences between national and store brand alternatives.

Respondents: A sample of 600 consumers were interviewed through mall intercepts in 10 different major markets including Albany, Chicago, Houston, Tampa. The respondents were a representative sample of consumers who personally purchased some form of internal analgesics in the last three months. The sample was balanced in terms of age, income, and gender. Moreover, the large sample allowed us to make a variety of comparisons between different types of consumers, for example heavy versus light analgesics users, heavy vs light store brand users, higher versus lower educated consumers, the type of analgesic most commonly used and the retail format where analgesics are most frequently purchased. Burke Marketing Research collected all the data.

Procedure: After respondents were qualified, they answered a series of questions about their shopping habits, in general and in relation to the analgesics category. These questions included the following:

- which retail formats they have purchased each of five different product categories (see below) in the last three months
- the retail format at which they most frequently purchase each product category
- whether they have purchased a store brand in the past three months in each of the categories
- a self-rated assessment of the level of store brand usage
- a self-rated assessment of their usage of non-prescription pain relievers
- their favorite brand of analgesics.

Then each respondent was asked to estimate the prices that they would expect to pay in their local market for popular sizes of leading brand/sizes in five different product categories along with the price of the comparable store brand alternative:

Category	Brand/Size
Analgesics	Tylenol 50 ct Extra Strength caplets
	Bayer 50 ct tablets
Shampoo	Advil 50 ct tablets
Film	Pantene Pro V 13oz
Laundry Detergent	Kodak Gold 24 ASA 100
Soft Drinks	Ultra Tide Liquid 100 oz
	Coca-Cola Classic 2 Liter

Moreover, respondents estimated these prices in three different retail formats: food stores, drug stores, and mass merchandisers. The order in which respondents were asked about categories and retail formats was randomized. Respondents made price estimates only if they had purchased a category in the last three months. A respondent who had purchased all five categories had to make 30 different price estimates (5 categories x 3 retail formats x 2 national-store brands = 30).

Finally, after the price estimation task, respondents were shown one pair of national-store brand prices for each of the five categories from a fictitious store and then asked to estimate how good a value they believed the store brand offered. Value was defined as "quality for the money". The price gaps were varied at three different levels; for example in the analgesics category, 10%=$5.19/$4.59; 30%=$5.19/$3.59; and 50%=$5.19/$2.59. Respondents saw only one price gap per category.

Results

Price Estimation: Actual market prices were obtained from IRI InfoScan data for each of the ten markets. The actual prices for all the categories and brands are shown in Exhibit A. A variety of different accuracy measures were then computed including:

- national brand directional accuracy = NB predicted - NB actual
- store brand directional accuracy = SB predicted - SB actual
- price gap directional accuracy = (NB predicted - NB actual) - (SB predicted - SB actual)
- national brand absolute accuracy = | NB predicted - NB actual |
- store brand absolute accuracy = | SB predicted - SB actual |
- price gap absolute accuracy = | (NB predicted - NB actual) - (SB predicted - SB actual) | .

We report accuracy in absolute value terms to avoid misinterpreting a small average directional accuracy score as indicating good price knowledge with a case where equal numbers of over and under-estimating respondents simply cancel each other out. So as to make these accuracy measures comparable given the different price levels of the various analgesic brands and the other four product categories, each of these accuracy measures also was computed on a percentage basis, where the denominator was the actual prices. For example,

- national brand % directional accuracy = (NB predicted - NB actual)/NB actual .

Exhibit A
Actual Market Prices for NBs and SBs

Category/Brand	NB, SB, Gap	Food	Drug	Mass Merchant
Analgesics	NB Price	$4.86	$5.26	$4.06
	SB Price	2.81	3.13	1.97
	% Gap	42%	41%	52%
Tylenol	NB Price	5.15	5.52	4.32
	SB Price	3.13	3.52	2.52
	% Gap	39%	36%	42%
Advil	NB Price	5.43	5.92	4.52
	SB Price	3.32	3.61	1.83
	% Gap	39%	39%	60%
Bayer	NB Price	4.00	4.35	3.35
	SB Price	2.00	2.25	1.55
	% Gap	50%	48%	54%
Pantene Shampoo	NB Price	3.49	3.63	2.79
	SB Price	2.59	2.59	1.99
	% Gap	26%	29%	29%
Kodak Film	NB Price	4.39	4.49	2.79
	SB Price	2.59	2.59	1.99
	% Gap	40%	39%	29%
Tide Detergent	NB Price	7.09	7.99	6.25
	SB Price	5.13	5.99	3.99
	% Gap	28%	25%	36%
Coke 2 liter	NB Price	1.21	1.16	.99
	SB Price	.77	.67	.70
	% Gap	36%	42%	29%

The results averaged across all respondents are displayed in Tables 1-12. All of the results for the national brands, directional and absolute accuracy in dollars and in percents, appear in Tables 1-4. As can be seen from Tables 1-2, respondents slightly underestimate the price of the national brands, on average by about 41¢ or 5%. The underestimation is greater for both Advil and Tylenol and in the drug store format. The absolute accuracy results shown in Tables 3-4 are significantly larger ($1.29 or 29%) than the directional results (3 times larger in dollar terms and 5 times larger in percent terms) which indicates that although more respondents underestimate national brand prices, a sizable minority over estimate national brand prices. The average respondent missed the mark by about 30% (Table 4).

An examination of Tables 5-8 shows a different picture for store brand price accuracy. Specifically, respondents systematically overestimate the price of the store brands, on average by 61¢ or 35%. This overestimation is quite robust, though it is most pronounced for Bayer aspirin and the mass merchandiser store format. A comparison of the directional accuracy scores with the absolute accuracy scores ($1.09 or 51%) reveals a predominant tendency for respondents to overestimate store brand prices.

The price gap results arise from a combination of a slight underestimation of national brand prices with a significant overestimation of store brand prices. Because the direction of the national and store brand errors are going in opposite directions, this implies an even bigger error in terms of estimating the gap. And in fact as shown in Table 9-10, respondents significantly underestimate the size of the gap, on average by about $1.00 or 47%. The absolute accuracy results are quite similar to the directional results, which means that virtually all respondents make the same mistake, significant underestimation of the true price gap.

What are the implications of these inaccurate consumer price expectations? One interpretation, the one that we favor, is that retailers are pricing their store brands way too low, giving the consumer a much larger gap than they expect to encounter. Consumers expect the price gap to be about 23% when in actuality it is 45%. Our view is that this means that retailers are leaving significant profit on the table and probably getting little if no good will in return. If this is true, retailers should reduce the price gap by rasing store brand prices. Another possibility is that although most consumers expect the price gap to be much smaller than it actually is, there may be a segment of customers who both expect and demand a large price gap and very low store brand prices. If this group is sizable and/or important to overall store performance (e.g., they are more store loyal, heavier users, etc...), then it may make sense for the retailer to offer bigger gaps than the average consumer expects.

In an effort to test this possibility, we engaged in an exhaustive analysis of the data summarized in Tables 1-12 in an effort to isolate any a priori identifiable segment of consumers who systematically were more accurate by virtue of expecting low store brand prices and large gap. Our expectation was that by virtue of either their greater price sensitivity or greater category expertise the following groups would expect lower store brand prices and consequently larger price gaps.

- elderly consumers (fixed income and greater analgesics usage)
- more educated consumers (greater category knowledge(
- heavy store brand users (greater knowledge)
- heavy category users.

Repeated attempts unearthed no consumer segment more or less accurate than another. We also reanalyzed the data considering only respondents estimates at the retail format that they most often bought the category. These results showed that respondents were no more accurate

estimating prices at their favorite format when compared to the other two formats. Our conclusion here is that the consumer price expectation results are quite robust.

We also analyzed price accuracy for the other four categories. To make inter-category comparisons meaningful, all accuracy measures were calculated on percentage basis. The results are shown in Table 13. The national brand results show that there is a slight tendency to overestimate these prices, especially for shampoo, film and soft drinks and more so in mass merchandisers. Analgesics estimates show a bit of underestimation in contrast. The store brand price estimates again show overestimation, especially analgesics, film , and soft drinks. Finally, the gap results generally show underestimation (-14%). However, there are big differences across categories. Analgesics shows the larger amount of underestimation (-47%), followed by film (32%) and detergent (-23%). Interesting, shampoos shows the exact opposite pattern, underestimation of the gap, by 40% on average. Using the logic enumerated earlier, this suggests that shampoos maybe a category that would benefit from a large gap so as to more closely align price reality with price expectations. This may partially explain why store brand shampoos obtain a very small share of sales (<2% nationally).

Table 1
National Brand (predicted - actual $)

	Advil	Bayer	Tylenol	Totals
Food	-$.71	-$.01	-$.45	-$.39
Drug	-1.15	-.35	-.71	-.74
Mass	-.37	.24	-.15	-.10
Totals	-.74	-.04	-.44	-.41

Table 2
National Brand (predicted - actual %)

	Advil	Bayer	Tylenol	Totals
Food	-10%	2%	-6%	-5%
Drug	-17	-6	-10	-11
Mass	-5	10	-1	1
Totals	-10	2	-5	-5

Table 3
National Brand |predicted - actual $|

	Advil	Bayer	Tylenol	Totals
Food	$1.43	$1.04	$1.35	$1.28
Drug	1.63	1.12	1.46	1.41
Mass	1.19	1.03	1.14	1.12
Totals	1.42	1.06	1.32	1.27

Table 4
National Brand |predicted - actual %|

	Advil	Bayer	Tylenol	Totals
Food	29%	28%	29%	28%
Drug	30	27	29	28
Mass	29	32	29	30
Totals	29	29	29	29

Table 5
Store Brand (predicted - actual $)

	Advil	Bayer	Tylenol	Totals
Food	.34	.95	.25	.51
Drug	.10	.72	.07	.29
Mass	1.40	1.11	.56	1.02
Totals	.61	.93	.56	.61

Table 6
Store Brand (predicted - actual %)

	Advil	Bayer	Tylenol	Totals
Food	15%	51%	11%	25%
Drug	8	37	4	16
Mass	86	80	25	64
Totals	36	56	13	35

Table 7
Store Brand |predicted - actual $|

	Advil	Bayer	Tylenol	Totals
Food	$1.07	$1.06	$.95	$1.03
Drug	1.11	.99	1.00	1.03
Mass	1.50	1.20	.97	1.22
Totals	1.23	1.08	.97	1.09

Table 8
Store Brand |predicted - actual %|

	Advil	Bayer	Tylenol	Totals
Food	36%	56%	33%	41%
Drug	35	49	30	38
Mass	91	85	41	72
Totals	54	63	35	51

Table 9
NB-SB Price Gap (predicted - actual $)

	Advil	Bayer	Tylenol	Totals
Food	-1.05	-.91	-.65	-.87
Drug	-1.26	-1.05	-.71	-1.01
Mass	-1.80	-.90	-.67	-1.12
Totals	-1.37	-.95	-.68	-1.00

Table 10
NB-SB Price Gap (predicted - actual %)

	Advil	Bayer	Tylenol	Totals
Food	-48%	-46%	-32%	-42%
Drug	-54	-52	-34	-47
Mass	-67	-51	-36	-51
Totals	-56	-50	-34	-47

Table 11
NB-SB Price Gap |predicted - actual $|

	Advil	Bayer	Tylenol	Totals
Food	$1.28	$1.15	$1.06	$1.16
Drug	1.46	1.22	1.12	1.27
Mass	1.88	1.09	1.02	1.33
Totals	1.54	1.15	1.07	1.25

Table 12
NB-SB Price Gap |predicted - actual %|

	Advil	Bayer	Tylenol	Totals
Food	62%	58%	52%	57%
Drug	63	60	57	60
Mass	70	62	58	63
Totals	65	60	56	60

Table 13
Accuracy of Price Expectations (predicted - actual)

National Brand % Errors						
			CATEGORY			
FORMAT	Analgesics	Shampoo	Film	Detergent	Soft Drinks	Totals
Food	-5%	14%	10%	-1%	18%	7%
Drug	-11	11	8	-10	28	5
Mass	1	27	12	-1	26	13
Totals	-5	17	10	-4	24	8

Private Label % Errors						
FORMAT	Analgesics	Shampoo	Film	Detergent	Soft Drinks	Totals
Food	25%	1%	43%	4%	33%	20%
Drug	16	4	37	-7	64	22
Mass	63	21	28	21	35	35
Totals	35	9	36	6	44	26

NB-SB Gap % Errors						
FORMAT	Analgesics	Shampoo	Film	Detergent	Soft Drinks	Totals
Food	-42%	50%	-38%	-12%	-11%	-10%
Drug	-47	28	-37	-18	-20	-19
Mass	-51	42	-24	-39	3	-14
Totals	-47	40	-32	-23	-9	-14

Price Gaps and Value Judgments: The average value judgments for the three different price gap levels (10%, 30%, 50%) for all five product categories are graphed Figures 1-5. As can be seen, judgments of value increase monotonically with the gap – the bigger the gap, the bigger consumers see the value. It is also clear, however, that there are diminishing returns to value with larger and larger gaps. Across the five categories the increase in value from a 10% to 30% gap is about 16% while the increase in value from 30% to 50% is 12%. The most extreme

case is found in the detergent category as can be from the pronounced kink in the value curve.

The kink in the analgesics category is less pronounced.

Figures 1-5
Value Judgments about the Store Brand depending on the Price Gap
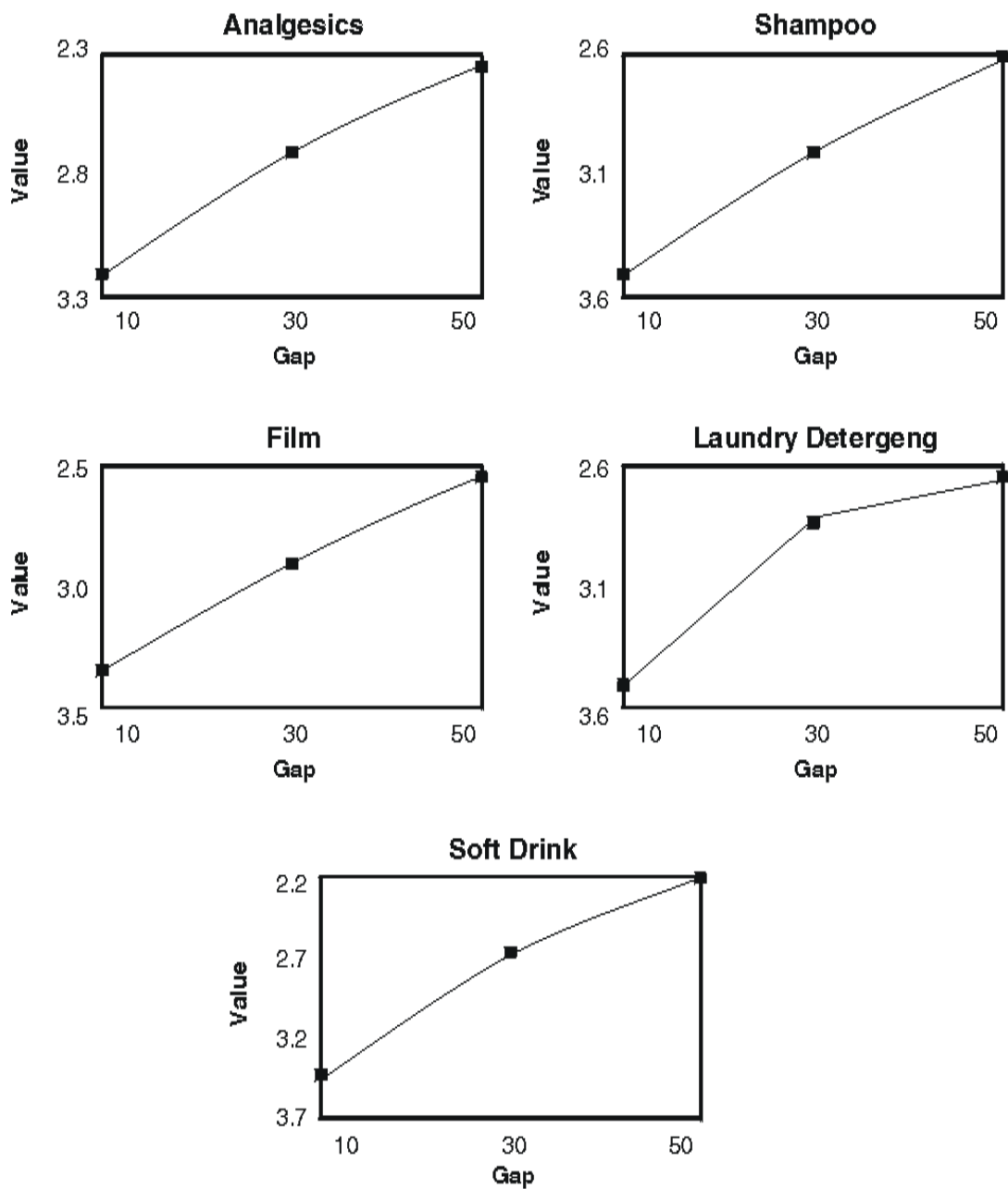
Our summary assessment of these data is that although there is clear evidence of diminishing returns, there is little evidence that consumers draw such a strong inference about the intrinsic quality of the store brand from the price gap so as to produce a boomerang effect where value judgments actually decline, at least for the range of price gaps and the categories presented here. It is possible that such a decline might be observed with bigger gaps and/or in categories where store brand quality is very low or quality variability is high.

Study 2
National Brand Prices, Store Brand Prices, and Store Price Image

This second consumer study is designed to provide information about the likely effect of national brand prices, store brand prices, and the resultant price gap on long-term competitive price image. This is a very difficult and tricky issue, especially since we really have little understanding of how retailer price images are formed in the first place and how they change dynamically over time. We all know that consumers have a favorable price image of WalMart and clearly this image is based on the fact that WalMart consistently has lower prices on their entire market basket. But most retail observers would agree that WalMart's price image is not totally justified by their prices – somehow WalMart seems get more mileage out of their low prices than other retailers who do battle with them. Although Study 1 showed that most consumers expect the national-store brand price gaps to be smaller than in fact they are, an understanding of the likely effects on long term price image is crucial in terms of adoption by retailers of reduced NB-SB price gaps.

Methodology

The basic logic in study 2 was to expose consumers to shopping lists and prices from different pairs of stores and measure which store consumers believed had the best overall prices (store choice) and by how much (intensity of preference). Each pair of stores offered different combinations of national brand and store brand prices. This allowed us to model store choice and intensity of preference as a function of the different prices and the resultant price gap.

Respondents: A sample of 200 consumers were interviewed through mall intercepts in 10 different major markets including Albany, Chicago, Houston, and Tampa. Just as in study 1, the respondents were a representative sample of consumers who personally purchased some form of internal analgesics in the last three months. Burke Marketing Research collected all the data. The data were collected via computer. Each respondent completed the questionnaire at specially programmed kiosks that presented the different pairs of stores and then asked respondents the store choice and preference intensity questions.

Procedure: Respondents were shown 9 item shopping lists and prices for several product categories for two competitive (fictional) stores. Three of the categories were represented by both NB's and SB's, the remaining three by leading NB's. A sample pair of lists is shown below. The critical manipulation involves the first two categories (e.g., in the lists below acetaminophen and OJ) with both NB's and SB's. For these two categories, prices of the NB's and SB's were be manipulated according to the two design matrices shown below the price lists. In words, NB and SB prices were independently manipulated up and down by about 13% each.

Fred's Store   **Barney's Store**

$5.99	Tylenol		$6.49	Tylenol
4.99	Fred's Non-Aspirin		4.49	Barney's Non-Aspirin
2.49	Tropicana OJ		2.79	Tropicana OJ
1.99	Fred's OJ		1.79	Barney's OJ
6.99	Tide		7.19	Tide
0.79	Kraft M&C		0.79	Kraft M&C
3.49	Oreos		3.29	Oreos
1.19	Kraft Philly CC		1.19	Kraft Philly CC
0.99	Fred's Cream Cheese		0.99	Barney's Cream Cheese

Fred's SB Price	NB Price $4.39	$5.19	$5.99
$2.69	39%	48%	55%
$3.19	27%	39%	47%
$3.69	16%	29%	38%

Barney's SB Price	NB Price $4.39	$5.19	$5.99
$2.69	39%	48%	55%
$3.19	27%	39%	47%
$3.69	16%	29%	38%

To make the purpose of the study less transparent, the remaining five items (four national brands and one store brand) in each set of store pairs served as distractors items. Across the store pairs, these items had the same prices +/- 1-2%, with the overall constraint that the sums of the prices across the five distractor items were equal across each pair.

The base case, which is the center cell in each matrix, offers a price gap of 39%. The orthogonal array results in each store having gaps that range from a low of about 16% to a high of 55%. By independently varying each stores NB and SB prices and the resultant price gap, we can then estimate the influence of NB prices, SB prices, and the gap on store choice and consumers perceptions of over all prices. Each respondent saw a subset of the 9x9 combinations shown above. Eliminating duplicate prices and since order does not matter results in 9x8/2=36 pairs of price lists. Each respondents saw a randomly selected set of 18 pairs of stores The

names of the retailers were fictitious and varied for each pair of lists. After viewing each pair, respondents pressed a key and moved to a screen that showed the response scale. The response scale contained two parts: 1) which store do you think charges the lowest prices overall; 2) how much lower (1-7 scale ranging from 1=a lot, 7=a little). It should be pointed out that the simultaneous presentation of the shopping lists is a significantly easier task than the one faced by consumers who wish to compare store prices – real shopping is a sequential task where memory is critical. Initially, we included a sequential presentation condition, but respondents told us the task was too difficult. It is interesting to note that consumers told us that to cope with the sequential task they would pick out one national brand price and try to remember it for the two stores.

Results

Our hypothesis was that the main determinant of store choice and price image (as measured by the expected price difference intensity measure) would be the difference in prices of the NB's. We expected that differences in SB prices between the stores and the relative size of the NB-SB price gaps would exert much less influence. A priori, it was difficult to predict whether SB prices or the gap will be more important.

A simple representation of the results is show in Table 14.

Table 14
Store Choice Probabilities Depending on Relative National and Store Brand Prices

National Brand Prices

Store Brand Prices	Disadvantage	Equal	Advantage
Disadvantage	0	.19	.65
Equal	.12	.50	.88
Advantage	.35	.81	1.00

The choice probabilities above and below the diagonal sum to 1.0 because of symmetry in the experimental design. As can be seen, when both stores have equal prices on both national and store brands, the probability of choice is by definition .5. And when a store has an advantage on both national and store brand prices, this dominating store is always chosen, p=1.0; conversely, a dominated store worse on both prices is never chosen. When a store has an advantage on one price and has equal prices on the other, choice probabilities drop to .88 (NB advantage) and .81 (SB advantage).

The most interesting results occur in the cells where the respondent faces a trade-off between national and store brand prices, an advantage on one price and a disadvantage on the other. Here we see that about two-third of the respondents (p=.65) choose the store with the NB advantage (and by definition the SB disadvantage). Table 15 provides more detail about these trade-off choices depending on the size of the advantage/disadvantage. Table 15 reports the probability of choosing a store with a national brand advantage and store brand disadvantage when it is paired up with a store having a national brand disadvantage and store brand advantage. As can be seen, in all cases more than 50% of the respondents choose the store with the national brand advantage. When the NB advantage is big the SB disadvantage is small, 3/4 (74%) of the

respondents rely on the NB advantage. Even when the NB advantage is small and the SB

disadvantage is large, a majority of the respondents stick with the NB advantage store.

Table 15
Probability of Choosing the Store with the National Brand Advantage
and Store Brand Disadvantage

Store Brand Disadvantage	National Brand Advantage	
	Small	Large
Small	.63	.74
Large	.55	.67

We also analyzed the data in a different manner in order to come up with a more precise

estimate of the relative influence that the prices of national brands, store brands, and the price

gap have on store price image. Using a statistical procedure called multinomial logit, we

estimated the probability that respondents would choose each of the nine different store types (3

NB x 3 SB price levels) assuming that they chose from the complete set of nine. The choice

probabilities are shown in Figure 6 and Table 16.

Table 16
Choice Probabilities for Each of the Nine Store Types

Store Brand Prices	National Brand Prices			
	High ($5.99)	Medium ($5.19)	Low ($4.39)	Average
High ($3.69)	.008	.030	.092	.044
Medium ($3.19)	.019	.066	.182	.089
Low ($2.69)	.042	.140	.420	.201
Average	.023	.079	.231	.111

As can be seen, both national and store brands have an impact on a store's overall price image. Decreases in both types of prices increase the probability of respondents choosing a store as lower priced. It is also clear that a given percent change in national brand prices has a bigger impact on price image than an equivalent percent change in store brand prices. For example, there is a tenfold increase in probability moving from the highest NB price (prob=.023) to the lowest NB price (prob=.231) whereas the same move in store brand prices results in 4.6 fold increases (.201/.044). This suggests that in terms of buying a better price image, national brands have more than two times the impact compared to store brand prices. This is not meant to imply that these price changes would be profitable, but they would have an influence on price image.

The relative impact of national and store brand prices is summarized in Table 17. In all cases the national brand price has significantly more impact on price image than the store brand price. Both Tylenol and Advil have more impact compared to Bayer. Also, we computed the impact for different groups of respondents. We see that heavy category users rely even more on the national brand prices than do the light category users (2.38 vs 1.95) to assess store price image. And ironically, we also found that heavy store brand users also paid relatively more - attention to national brands prices compared to those respondents who were light users of store brands (2.89 vs 1.99).

Table 17
Percent Change in Choice Probability
Between Stores with the Lowest and Highest Prices

	National Brand Price Effect	**Store Brand Price Effect**	**Ratio of NB to SB Price Effect**
Total Analgesics	1000%	460%	2.17
Tylenol	1379	552	2.50
Advil	945	357	2.64
Bayer	800	503	1.59
Category Usage			
Light	819	419	1.95
Heavy	1208	507	2.38
Store Brand Usage			
Light	949	477	1.99
Heavy	1233	426	2.89

Finally, our analyses found absolutely no evidence that the price gap had any impact at all on respondents assessments of store price image. Only national brand and store brand prices mattered, not the gap between them. This is pretty easy to see by examination of Table 16. The smallest price gap store has low NB and high SB prices and a choice probability of .092. The largest price gap store has high NB prices and low SB prices, p(choice)=.042. Although the small gap store is more attractive than the high gap store, this effect is completely driven by the NB prices. And in fact reducing the price gap in the low NB-high SB store by raising SB prices a notch actually increases P(choice) up to .182. In sum, we find no evidence that the price gap is important when it comes to store price image. Therefore, if retailers opt for a high price gap, they better find that it leads to an increase in category profit, since the long term impact on price

image and store traffic appear negligible. The only way that a big NB-SB price gap can lead to increased profitability is if store brand demand is extremely price sensitive, not a likely state of affairs given all the previous research of which we are familiar. And so this leads us into the in-market tests where we can examine the impact of NB and SB prices on unit sales and dollar profit.

In-Market Pricing Experiments

The two consumer surveys showed two things. (1) In 4 out of 5 product categories consumers expect national-store brand price gaps to be smaller than they currently are. (2) Price image is much more influenced by a retailer's national brand prices relative to competition; store brand prices exert less than half as much influence and price gaps per se had no influence at all. This implies that retailers could increase category profitability by raising store brand prices while holding the line on national brand prices and experience little if any negative spillover onto their long term price image. In order to see whether this conjecture is in fact true, we conducted two in-market pricing experiments, one with a major food retailer and the other with a top drug store chain. The experimental price gaps were maintained for 6 months in order to better assess any longer-term impact.

Methodology

The tests utilized a straight-forward pre-test post-test design where stores matched in terms of historical sales and demographic characteristics were randomly assigned to one of several price gap conditions. Price gaps were created by holding constant prices for all national brand analgesic SKUs and then raising or lowering the comparable store brands. Baseline sales

were computed using the six month period immediately preceding the experimental price changes. In both retailers, only everyday shelf prices were adjusted. Promotions occurred as they normally would. Promotion prices on store brands always were dropped to the same level in all stores irrespective of the everyday prices. Additional details of the test will described separately for the two retailers.

Food Retailer: All 84 of this retailer's stores participated in the test. The retailer is located in a major metropolitan area and competes against other food, food-drug, drug, and mass merchant retailers. The retailer maintains a mix of urban and suburban locations. A majority of the stores have food-drug combos with pharmacies though a minority of the outlets have a more traditional grocery store commitment to HBA. The retailer has long followed a Hi-Lo promotion policy, which is the norm in this market. The current gap between national and store brands averaged about 37%, though it ranged from a low of 17% to a high of 66% depending on the cost structure of the particular store brand SKU. Three new price gaps were created and all the store brand skus were adjusted to those gaps irrespective of the existing starting price gap: 15%, 33%, and 50%. In addition, we had planned on placing "Compare and Save" signage in half of the stores. The retailer previously had not made a consistent commitment to this kind of signage. The rationale behind the signage was to call extra attention to the price gap. In the big 50% gap condition, this should help the store brands and harm the national brands. In the small 15% gap condition, the signage could potentially backfire by drawing attention to the more modest savings accruing to the store brand. Unfortunately, the signage part of the test could not be adequately implemented. There were 28 stores in each of the three cells.

Drug Retailer: 100 drug store locations participated in the tests, all of them located in a major metropolitan area in urban surroundings. This retailer faces competition from all formats, drug, food, food-drug, and mass merchant retailers, though because of the relatively small trading areas, the retailer focuses predominantly on other drug stores in terms of competitive pricing. The retailer has long followed a Hi-Lo promotion policy, which is the norm in this market. The current gap between national and store brands averaged about 47%, though it ranged from a low of 17% to a high of 66% depending on the cost structure of the particular store brand sku. Four new price gaps were created and all the store brand skus were adjusted to those gaps irrespective of the existing starting price gap: 20%, 30%, 40% and 50%. There were 23-27 stores in each of the four cells.

Results

The main data to be analyzed were unit and $ sales and profit data collected from scanners. All performance measures were computed as percentage changes in the test period compared to that achieved during an historical baseline period of the immediately preceding six months. For example,

* % Change Units = (Test Period Units - Historical Period Units)/Historical Period Units
* % Change $ Sales = (Test Period $ Sales - Historical Period $ Sales)/Historical Period $ Sales
* % Change $ Profit = (Test Period $ Profit - Historical Period $ Profit)/Historical Period $ Profit

In order to maintain the confidentiality of the retailers' sales and profit data, we have indexed them to the pricing condition that was closest to that which existed before the start of the test, 33% for food and 50% for drug. All results are then expressed relative to this condition which we set at 0. The reported results are therefore percentage changes relative to these control conditions.

Our expectation was that both national brands and private labels should be relatively insensitive to the price gap, although we expected that SB sales would be more sensitive to the gap than NB sales. With too large a gap, retailers harm national brand sales and gain no favorable price image benefits, assuming that price image is manly driven by inter-store price comparisons of the leading national brands. Moreover, they forego considerable profit on private labels by giving up margin and not being compensating with large enough increases in sales. We also thought it possible that, despite virtual quality parity of NB and SB analgesics, that too large a price gap may reduce consumers' perceptions of SB quality; that is, they just could not believe that a high quality SB could be that cheap. With too small a gap (smaller than the storewide 25-30%), NB sales may go down a bit, and one runs the greater risk of losing higher margin SB sales. On top of that, the retailer potentially could harm the value image that is a key driver of the entire store brand program. We did not, however, expect the SB price gap to have much effect on overall store price image, which is more likely pegged to leading NB absolute prices.

Food Retailer Results

Aggregate results for the food retailer are presented in Tables 18-20. A fairly clear picture emerges. First, demand for both national brands and store brands is influenced by the gap. There is a small (3.5%=4.7-1.2) increase in demand for NB's when moving from a 50% to a 15% gap.

Table 18
Food Retailer: Percent Change in Unit Sales

	Percent Change in Unit Sales		
Price Gap	**National Brands**	**Store Brands**	**Total Category**
15%	4.7%	-3.2%	2.7%
33%	0	0	0
50%	1.2	19.8	6.9

Table 19
Food Retailer: Percent Change in $ Sales Revenue

	Percent Change in Unit Sales		
Price Gap	**National Brands**	**Store Brands**	**Total Category**
15%	9.2%	4.9%	4.4%
33%	0	0	0
50%	5.8	-4.3	0.9

Table 20
Food Retailer: Percent Change in $ Profit

	Percent Change in Unit Sales		
Price Gap	**National Brands**	**Store Brands**	**Total Category**
15%	4.4%	9.7%	6.1%
33%	0	0	0
50%	0.8	-14.2	-3.5

There is a more sizable [23%=19-(-3.2)] increase in SB sales when moving from a 15% to 50%

gap. Unit sales of the entire category is about 4% higher in the 50% gap condition. But this

increase in sales comes at a price – in this case a 41% decrease in the SB's price in order to move

from a 15% (85% of NB price) to 50% gap (50% of NB price). This suggests a fairly low price elasticity of demand (23% change in unit demand for a 41% change in SB price). And by definition (Hoch, Drèze and Purk 1994), when price elasticities are low, lowering price is a losing proposition.

We see that both $ sales and $ profit are significantly higher when the retailer maintains smaller price gaps. Compared to the 33% price gap condition, category profits are 6.1% higher with a 15% gap and 3.5% lower with a 50% gap. Both differences are statistically reliable.

Drug Chain Results

The results for the drug chain are qualitatively similar to those for the food retailer. That is, demand for store brands is only moderately sensitive to the price of the store brand and the gap with national brands. As a result, smaller price gaps and higher store brand prices are significantly more profitable than larger gaps and lower store brand prices.

The specific results are reported in Tables 21-23. Looking first at unit sales, a decrease in the price gap from 50% to 20% results in a 14.6% decrease in store brand volume. At the same time there is a small increase in national brand sales but only for the 30% gap. We cannot explain why national brand sales did not increase in the 20% condition. Again, it is important to remember what the retailer needs to do with store brand prices in order to move from a 20% (80% of NB price) to a 50% (50% of NB price) gap. Store brand prices are 37.5% (1-59%/80%) lower in the 50% condition whereas total category unit sales are only marginally higher, 5.5% higher than in the 20% gap condition and 1.4% higher than in the 30% condition. As with the food retailer, this low price sensitivity to the gap and store brand prices means that higher store brand prices are more profitable. In all cases, lower gaps result in higher profits. In this

particular case, the 30% gap produces the highest profits, 10.3% higher than the 50% gap

condition.

Table 21
Drug Chain:
Percent Change in Unit Sales

	Percent Change in Unit Sales		
Price Gap	**National Brands**	**Store Brands**	**Total Category**
20%	-3.8%	-14.6%	-5.5%
30%	5.7	-6.1	-1.4
40%	-5.6	-3.1	-4.5
50%	0	0	0

Table 22
Drug Chain:
Percent Change in $ Sales Revenue

	Percent Change in Unit Sales		
Price Gap	**National Brands**	**Store Brands**	**Total Category**
20%	2.0%	3.0%	-0.6%
30%	7.9	8.5	6.4
40%	-5.0	7.5	-1.4
50%	0	0	0

Table 23
Drug Chain:
Percent Change in $ Profit

	Percent Change in Unit Sales		
Price Gap	National Brands	Store Brands	Total Category
20%	-0.2%	9.8%	3.0%
30%	10.7	16.2	10.3
40%	-2.7	10.5	2.2
50%	0	0	0

Summary of In-Market Test Results

We believe that the main lesson to take away from these in-market tests is that store brand demand is relatively insensitive to both the absolute price levels of the store brand and the resulting price gap with the national brand. And so at least in the context of these tests, it seems clear that in the short to intermediate term, category profits will be higher if the retailer charges higher store brand prices. For the food retailer, the lowest gap (15%) produced the highest category profit. For the drug chain, a 30% gap increased profit the most. Neither here nor in practice it is not possible to determine the exact optimal gap. What is important for the retailer to figure out is whether current prices are either above or below the theoretical optimum and through systematic experimentation move toward or away from that optimum. For whatever reason, it appears that current pricing practice has led a large number of retailers to price store brands in the analgesics and other categories significantly below the optimal price, resulting in foregone profit opportunities on both store brands and their national brand counterparts.

Conclusions

In total our results suggest that retailers who maintain excessively large price gaps between national and store brands in analgesics and other categories are leaving significant category profit on the table and getting little if anything in return. Consumers expect the price gap to be in the 20-30% range when in fact the actual gap is about 45% nationally. Moreover, we observed that larger gaps produce diminishing returns in terms of consumers' assessment of the value offered by the store brand. If gaps are too big, consumers may infer that the quality is not there, which is disastrous for any retailer who is intent on building and maintaining a strong store brand program. We also found consumers' perceptions of store price image are affected about twice as much by a national brand price advantage compared to a store brand price advantage. It is not that store brand prices do not matter, they just don't matter as much when compared with the national brands about which consumers are so much more familiar. Finally, results from in-market pricing tests show that unit sales of national and store brands are relatively insensitive to the underlying price gap. As a consequence of this inelastic response in demand to the price gap, sales revenue and $ profit are significantly greater when gaps are smaller.

In order for category management to work, manufacturers and retailers need to find those overhyped but elusive "win-win" situations. Our research has convinced us that smaller rather than larger gaps between national and store brand prices are an example where a "win-win" actually exists.

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