M A R K E T I N G S C I E N C E I N S T I T U T E

What Makes Consumers Pay More for National Brands Than for Store Brands: Image or Quality?

Raj Sethuraman

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Private labels, or store brands, have become a major force to reckon with in grocery products. They account for more than one-fifth of total volume sales in the United States and are outpacing national brand growth. Central to understanding this trend is the question, Why do some consumers purchase national brands and others purchase store brands? More specifically, why are some consumers willing to pay a price premium for national brands over store brands?

In this study, author Sethuraman investigates these questions. To begin, he suggests that consumers may be willing to pay a price premium for national brands for three possible reasons: (1) they believe that there is a quality difference between a national brand and a store brand that warrants payment of a higher price for the national brand; (2) they may be very sensitive to quality changes and are willing to pay a higher price for the national brand; (3) they may believe that there is little difference in quality between the national brand and the store brand, on average, but may still want to pay a higher price for the national brand because of their familiarity with it, its imagery, or other positive associations that go beyond quality perceptions. Sethuraman calls such imagery and positive associations *nonquality utility.*

The study develops a model that separates the total price premium that consumers are willing to pay into three components: perceived quality differential, consumer quality sensitivity, and nonquality utility. The model is estimated using data on what consumers were willing to pay for national brands versus store brands. The dataset consists of 2,237 observations from 132 consumers on 20 grocery products.

Findings and Implications

A key insight of the study is that perceived quality differential and nonquality utility, or brand image, dominate different stages of the purchasing process. Perceived quality differential (or parity) is the driving force in a consumer's decision to participate in or consider purchasing a store brand. But when it comes to deciding how much more consumers will pay for national brands over store brands, brand image or brand equity plays the primary role. In fact, consumers will pay a reason-

able premium for national brands even if they believe that the national brand and the store brand are of the same quality.

These findings have important implications for national brand managers and retailers alike. Among them:

- National brand managers will be able to command a reasonable price premium even when retailers close the quality gap. They should maintain and increase their brand's equity through frequent and effective advertising and other equity-enhancing strategies.
- Retailers, by contrast, should recognize the importance of national brand equity and set the price differential for their store brands appropriately. Just because retailers have closed the quality gap does not mean that they can close the price gap and maintain a low price differential. Nor should they set too high a price differential; charging too low a price for a store brand may create negative brand associations.

Raj Sethuraman is Assistant Professor at the Cox School of Business, Southern Methodist University.

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Introduction

Private labels or store brands have become a major force to reckon with in grocery products. Private labels account for about one-fifth of total volume sales in the United States, one-fourth in Canada, and nearly one-half in Europe (Hoch and Banerji 1993; Dunne and Narasimhan 1999). The Private Label Manufacturers Association (PLMA) website reports that store brand sales in grocery products in the United States have grown from $34 billion in 1994 to $43.3 billion in 1998, outpacing national brand growth.

Central to understanding the private label phenomenon is the question, Why do some consumers purchase national brands and others purchase store brands? When faced with a choice between the two brands at a retail outlet, a consumer's decision can be summarized as follows: Generally, prices of national brands are higher than store brand prices. Suppose the price of a national brand is $1.00 and the price of a store brand is $0.80. Then, the price differential is $0.20. If a consumer is willing to pay more than the $0.20 premium for the national brand, she or he will buy the national brand. If a consumer is unwilling to pay $0.20 premium, she or he will purchase the store brand. More generally, a consumer will purchase the national brand (store brand) if the premium she or he is willing to pay for the national brand over the store brand is more (less) than the actual price differential between the two brands. Thus, our understanding of why some consumers purchase national brands and others purchase store brands can be enhanced by gaining insights into why consumers are willing to pay a price premium for national brands over store brands.

Why are consumers willing to pay more for national brands than for store brands? It has been traditionally believed that national brands are of relatively higher quality than store brands. One obvious answer, then, is that consumers perceive the national brands to be higher in quality. Recently, however, retailers have given greater attention to quality of store brands and have attempted to close the quality gap. For instance, in a 1991 Gallup survey, 67 percent of consumers (up from 42 percent in 1984) reported that "store brand items usually perform as well or taste as good as nationally advertised brands" (Fitzell 1992, p. 148). The PLMA website reports that in a 1999 Gallup study, 75 percent of consumers ascribed the same level of product quality to national brands and store brands. Yet national brands continue to command some premium even in commodity products (for example, milk and flour), suggesting that consumers derive utility (that is, benefit) from the national brand beyond what is dictated by quality. Thus, consumers' willingness to pay a premium for national brands over store brands may derive from three sources:

1. Consumers may believe that there is a quality difference between a national brand and a store brand that warrants payment of a higher price for the national brand.

2. Consumers may not necessarily feel that the quality difference is high, but they may be very sensitive to quality changes, and so they are willing to pay a higher price for the national brand.

3. Consumers may believe that there is little difference in quality between the national brand and the store brand, on average, but may still want to pay a higher price for the national brand because of their familiarity with it, its imagery, or other positive associations that go beyond quality perceptions.

These three possibilities are the foundation of this paper. In particular, this paper addresses the following questions:

1. Can we separate the premium that consumers are willing to pay for national brands over store brands into three components: perceived quality differential, quality sensitivity, and nonquality utility (that is, utility not explained by the perceived quality differential)?

2. Based on the above distinctions, can we understand why some consumers are willing to pay more for national brands than for store brands? Is it because of perceived quality differential, quality sensitivity, or nonquality utility?

Answers to the above questions can have important implications for manufacturers and retailers alike. If quality is the dominant reason why consumers pay more for national brands, then both national brand manufacturers and store brand managers should focus on products and try to improve their physical and perceived quality. If nonquality factors dominate, then managers should focus on image-building strategies such as advertising.

The growth of private labels over the last decade has generated substantial research covering a wide array of topics. However, past research has not addressed these issues. By analyzing why consumers pay a premium for national brands over store brands, this paper also contributes to the literature on brand equity. Brand equity is one of the most important concepts of the 1980s and has been shown to be positively related to market share, return on investment, and stock market value (Aaker 1991; Kerin and Sethuraman 1998). The concept has been defined in multiple ways. At the consumer level, it has been defined as the set of associations and behaviors on the part of customers that permits a brand to earn greater volume or margins (Keller 1998). Thus, brands with positive customer-based brand equity should be able to command a price premium over other comparable brands. This notion of brand equity as the premium consumers pay for a brand has been used by academic researchers (e.g., Park and Srinivasan 1994) and research firms such as D. D. B. Needham (Keller 1998, p. 347) to measure equity. This dollar-metric approach to measuring brand equity has been found to be one of the best for predicting brand choice and market shares (Agarwal and Rao 1996).

This paper adapts the dollar-metric approach and estimates the shared brand equity enjoyed by national brands over store brands for each individual consumer and each product category. With private labels closing the quality gap, the strategy for the survival and growth of national brands will ultimately depend on their ability

to maintain and enhance their brand equity. Measuring national brand equity and identifying which type of consumers have higher or lower brand equity can help brand managers focus on the right consumer segments and design appropriate marketing strategies.

The paper is divided as follows. First, we draw upon a general utility framework and develop an econometric model for separating the total price premium that consumers are willing to pay into the three components: perceived quality differential, quality sensitivity, and nonquality utility. Second, we describe the survey used for collecting data and estimate the model. The dataset consists of 2,237 observations from 132 consumers on 20 grocery products. Third, we analyze the estimates from the model and obtain several insights. Fourth, we provide some strategic implications of our findings. Finally, we conclude by discussing the limitations and directions for future research.

Utility Framework and Econometric Model

The econometric model for separating quality and nonquality premiums is derived from the basic utility-theory framework.

Utility Framework

We start with the conventional utility model involving price and quality and define the utility (V) for national brand (NB), as in Blattberg and Wisniewski (1989), as:

$$V_{NB} = \beta\, Q_{NB} - P_{NB}, \text{ where} \quad (1)$$

Q_{NB} is the quality of national brand and P_{NB} is the price of national brand. Coefficient β is the consumer's desire for quality or quality sensitivity relative to price sensitivity taken as 1. We will call the nonprice term $\beta\, Q_{NB}$ as nonprice dollar-metric utility, U_{NB}. Equation 1 suggests that nonprice utility arises exclusively from the quality of the national brand. However, literature on brand loyalty/equity suggests that brand strength or equity can arise from factors other than quality. In particular, Aaker (1991) states that, besides quality, brand equity or consumer's utility for a brand may arise from loyalty, awareness, brand image, and brand associations. We believe this nonquality utility is a particularly important consideration in the context of national brand versus store brand competition since national brands are seen as "image" brands and store brands as "no-frills" price brands. To incorporate nonquality utility, we introduce an intercept term (α_{NB}) in the utility equation as follows:

$$U_{NB} = \alpha_{NB} + \beta\, Q_{NB}. \quad (2)$$

The intercept (α_{NB}) can have several interpretations. From an economic utility standpoint, it can be thought of as "intrinsic" utility, or preference for the brand. From a marketing standpoint, an intercept term has been used to capture consumer-level brand loyalty or equity (e.g., Jedidi, Mela, and Gupta 1999; Kamakura and Russell 1993). At an aggregate level, the term has been used to represent national brand strength (e.g., Raju, Sethuraman, and Dhar 1995).

Equation 2 is similar to Park and Srinivasan's (1994) separation of attribute- and nonattribute-based equity in a general context. Their model can be written in our context as $U_{ik} = n_{ik} + f(S_{ik})$ where U_{ik} is utility or preference of consumer i for brand k (similar to U_{NB} in our model). Coefficient n_{ik} is nonattribute-based utility (analogous to α_{NB} in our model); function $f(S_{ik})$ is the dollar-metric value of attributes based on their perceived levels (analogous to $\beta\, Q_{NB}$ in our model). Although Park and Srinivasan (1994) use multiple attributes, consistent with our research focus and existing literature on national brand versus store brand competition, we consider quality as the primary composite attribute.

Corresponding to Equation 2, we can write the utility for store brand (SB) as:

$$U_{SB} = \alpha_{SB} + \beta\ Q_{SB}. \quad (3)$$

From equations 2 and 3, we can state that a consumer will buy the national brand if:

$$U_{NB} - U_{SB} = (\alpha_{NB} - \alpha_{SB}) + \beta\ (Q_{NB} - Q_{SB}) > P_{NB} - P_{SB}$$, and store brand otherwise. (4)

$U_{NB} - U_{SB}$ is the utility differential, reservation price differential, or price premium consumers are willing to pay for national brands over store brands. For brevity, we will simply call it *premium*. The expression $(\alpha_{NB} - \alpha_{SB})$ represents the utility not directly associated with quality. We call it *nonquality utility* or *nonquality premium*, α. The expression $\beta\ (Q_{NB} - Q_{SB})$ is the quality-based utility or *quality premium*. It is influenced by *quality sensitivity* (β) and *perceived quality differential* ($QD = Q_{NB} - Q_{SB}$). Thus Equation 4 can be written as:

$$\text{Premium} = \alpha + \beta\ QD. \quad (5)$$

Equation 5 forms the basis for developing the econometric model.

Econometric Model

The econometric model is developed by taking a multiple-consumer, multiple-category perspective. From Equation 5, the premium consumer i is willing to pay for a national brand over a store brand in product category j can be written as:

$$\text{Premium}_{ij} = \alpha_{ij} + \beta_{ij}\ QD_{ij} \quad (6)$$

Equation 6 cannot be estimated since two parameters (α_{ij}, β_{ij}) are to be measured for each i, j observation. So, we decompose the nonquality utility of consumer i for product j (α_{ij}) as:

$\alpha_{ij} = \alpha^{c}_{i} + \alpha^{p}_{j}$ (c and p denote consumer and product, respectively), where

α^{c}_{i} = nonquality utility or premium that is unique to consumer i but invariant across products, and

α^{p}_{j} = nonquality premium that is unique to product j but invariant across consumers.

This decomposition is similar in spirit to the ones used in experimental designs where the combined effect due to two treatments (i, j) are decomposed into (main) effect due to treatment i and effect due to treatment j. Here, the two “treatments” are product and consumer. The decomposition reduces the number of estimates while capturing variations due to consumer and product differences.

Similarly, we decompose the quality sensitivity of consumer i for product j (β_{ij}) as:

$\beta_{ij} = \beta^{c}_{i} + \beta^{p}_{j}$, where

β^{c}_{i} = quality sensitivity of consumer i that is invariant across products for the consumer, and

β^p_j = quality sensitivity unique to product j and invariant across consumers.

Based on the decomposition, we can rewrite Equation 6 as follows:

$$Premium_{ij} = \alpha^c_i + \alpha^p_j + (\beta^c_i + \beta^p_j)\ QD_{ij} \quad (7)$$

Equation 7 can be estimated using linear regression by creating appropriate dummy indicator variables for consumers and products as follows:

$$Premium_{ij} = \sum_i \alpha^c_i\ CONSUMER_i + \sum_i \alpha^b_j\ PRODUCT_j + \quad (8)$$

$$\sum_i \beta^c_i\ CONSUMER_i\ QD_{ij} + \sum_j \beta^p_j\ PRODUCT_j.\ QD_{ij} + Error, \text{ where}$$

$CONSUMER_i$ = dummy indicator for consumer i = 1 for consumer i, and 0 otherwise.

$PRODUCT_j$ = dummy indicator for product j = 1 for product j, and 0 otherwise.

For estimating Equation 8, we need data on the perceived quality differential between national brands and store brands and on premium that consumers are willing to pay for national brands over store brands. In the case of n consumers and N products, there are nN observations and 2(n+N) parameters to be estimated. In the next section, we describe the survey we use to obtain the data and the estimation procedure.

Data and Estimation

Measures and Sample

We measure the perceived quality differential and the premium consumers are willing to pay for national brands by directly asking consumers in a survey. Survey-based methods are often used in understanding brand choice and price sensitivities (e.g., Bucklin and Srinivasan 1991; Dillon and Gupta 1996). Self-explicated approaches to customer-preference-structure measurement have also been found to have high robustness and predictive validity (Park and Srinivasan 1994).

In each selected product category, we ask consumers to focus on the national brand that they are most familiar with and a private label or store brand in a retail store that they frequent. Because our econometric model is based on observations across multiple consumers (i) and multiple product categories (j), we construct measures of perceived quality differential and price premium that are comparable across consumers and product categories.

We measure the perceived quality differential between national brands and store brands as follows: We state to the consumers that the quality of a national brand is 100 and ask them to rate the quality of the store brand on a scale between 0 and 200 at intervals of 10 (0 being much worse than national brand, 100 being equal to national brand, and 200 being much better than national brand). If X is the quality of the store brand perceived by the consumers, the quality differential is computed as QD = 100 - X. The quality differential measure can range from -100 to +100. Since we are interested in consumers' opinions and perceptions rather than actual knowledge, respondents are encouraged to answer the comparison questions even if they have not bought the national or store brand but have an opinion about it. They were asked to omit a product category if they do not purchase the product or do not have an opinion.

The reservation price differential is measured in a similar manner. We state that the normal purchase price of the national brand in a product category is 100. We ask respondents to indicate on a scale ranging from 0 to 200 (at intervals of 10) the maximum price they will pay to purchase the store brand—for example, a score of 90 would mean they are willing to pay a 10 percent premium for the national brand (100 - 90). If Y is the price they say they would be willing to pay for the store brand, then the premium consumers are willing to pay for the national brand is computed as PREMIUM = 100 - Y. Thus, the premium expressed as a percentage of national brand price can range from -100 percent to +100 percent. Note that the measure of the reservation price differential is based on what consumers reported that they are willing to pay for national brands versus store brands, not on what they actually paid.

A sample of 350 randomly selected households from a medium-sized metropolitan area received the questionnaire. Respondents received $10 for completing the ques-

tionnaire. The respondents were asked to provide their perceptions of quality differential and the premiums they were willing to pay for 20 selected grocery products: aluminum foil, analgesics, liquid bleach, cake mix, cold cereal, processed cheese, ground coffee, cookies, dishwashing liquid, dog food, fabric softener, flour, frozen pizza, frozen vegetables, jams/jellies, ketchup, refrigerated orange juice, shampoo, soft drinks, and toilet tissue. The product categories were selected to cover a wide range of commonly purchased food and nonfood grocery products. We also collected demographic information from the respondents. A total of 136 completed questionnaires were returned, of which 132 were usable. Four questionnaires were excluded because the reported values were extreme (-100 or +100) for almost all product categories.

Distribution of Quality Differential and Price Premium

The sample of 132 respondents provided information for up to 20 product categories. Several consumers did not respond to some product categories because they do not buy them or did not have an opinion about store brands. Thus, there are 2,237 observations from 132 consumers across 20 product categories.

Figure 1. Distribution of Quality Differential and Price Premium

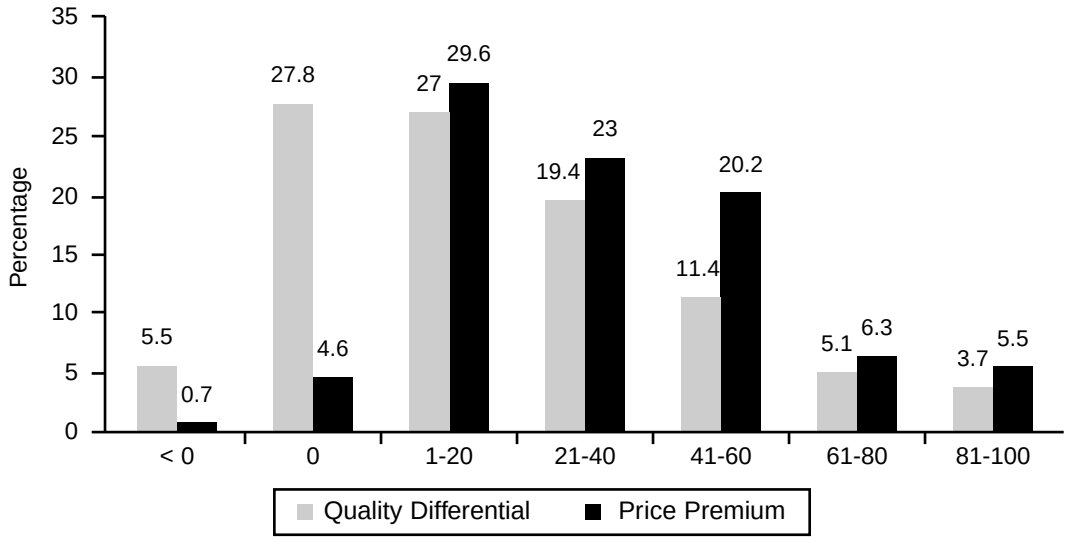


Figure 1 provides the distribution of perceived quality differential between national brands and store brands. In less than 6 percent of the 2,237 observations, consumers perceived the quality of private labels to be higher than that of national brands. This finding is consistent with the general notion that private labels are as good as or inferior to national brands. In a substantial number of observations (28 percent), consumers perceived the private labels to be equal in quality to that of

the national brands. This finding is also consistent with recent trends that suggest that a large number of consumers feel store brands usually perform as well as nationally advertised brands. The mean perceived quality differential is 22.7 percent, and the median is 20 percent.

Figure 1 also gives the distribution of the price premiums that consumers state they are willing to pay for national brands over store brands. Although in about 33 percent of the observations consumers perceive the store brands to be equal or higher in quality when compared to national brands, in only 5 percent of the cases are they willing to pay the same or higher price for the store brand. This finding is consistent with general belief that consumers derive utility from national brands beyond that explained by quality. Our model enables us to quantify this aspect by separating quality and nonquality utility. The mean price premium is 36.7 percent, and the median is 30 percent.

Estimation

First we describe the procedure we use for estimating the model (Equation 8). There are 264 (132 α^c_i + 132 β^c_i) consumer parameters and 40 (20 α^p_j + 20 β^p_j) product parameters to be estimated. We first note that Equation 8 is separable in consumer and product parameters (design matrices can be partitioned) so that we can write Equation 8 as:

$$\text{Premium}_{ij} = [\ \sum_i \alpha^c_i \text{ CONSUMER}_i + \sum_i \beta^c_i \text{ CONSUMER}_i \text{ QD}_{ij}\ ] + \text{Residual} \qquad (9)$$

$$\text{Residual} = [\ \sum_j \alpha^p_j \text{ PRODUCT}_j + \sum_j \beta^p_j \text{ PRODUCT}_j . \text{ QD}_{ij}\ ] + \text{Error.} \qquad (10)$$

Therefore, first we estimate the consumer parameters using Equation 9. We exclude the intercept term so that all 264 parameters can be estimated. The R^2 for the consumer model is .914 (adj. R^2 is .903, $F_{264,1973} = 79.6$, $p < .001$). In other words, the consumer parameters explain a substantial portion of the total variation in price premium. We then take the residual from the consumer model and estimate Equation 10. The R^2 for the model is .048 (adj. R^2 is .03, $F_{40,2197} = 2.75$, $p < .01$). Together, the regression model (Equation 8) explains about 96.2 percent of total variation in the premium consumers are willing to pay for national brands, indicating an extremely good fit with the data. From these estimates, we can compute nonquality utility for each consumer i for product j as $\alpha_{ij} = \alpha^c_i + \alpha^p_j$, quality sensitivity as $\beta_{ij} = \beta^c_i + \beta^p_j$, and quality premium as β_{ij} QD_{ij} .

Analysis of Premium Components

Descriptive Statistics

Quality Sensitivity (β). Quality sensitivity measures the average increase in the percentage premium consumers are willing to pay for national brands over store brands for a 1 percent increase in perceived quality differential across categories. The measure is dimensionless. In general, the parameter is expected to be positive (the higher the quality differential, the greater the premium consumers are willing to pay), and can be greater than 1. In about 90 percent of the observations, β is between 0 and 1. In about 8 percent of the observations, β is negative, which could have arisen because of an estimation or measurement error. Deleting these observations or truncating them to zero could lead to potential biases. Therefore, in the spirit of other works that analyze parameter estimates (e.g., Assmus, Farley, and Lehmann 1984; Sethuraman, Srinivasan, and Kim 1999), we retain them in our data. However, we deleted observations from one consumer with "extreme" values (large negative $\beta < -1$), resulting in a total of 2,218 observations. The mean quality sensitivity is 0.36 (median = 0.305). In other words, a 1 percent increase in perceived quality differential increases the premium consumers are willing to pay for national brands by 0.36 percent on average.

Nonquality Utility (α). In general, we expect α to be non-negative—quality being equal, consumers will likely pay more for national brands. However, it can be negative if a consumer has more positive associations with the store brand. In about 1 percent of the observations, α is negative. In about 90 percent of the observations, α is between 0 and 50 percent. The mean for α = 28.1 percent (median = 26.1 percent). In other words, even if there is no perceived quality differential, consumers state they would pay 28.1 percent premium for national brands on average. We also tested the internal consistency of the estimate of α in the following three ways and found the magnitude of the estimate to be robust.

Note that α is the estimate of the premium when the perceived quality differential is zero. We considered only those 623 observations with QD = 0. The mean premium consumers are willing to pay in these observations is 27.6 percent.

To see if these 623 observations were driving the estimate, we excluded them and estimated a simpler aggregate model: $\text{Premium}_{ij} = \alpha + \beta\ \text{QD}_{ij}$ with the remaining observations. The estimate of α is 26.8 percent.

We included all 2,218 observations and estimated the simple model: $\text{Premium}_{ij} = \alpha + \beta\ \text{QD}_{ij}$. The estimate of α is 26.6.

Quality and Nonquality Premium. The mean quality differential for the 2,218 observations is 22.8. The average premium is 36.7 percent and the mean quality premium (β*QD) 8.6 percent. In other words, of the average 36.7 percent premi-

um that consumers say they would pay for national brands, about 8.6 percent (23 percent of the total) can be attributed to quality differential and the remaining 28.1 percent (77 percent of total) to nonquality utility.

In summary, the findings indicate that a substantial portion of the premium that consumers are willing to pay for national brands over store brands would be paid even when the perceived quality differential between the two brands is small or zero.

Relationship Between Premium Components and Demographic Characteristics

By decomposing the total premium into its components, we are now in a position to obtain some insights into why some consumers would pay a greater premium than others. Is it because of differences in quality differential, quality sensitivity, and/or nonquality utility?

Our survey provided information on the following demographic variables:

Age: Young (18-40 years); Middle (41-60 years); Old (> 60 Years)

(Because there were only four consumers in the 18-22 group, they were combined with 23-40-year-olds.)

Annual Household Income: Low ($0 – $25,000); Middle ($25,000 - $50,000); High (> $50,000)

Gender: Male; Female

Education: High school (or below); College

Family Size: Number of persons living in the household.

Because this area is relatively underresearched, we do not have concrete prior hypotheses relating demographic characteristics to premium components.

To assess the influence of demographic characteristics on premium components, after accounting for product category differences ($PRODUCT_j$), we estimate the following regression models:

$$\text{Nonquality utility, } \alpha_{ij} = f(PRODUCT_j, \text{Age, Income, Gender, Education, Family Size}) \quad (11)$$

$$\text{Quality sensitivity, } \beta_{ij} = f(PRODUCT_j, \text{Age, Income, Gender, Education, Family Size}) \quad (12)$$

$$\text{Quality differential, } QD_{ij} = f(PRODUCT_j, \text{Age, Income, Gender, Education, Family Size}) \quad (13)$$

For completeness, we also estimate the model:

$$\text{Premium}_{ij} = f(PRODUCT_j, \text{Age, Income, Gender, Education, Family Size}) \quad (14)$$

Because the dependent variables are likely to be correlated, estimating the models using a simultaneous equation system is appropriate. However, because the inde-

pendent variables are the same for all models, estimation of individual models using OLS would yield the same results as "seemingly unrelated regression" equations. There are 2,149 observations in which information is available for all variables. Collinearity does not appear to be a problem in the dataset. (The highest correlation between demographic variables is 0.25.) Table 1 presents the OLS regression results. Table 2 presents the means of premium components by demographic group. Together, they provide several interesting insights for each demographic variable.

Table 1. Relationship Between Premium Components and Demographics: Regression Results

		Dependent Variable			
Demographic Variable	**Group**	**Nonquality Utility (α)**	**Quality Sensitivity (β)**	**Quality Differential (QD)**	**Premium**
Age (years)	18-40	7.0 (1.02)*	0.15 (.023)*	7.91 (1.83)*	10.9 (1.62)*
	41-60	2.35 (1.06)*	0.21 (.024)*	4.41 (1.91)*	6.95 (1.68)*
	> 60	0	0	0	0
Income (in '000 $)	< 25	2.2 (.90)*	-.04 (.024)	1.39 (1.62)	1.73 (1.42)
	25-50	-4.21 (.88)*	-.02 (.02)	-2.38 (1.59)	-5.82 (1.40)*
	> 50	0	0	0	0
Gender	Female	-0.69 (.71)	0.05 (.016)*	1.85 (1.28)	1.56 (1.13)
		0	0	0	0
Education	College	-0.93 (.70)	-0.014 (.02)	-5.91 (1.27)*	-3.29 (1.12)*
	High School	0	0	0	0
Family Size	Ratio	-0.87 (.30)*	0.03 (.07)	-0.15 (.53)	-0.50 (.47)
R^2 (adj R^2)		0.10 (.10)	0.11 (.10)	0.13 (.12)	0.08 (.08)

Note: Standard errors in parentheses.

* = significant at 5% level (two-tailed test)

Table 2. Means of Premium Components by Demographic Groups

Demographic Variable	Group	# of Obsns.	Nonquality Utility (α)	Quality Sensitivity (β)	Quality Differential (QD)	Premium
Age (years)	18-40	1,007	30.9	0.36	24.9	39.7
	41-60	816	25.9	0.44	21.7	35.8
	> 60	303	21.8	0.20	18.3	27.3
Income (in '000 $)	< 25	686	31.4	0.30	25.6	39.1
	25-50	640	24.1	0.35	19.9	31.2
	> 50	823	28.0	0.43	22.6	38.0
Gender	Female	1,521	27.6	0.37	23.0	36.8
	Male	628	28.8	0.34	22.3	35.3
Education	College	1,345	27.7	0.38	20.9	35.9
	High School	804	28.4	0.34	26.0	38.0

Note: Means by family size not reported as they were treated as a continuous variable.

Age. Age is negatively related to reservation price differential; that is, based on self-reports, younger consumers (18-40) would pay the highest premium for national brands followed by middle-aged consumers (41-60). Older consumers (> 60) would pay the least. Why is this so? Our results reveal that it is due to all three premium components. Compared to older consumers, younger consumers have higher nonquality utility, higher quality sensitivity, and perceive a higher quality differential between national brands and store brands. Particularly noteworthy is the big difference in nonquality utility (α), which is about 9 percent. This finding is fairly intuitive. Because of their age and greater desire for social acceptability, young consumers would be more image-conscious and favorably disposed toward national brands. Middle-aged consumers appear to be the most quality sensitive among all age groups.

Income. One would expect that, because of their reduced purchasing power, lower income consumers would be willing to pay a smaller premium for national brands than other income groups. Interestingly, middle income consumers ($25,000-$50,000) are the ones who are willing to pay the lowest premium for national brands. This finding is consistent with a 1991 Gallup survey that noted that middle income consumers are most likely to buy store brands (Fitzell 1992). Why do low income consumers want to pay more for national brands? Our analysis in tables 1 and 2 reveals that it is mainly because of the difference in nonquality utility (brand image): low income consumers have significantly higher α than middle income consumers. Fitzell (1992) and other private label promoters have bemoaned this "unfortunate" situation. Low income consumers stand to benefit the most from private labels because the brands are lower priced, reasonable alternatives to national brands. Yet, these are the very people who are unwilling to buy store brands because they are attracted by the imagery of national brands and use it to convey status. As would be expected, high income consumers have the highest quality sensitivity—in other words, they are the most discerning consumers.

Gender. Females state that they are willing to pay a slightly higher premium for national brands than males. Regression results indicate that this difference is due to their higher quality sensitivity.

Education. Educated consumers, because of their ability to process product information from package labels and other sources, are more likely to recognize that store brands are comparable in quality to national brands. Consistent with this notion, we find that consumers with a college education believe that there is less quality differential between national brands and store brands than consumers with a high school (or less) education.

Family Size. There is no significant effect of family size on the price premium consumers will pay for national brands, even though smaller families (singles and couples) have greater nonquality utility than larger families.

Relationship Between Premium Components and Store Brand Familiarity/ Purchase

In our survey, we obtained information on familiarity with store brands in each product category by asking consumers if they are very familiar with store brands, somewhat familiar with store brands, or not familiar with store brands. The means of the premium and its components organized by the extent of familiarity are given below:

Store Brand Familiarity	Number of Observations	Nonquality Utility (α)	Quality Sensitivity (β)	Quality Differential (QD)	Premium
Very Familiar	603	27.5	0.42	12.7	33.0
Somewhat Familiar	834	27.8	0.31	19.8	34.1
Not Familiar	758	28.3	0.36	33.8	41.8

Familiarity with store brands does reduce the premium consumers are willing to pay for national brands. There may be a reciprocal relationship between the two variables. Because consumers are not willing to pay a high premium for the national brands, they buy the store brand and become familiar with it. Once they become familiar with the store brand, they probably recognize the comparable quality of store brands and therefore decide not to pay a higher premium for national brands. In either case, clearly those who are very familiar with store brands perceive the quality differential to be less than those who are not familiar with store brands. However, familiarity with store brands does not significantly reduce nonquality utility. Even those very familiar with store brands, on aggregate, say they would pay a nonquality-related premium of 27.5 percent for national brands.

In our survey, we also asked consumers to indicate for each product category whether they have purchased a store brand in the category in the last 12 months, and if so, whether store brands represented a minor share (less than 50 percent) or a major share (over 50 percent) of total purchase in the category. Our interest here

is to ascertain what utility component discriminates the most among these three groups. The following table presents the average premium and its components for the three groups:

Observation Type	Number of Observations	Nonquality Utility (α)	Quality Sensitivity (β)	Quality Differential (QD)	Premium
Exclusive NB Purchase	1,086	29.9	0.36	36.8	44.9
SB Purchase < 50%	758	26.6	0.33	14.0	31.1
SB Purchase ≥ 50%	367	25.4	0.39	1.6	25.5

As would be expected, the price premium that the consumers state they would pay for national brands is considerably higher in cases where they have not purchased a store brand than in cases where they have. The nonquality utility is also slightly higher in the case of exclusive national brand purchase. What really distinguishes the three groups is the perceived quality differential. Those who have never purchased a store brand in a category perceive the store brand to be considerably inferior in quality compared to national brands. By contrast, those who make major store brand purchases believe there is no difference in quality between the two brands. However, even they would pay about a 25 percent premium for national brands. Taken together, the results indicate that perceived quality differential is the major factor for a consumer deciding whether or not to consider purchasing a store brand, but nonquality utility is the dominant factor for the consumer deciding how much premium he or she will pay for national brands over store brands.

Analysis by Product Category: Calculation of Brand Equity

Table 3 provides information for each product category we analyzed. The categories are organized in the ascending order of mean perceived quality differential (column 3). Categories such as bleach and flour, which are typically considered commodity products, have the lowest perceived quality differential, while more differentiated products such as shampoo and soft drinks have the highest perceived quality differential. Thus, our measure of perceived quality differential appears to have some face validity.

Table 3. Analysis by Product Category: Calculation of Brand Equity

		Quality Differential		Mean National Brand Equity		
Product (1)	# Obsns. (2)	Perceived (3)	Objective (4)	Quality (5)	Nonquality (6)	Total (7)
Bleach	106	5.9	0	2.12	31.5	33.6
Flour	117	8.4	2.5	1.48	30.2	31.7
Frozen vegetables	122	12.8	20	-2.81	26.7	23.9
Analgesics	119	16.1	5	3.89	26.9	30.8
Jams/jellies	113	16.7	7.5	3.59	28.6	32.2
Fabric softener	93	17.5	12.5	1.40	30.2	31.6
Aluminum foil	127	18.3	7.5	4.00	24.9	28.9
Orange juice	118	18.7	7.5	3.47	27	30.5
Cheese	127	19.3	5	7.01	21.2	28.2
Cookies	117	22.1	17.5	1.38	29.9	31.3
Cake mix	102	22.6	20	1.07	27.6	28.7
Dish liquid	125	24.1	20	1.07	29.1	30.2
Coffee (ground)	92	25.4	10	7.55	23.5	31.0
Ketchup	118	28.3	10	8.24	26.9	35.1
Frozen pizza	94	28.4	20	2.44	27.5	29.9
Cereal	122	29.6	7.5	7.10	30.9	38.0
Dog food	33	36.3	10	9.73	28.7	38.4
Toilet tissue	129	34.5	22.5	4.32	28.6	32.9
Soft drink	121	36.4	22.5	4.90	31.4	36.8
Shampoo	123	37.3	17.5	5.94	32.9	38.8
Aggregate	2,218	22.8	10	4.6	28.1	32.7

We did not have any source (such as consumer reports or experts) for collecting objective quality differentials in this particular market. Therefore, we used the overall objective store brand quality measures from Hoch and Banerji (1993) as surrogates. Hoch and Banerji asked 25 retail experts to rate the quality of the best private label in comparison to leading national brands in the product category on a scale: 1 = much worse than national brand; 5 = about the same as national brand. The experts' ratings were averaged to get mean private label quality. The "objective" quality differential between national and store brands can be obtained as 5 minus mean private label quality. The quality differential would range from 0, or no quality difference (5-5), to 4, or maximum quality difference (5-1). In our perceived quality differential scale used in the survey, no quality difference is zero and maximum quality difference is 100. To make the two scales comparable, we assumed that a quality difference of 1 in the Hoch and Banerji scale would represent a 25-point quality differential in our scale. For instance, suppose the mean expert quality rating of private labels is 4.6. Then the "objective" quality difference in the Hoch and Banerji scale is 0.4, and 10 (0.4*25) in our scale. The objective quality ratings computed in the above manner are reported in Table 3 (column 4).

The Pearson and Spearman correlations between the perceived quality differential in our data and the "objective" quality differential from Hoch and Banerji (1993)

are both 0.58. We find this correlation to be reasonably high given that the data were collected from different markets using different measures at different time periods. One notable deviant is frozen vegetables. Generally, we believe that vegetables are commodity products with little quality differential. Consistent with this expectation, the mean perceived quality differential is the third lowest at 12.8 percent. Surprisingly, the expert rating of quality differential is one of the highest among the 20 categories. Two explanations have been offered: though the basic product may be the same, private label frozen vegetables (for example, peas) may be nonuniform in size; a good frozen product should withstand unfreezing and refreezing as many as six times. If we delete this category, the Pearson and Spearman correlations increase to about 0.70. In summary, the data indicate a fairly strong positive correlation between "objective" quality differential and perceived quality differential.

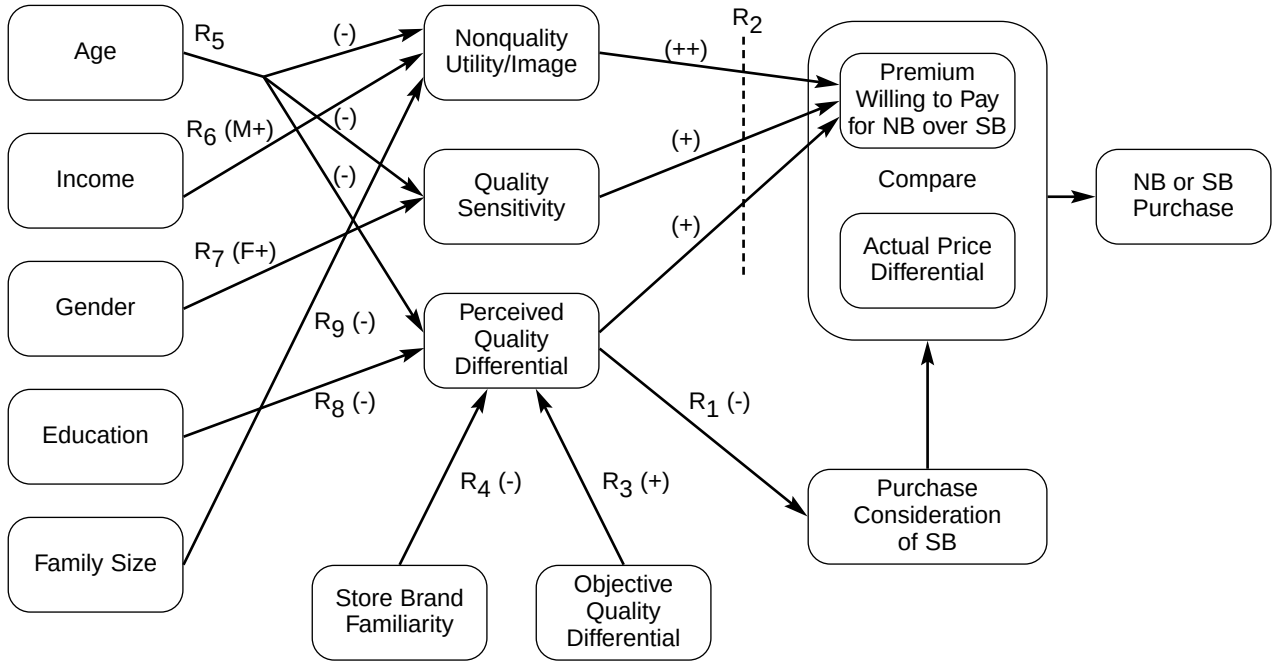
We use the objective quality differential measure for computing national brand equity based on the Park and Srinivasan (1994) framework. They conceptualize attribute-based brand equity as the utility based on the differences between subjectively perceived attribute levels and objectively measured attribute levels, and nonattribute-based equity as the brand's overall preference unrelated to measured product attributes. In our model, quality is the composite attribute, and quality-based equity would be measured as β * (perceived quality differential – objective quality differential). Nonquality-based national brand equity is measured by α. Columns 5, 6, and 7 of Table 3 provide estimates of quality-based, nonquality-based, and total national brand equity, respectively. National brand quality equity is generally positive, as expected (except for the frozen vegetables category with its questionable objective quality rating). However, quality-based equity is generally small compared to nonquality-based equity. On aggregate, quality-based equity accounts for about 14 percent of total brand equity (Table 3, column 7). This finding is quite consistent with Park and Srinivasan's (1994) analysis of toothpaste and mouthwash categories where they find that brand equity is less driven by attribute-based equity and more by nonattribute-based equity. In fact, in their study, the proportion of total national-brand equity (relative to store brands) accounted for by attribute-based component was 20.2 percent for Crest, 17.3 percent for Colgate, and 10.3 percent for Scope (Table 2). These numbers are comparable to the 14 percent in our study. It is also worth noting that customer-based national brand equity is considerable (about 30 percent) even in commodity products such as bleach and flour.

Summary of Results

Our analysis yields several results that offer qualitative insights into store-brand purchase behavior. These results are summarized below. Figure 2 presents a schematic representation of the relevant phase of the purchase process in which the various results apply.

Figure 2. Summary of Results

(To be read in conjunction with summary of results section in text)



Note: NB = national brand; SB = store brand

\+ = positive relationship; - = negative relationship; ++ = dominant factor

F = female; M = middle income

R_1 - R_9 represent results summarized in the text.

R_1: Perceived quality differential (acceptable store brand quality) is the primary driver in a consumer's decision to participate in or consider the purchase of a store brand.

R_2: The premium that consumer will pay for a national brand over a store brand is determined by a consumer's perceived quality differential, quality sensitivity, and nonquality utility (brand image). Of these, nonquality utility appears to be the dominant influence. In particular, consumers will pay a reasonable price premium for national brands even if they perceive no difference in quality between national and store brands.

R_3: Perceived quality differential is positively related to objective quality differential.

R_4: Perceived quality differential is considerably lower if consumers are familiar with store brands.

R_5: Younger consumers in general would pay a higher premium for national brands than older consumers primarily because they have higher nonquality utility and higher perceived quality differential.

R_6: Middle income consumers would pay the lowest price premium for national brands. Low income consumers would pay a higher premium than middle income consumers because of their higher nonquality utility. High income consumers would pay a higher premium than middle income consumers because of their greater nonquality utility and quality sensitivity.

R_7: Females are more quality sensitive than males.

R_8: Educated consumers perceive the quality differential between national brands and store brands to be less than those with a high school or less education.

R_9: Smaller families have greater nonquality utility than larger families.

Managerial Implications

We now discuss some strategic implications for manufacturers and retailers.

Manufacturer Strategies

Customer-based national brand equity accounts for a substantial portion of the premium consumers will pay for national brands over store brands. At a macro-level, the notion that brand equity represents a substantial portion of a company's asset has been documented (e.g., Simon and Sullivan 1993). Our research shows that, at a micro-level, brand equity plays a significant role in national brand versus store brand purchase in grocery products. This finding represents good news for national brand managers because it allows them to command a reasonable price premium even when retailers close the quality gap. National brand managers should maintain and increase this equity through frequent and effective advertising and other equity-enhancing strategies (see Aaker 1991; Keller 1998). The importance of nonquality utility suggests that they should focus more on image-based emotional advertising than on quality or attribute-based advertising.

Results from the consumer-level analysis suggest product management and targeting strategies. In particular, our findings suggest two distinct segments that are most prone to paying a high premium for national brands in grocery products.

The first is the low income (< $25,000), low education (high school or less), young (18-40) segment. These consumers value the brand image of national brands the most. Either because of their lower education or because of their brand image, they already perceive a high quality differential between national and store brands, but they are not very quality sensitive. The strategy for national brand managers should therefore be to offer products of acceptable quality at reasonable prices and, at the same time, reinforce the image component with targeted advertising.

The second segment is high income (> $50,000), college-educated, middle-aged (41-60) consumers. These consumers are the most discerning (quality-sensitive) consumers. They also have a greater ability to spend money because of their higher income level. Therefore, it would be worthwhile to offer premium high quality brands targeted at these consumers.

Retailer Strategies

Perhaps the most important implication for retailers relates to managing the price differential between national and store brands. Consumers appear to be willing to pay a reasonable price premium for national brands even if their perceived quality differential is zero. Retailers should recognize this characteristic and ensure that the actual price differential is above this minimum price differential: just because retailers have closed the quality gap does not mean that they can close the price gap.

The actual price differential should not be too high, either. Hoch and Lodish (1998) argue for reducing the price differential between national brands and store brands because retailers are leaving money on the table. Our research offers other related reasons why the price differential should not be too high:

1. If the perceived quality differential is high, consumers will probably not buy the product anyway (see result, R1). Therefore, there is no point in trying to entice a person who perceives low store brand quality (high quality differential) with big savings (high price differential).

2. A high price differential may lead to the perception of a store brand as a cheap, low quality brand.

3. Even if it does not alter the quality perception, a high price differential may lead to increased nonquality utility for national brands through price expectations. This logic relates to the finding that frequent price deals can reduce reference prices for the brand (Kalyanram and Winer 1995). If a consumer repeatedly sees a 40-50 percent price differential between a national brand and a store brand, then that becomes the reference price differential. They expect to get that much saving from the store brand even if they believe there is not much difference in quality between the national brand and the store brand.

In summary, the key message is that retailers cannot set the price differential too low or too high. Donegan (1989), Hoch and Lodish (1998), and Sethuraman (1992) recommend the price differential to be generally between 15 and 30 percent. However, the required price differential varies with markets and retailer objectives.

There are other strategic implications of our findings for retailers wishing to increase their private label share. First, retailers must ensure that the objective quality of store brands is close to that of national brands—our research indicates that objective quality is positively related to perceived quality. Second, retailers can attempt to reduce the perceived quality differential between national brands and store brands through offering samples—our research indicates that consumers would consider purchasing store brands if the quality differential is not high and that familiarity with store brands reduces the perceived quality differential. Third, retailers can attempt to reduce the nonquality utility (brand equity) component of the price premium. This can be accomplished by enhancing the image of store brands through better packaging or local advertising, or countering the image impact of national brands. A recent advertisement for Sprite says “Image is Nothing, Thirst is Everything!” Similar campaigns or “Why Pay More?” slogans may be some ways to counter the national brand image. These strategies should be used in particular to switch low income and younger consumers to store brands—our research indicates that these segments value the brand image of national brands more than other groups.

Conclusions

In this paper, we have described an econometric model and its application for separating the total price premium that consumers state they are willing to pay for national brands over store brands into a premium that is attributable to quality differences between the two brands (quality premium) and a premium not directly attributable to perceived quality (brand equity). Our method is based on the utility framework and uses data from a consumer survey.

The key qualitative insight obtained from our empirical study regards the role of quality and brand image in the purchasing process. Our results suggest that the perceived quality of store brand (or quality differential) plays a dominant role in a consumer's decision to consider purchasing a store brand. This aspect is consistent with the quality threshold or acceptable quality notion. However, quality plays a relatively lesser role in how much consumers would pay for store brands over national brands. The price premium is predominantly influenced by nonquality utility, which may arise because of familiarity, imagery, or simply habit.

Our methodology has some limitations. First, our measure of perceived quality differential and price premium are based on self-reports. This approach, however, is a fairly well-established research practice. A number of past research studies involving attribute tradeoffs or price sensitivities, including most conjoint analysis studies, use the self-report approach. Second, in measuring quality differential and price premium, we have used national brands as the anchor. Our reasoning is as follows. Literature on reference prices and referent brands suggest that the referent brand is likely to be the most recently or most often purchased. Kalyanram and Winer (1995) find convincing empirical evidence that past prices are considered when consumers form reference prices. In about 50 percent of the cases, consumers purchased national brands exclusively, and in the other 50 percent of the cases, they purchased national brands and store brands. Therefore, national brands appeared to be a better candidate for being an anchor. Consistent with this argument, in our pretests, consumers given a store brand anchor said they were uncomfortable anchoring on a brand that they are not familiar with. Third, we use a percentage premium measure so as to be consistent across all products and consumers instead of using absolute price differential (dollars and cents). Fourth, we have considered national brand and private labels as single identities, although there are likely to be differences among national brands and among private labels.

In Table 3, we have shown that our measure of perceived quality differential is strongly positively related to the objective-quality-differential measure obtained from an external source. Thus, the perceived-quality-differential measure appears to have external validity. To assess the external validity of the price premium measure, we compared our survey measure with that obtained from aggregate U.S. supermarket data for the same year (*Infoscan Supermarket Review* 1995) provided by Information Resources, Inc. For each product category, we computed the average price differential between national and store brands from the Infoscan

Supermarket Review. For this price differential, we computed the market share of private labels predicted in our survey and compared it with actual U.S. private label share given in the Supermarket Review. Details are given in the appendix. The correlation between predicted and actual market share is 0.85 and the mean absolute percentage deviation between the two market shares is 29.5 percent. Given the differences in the markets and the type of measures, we believe these numbers indicate a strong relationship, thus providing some external validity to the survey-based price premium measure.

Furthermore, as we have noted in the paper, several of our findings are consistent with expectations and prior research providing face validity and nomological validity to our approach. Importantly, our key result that nonquality utility is a major driver of brand equity is consistent with Park and Srinivasan (1994). Therefore, we believe our broad qualitative insights into national brand versus store brand competition are robust. Future research can validate and refine these results using alternate methodologies (for example, lab or field experiments) and different markets. In addition, an important topic for future research is to identify the source of nonquality utility. Is it reputation, loyalty, experience, or habit?

Appendix. Assessing External Validity of Price Premium Measure

The aggregate U.S. market average price differential between national brands and store brands obtained from Infoscan Supermarket Review (1995) is provided in column 2 of Table A1 (below) for each product category. The aggregate U.S. market share of private labels at this price differential is given in column 3. For the same price differential, we calculated the private label share predicted from our survey in the following manner.

First, we calculated the number of consumers in our survey whose reservation price differential is less than actual price differential. This quantity represents the number of potential store brand consumers. However, not all of these consumers would purchase the store brand all the time. In particular, there are three types of consumers in our survey with different purchase behavior, as indicated in the following table. Therefore, we weighted the number of store brand consumers by the midpoint of their store brand purchase share.

Store Brand Purchase Segment	# of Consumers	# of Consumers with Reservation Price Differential Less Than Actual Price Differential	Segment Weight	Weighted # of Consumers Purchasing Private Labels
Not purchased (0%)	N_1	N_1'	0	0
Minor purchase (0-50%)	N_2	N_2'	0.25	$0.25\ N_2'$
Major purchase (50-100%)	N_3	N_3'	0.75	$0.75\ N_3'$
Total	$N_1 + N_2 + N_3$			$0.25\ N_2' + 0.75\ N_3'$

The predicted store brand market share (%) is calculated as $\frac{0.25\ N_2' + 0.75\ N_3'}{N_1 + N_2 + N_3} * 100$

The predicted market share is provided in column 4 of Table A1. The correlation between actual and predicted market share is 0.85 and the mean absolute percentage deviation between the two is 29.5 percent.

Table A1. Actual and Predicted Private Label Market Shares

Product	Actual Price Differential (%) Supermarket Review	Actual Market Share (%) Supermarket Review	Predicted Market Share from Survey
Aluminum foil	35.0	49.1	31.9
Analgesics	31.1	25.3	23.8
Bleach	37.6	36.0	19.9
Cake mix	16.4	5.5	4.6
Cereal	40.6	10.4	11.3
Cheese	22.1	26.6	18.1
Coffee (ground)	17.2	8.4	5.1
Cookies	39.9	16.4	16.0
Dish liquid	36.7	6.2	5.9
Dog food	41.5	13.1	9.3
Fabric softener	34.3	22.8	10.8
Flour	27.6	21.4	15.8
Frozen pizza	32.1	7.5	8.0
Frozen vegetables	31.3	39.1	25.0
Jams/jellies	26.4	27.0	18.9
Ketchup	25.6	17.6	7.6
Orange juice	30.5	30.2	21.0
Shampoo	26.2	3.2	1.8
Soft drink	32.1	10.7	6.1
Toilet tissue	27.0	13.5	7.9

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