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Private labels or store brands have witnessed considerable growth in grocery products in recent times. Because low price is the major differential advantage of private labels, several national brand manufacturers have attempted to fight private label growth by cutting prices. However, price cuts can reduce margins and hurt profitability. Therefore national brand manufacturers face a dilemma: Should they cut their prices to compete with private labels? Or should they adopt other non-price-related strategies?

In this study, professors Sethuraman and Cole investigate the following questions: In what type of product categories are consumers willing to pay a price premium for national brands over store brands? What factors influence the size of this price premium? In particular, they examine whether the following factors influence the premium consumers are willing to pay for national brands: perceived quality differential between national and store brands, average purchase price, purchase frequency, familiarity with store brands, price-quality inference, perceived deal frequency, the amount of pleasure derived from consuming the product, and demographics.

The Study

Two consumer surveys were used to collect data. The first survey investigated the relationship between perceived quality differential and price premium consumers are willing to pay for national brands across 203 consumers and 88 grocery products. The second detailed study identified additional factors besides quality differential that influence the size of the price premium, using information from 140 consumers across 20 grocery products.

Key Findings and Managerial Implications

1. Overall, perceived quality differential accounts for about 16% of the variation in price premiums across consumers and product categories and is the most important variable among the ones considered. This suggests that national brand managers should invest in product improvements to increase objective quality differential as well as spend on advertising to increase perceived quality differential.

Contents

Introduction

Private labels or store brands are generally brands owned, controlled, and sold exclusively by retailers. Private label sales, which have been growing rapidly, now account for over $48 billion of grocery product sales (Hoch and Banerji 1993). In fact, in 1995, private labels gained share in 71% of 238 different product categories; by early in the next century, they are expected to grow to over 20% dollar share (Khermouch 1996). Currently, private labels have over 50% market share in milk, frozen vegetables, and some first-aid products, and are gaining shares even in categories such as cereals, cigarettes, and diapers, which have been considered bastions of national brands (Strauss 1993). These trends suggest that national brand manufacturers should take the presence of private labels into account in determining their brand strategies (Quelch and Harding 1996; Hoch 1996).

Because lower prices are used to differentiate private labels from national brands, price competition between these types of packaged goods has intensified. A number of national brand manufacturers including Philip Morris, Procter & Gamble, Kodak, and Nabisco have cut prices and/or altered their promotional strategies to protect their market share (Ortega and Stern 1993). Price cuts, however, reduce margins and can adversely affect financial performance. For instance, when Philip Morris cut the price of Marlboro cigarettes in 1993 to compete with the cheaper private label cigarettes, its stock value fell by $14 billion because analysts believed that such a strategy would result in deterioration of brand value and long-term profits (Quelch and Harding 1996). Therefore national brand manufacturers face a dilemma: Should they cut their prices to compete with private labels? Or should they adopt other nonprice-related strategies to enhance the value of their brands so that consumers are willing to pay larger premiums for their brands? If the answer to this last question is yes, what should these strategies be? We attempt to shed light on these issues in this paper.

The relatively few published papers on private labels in the 1970s and 1980s identify how private label and generic brand buyers differ from national brand buyers (e.g., McEnally and Hawes 1984; Szymanski and Busch 1987). Recent research has focused on understanding cross-category variations in private label market shares (e.g., Sethuraman 1992; Hoch and Banerji 1993; Raju, Sethuraman, and Dhar 1995), the effect of price promotions in the context of national brand vs. store brand competition (e.g., Blattberg and Wisniewski 1989; Sethuraman 1995), and optimal promotional strategies for national brands and store brands (e.g., Lal 1990; Rao 1991). Prior behavioral research investigated the relationship between consumers' perceived risk and the branding of supermarket products (Dunn, Murphy, and Skelly 1986); recently, a field experiment investigated how price and ingredient information affect quality perceptions of store brands (Richardson, Dick, and Jain 1994).

To the best of our knowledge, past research has not attempted to identify factors influencing how large a premium consumers are willing to pay for national brands.

Furthermore, while our study is related to national brands and store brands, we believe the findings may be more generally valid for understanding competition between any two brands of differing price and perceived quality and thus contribute to the perceived value literature (Zeithaml 1988).

In order to guide the national brand managers' marketing decisions, we ask two questions: In what type of product categories are consumers willing to pay a price premium for national brands? What factors influence the size of this price premium? In particular, we investigate whether the perceived quality differential between national and store brands, average purchase price in the product category, purchase frequency, familiarity with category store brands, price-quality inference at the category level, perceived deal frequency, the amount of pleasure derived from consuming the product category, and demographic characteristics influence the premium consumers are willing to pay for national brands. In Table 1, we classify these possible factors as objective or perceptual characteristics and as category or consumer variables, and specify their marketing implications.

Table 1. Variables Investigated and Their Potential Managerial Implications

Variable Type	Variables	Key Managerial Implications
Category Related Objective category variables	• Average purchase price • Purchase frequency	*Guiding pricing strategies for different types of products* For instance, if consumers pay less premium in products which they purchase frequently, then in such categories, national brand managers should adopt a more aggressive pricing strategy.
Category/Consumer Related Consumer perceptual variables	• Consumption pleasure • Perceived quality difference • Price quality inference • Perceived deal frequency • Familiarity with store brands	*Enhancing correct favorable perceptions or changing incorrect unfavorable perceptions through promotions* For instance, if there is a large quality difference between the national brand and store brand but consumers do not perceive it as such, the manager can advertise the high quality and offer free samples. *Altering strategy if unfavorable perceptions are correct* For instance, if consumer pay low premiums because they can get their national brand on deal, then the manager can reduce the deal frequency.
Consumer Related Objective consumer variables	• Household income • Family size • Age of respondent • Gender • Education attainment	*Segmentation and targeting* For instance, if high income consumers would pay a higher premium for national brands, then the premium national brands can target that market.

Objective Category Variables. Objective category variables, the enduring objective characteristics of a product category, include variables like price and interpurchase time (Narasimhan, Neslin, and Sen 1996). By studying these factors, national

brand managers and retailers can identify the product categories where consumers will pay larger (or smaller) price premiums for national brands. For instance, if consumers pay small premiums for products that they purchase frequently, then in such categories, national brand managers should adopt a more aggressive pricing strategy, perhaps with coupons and other promotions.

Objective Consumer Variables. Objective consumer variables, the enduring characteristics of consumers, include demographic variables. Investigating these variables helps managers segment and target markets. For instance, if high income consumers will pay a higher premium for national brands than low income consumers, then national brands might target high income consumers.

Perceptual Variables (Category/Consumer Related). Perceptual variables, derived from consumers' perceptions, may be both consumer and category related. Some perceptions may vary more widely across product categories than across consumers (e.g., perceived quality differential between national brands and store brands), and some may vary more widely across consumers than products (e.g., store brand familiarity). Because perceptions can be modified, they have interesting managerial implications. For example, suppose consumers are willing to pay small premiums in product categories that they think are frequently discounted. In selecting appropriate brand strategies, managers must consider whether consumer perceptions are accurate. If consumer perceptions are accurate, then managers might want to decrease the promotion frequency; if consumer perceptions are inaccurate, then managers might want to try to change these perceptions through advertising or product positioning. Generally, the perceptual variables will have implications for product pricing if they are more category specific and for segmentation/targeting if they are more consumer specific.[1]

Because perceived quality differences are an intuitive and important reason for consumers' willingness to pay more for national brands, we investigate their role in influencing price premiums in 88 different product categories with 203 consumers in our preliminary Study 1. We find that while, overall, greater perceived quality difference is related to willingness to pay a higher price for the national brand, quality differential accounted for only about 18% of the variation in price premiums or reservation price differential. This leads us to the main study (Study 2), where we examine the relationship between quality differential and reservation price differential using more refined measures of quality difference and premium. Furthermore, in the second study, we investigate how additional category/consumer characteristics influence reservation price differential.

The paper is organized as follows. First, we describe the preliminary study (Study 1), which provides the motivation and forms the basis for the follow-up main study (Study 2), which we describe next. Finally, we discuss the managerial implications of the key results and provide some directions for future research.

Study 1

The main purpose of this study was to assess, through a consumer survey, the strength of the relationship between perceived quality difference and the premium consumers are willing to pay for national brands over store brands. Prior research has suggested that quality is an important determinant of private label success (Fitzell 1992; Hoch and Banerji 1993).

Survey Design and Measures

We selected 88 grocery products with the highest levels of national category sales for the survey. (Data on category retail sales were obtained from *Infoscan Annual Supermarket Report* [1992] provided by Information Resources, Inc.).

We measure perceived quality difference between national brands and store brands using the following question.

Please indicate your opinion about the quality of private labels when compared with the quality of national brands for each product category:

The quality of private labels is

Product	Greater than national brand	About the same as national brand	Slightly lower than national brand	Somewhat lower than national brand	Lower than national brand	Much lower than national brand	Very much lower than national brand	Don't know
Example	1	2	3	4	5	6	7	DK

Note that we use a 7-point unbalanced scale for measuring perceived quality difference (the neutral point is 2). The advantage of this unbalanced scale over a 7-point balanced scale is that if indeed most consumers feel that the quality of private labels is equal to or lower than that of national brands, then we can better distinguish between different levels of perceived quality difference. The scale's disadvantage is that it may bias results by suggesting that national brands are equal to or higher in quality than store brands. We address this issue in Study 2.

In a question measuring the reservation price differential or premium, we state that a national brand familiar to the consumer is available at a certain price. Then, we ask respondents to indicate on a scale ranging from 0 to 110% of the national brand price, the (maximum) price at which they would be likely to buy the store brand instead of the national brand.

In the following product categories, suppose the *national brand price is 99 cents.* At what price would you be willing to buy a private label brand instead of the national brand?

Example 1.19 — 1.09 — .99 — .89 — .79 — .69 — .59 — .49 — .39 — .29 — .19 — .09 — 0 DK

The product categories were classified based on average price per purchase (obtained from *Marketing Factbook* [1992] provided by Information Resources, Inc.) as follows: (1) less than $.50, (2) $.50-$1.50, (3) $1.50-$2.50, (4) $2.50-$3.50, (5) over $3.50. In 80 of the 88 products, the average category price is between $.50 and $3.50. For categories in the price range $.50 to $1.50, we set the national brand price as $.99. We used an end-9 pricing to make the price more realistic. Similarly, for categories in the price range $1.50 to $2.50, we set the national brand price as $1.99 and for categories in the price range $2.50 to $3.50, we set the national brand price as $2.99. For those categories that were priced less than $.50 or more than $3.50, we set the price close to their average price. The national brand prices range from $.39 for salt to $7.99 for diapers.

We used a convenience sample consisting of 450 staff, faculty, and community-dwelling volunteers. The respondents learned that $2 would be sent to a local non-profit organization if they filled out the questionnaire. We received back 203 usable responses.

Data and Descriptive Statistics

Each respondent answered the two questions for 22 categories. Thus, the database consists of quality differential and premium measures for 88 product categories from 203 respondents (each providing measures for a maximum of 22 categories). In total, there are 3,749 observations with quality differential and premium measures for doing our analysis.

We computed a percentage quality differential measure (QUALDIF) by treating 2 as 0% and 7 as 100%, and the scale as an interval scale (1 point interval equals 20% quality difference). Thus if Y is the response to the quality question, then QUALDIF = (Y-2)*20. For the price question, if Z is the response, then the percentage reservation price differential or premium (PREMIUM) was computed as: (National Brand Price - Z) * 100/National Brand Price.

The mean quality differential is 21%. Figure 1 gives the distribution of quality differentials. In less than 4% of the 3,749 observations, consumers perceived the quality of private labels to be higher than that of store brands. This finding is consistent with the general notion that private labels are inferior to national brands. However, in a substantial number of observations (37%), 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 or taste as good as nationally advertised brands (Fitzell 1992).

Figure 1. Distribution of Quality Differential and Price Premium (Study 1)

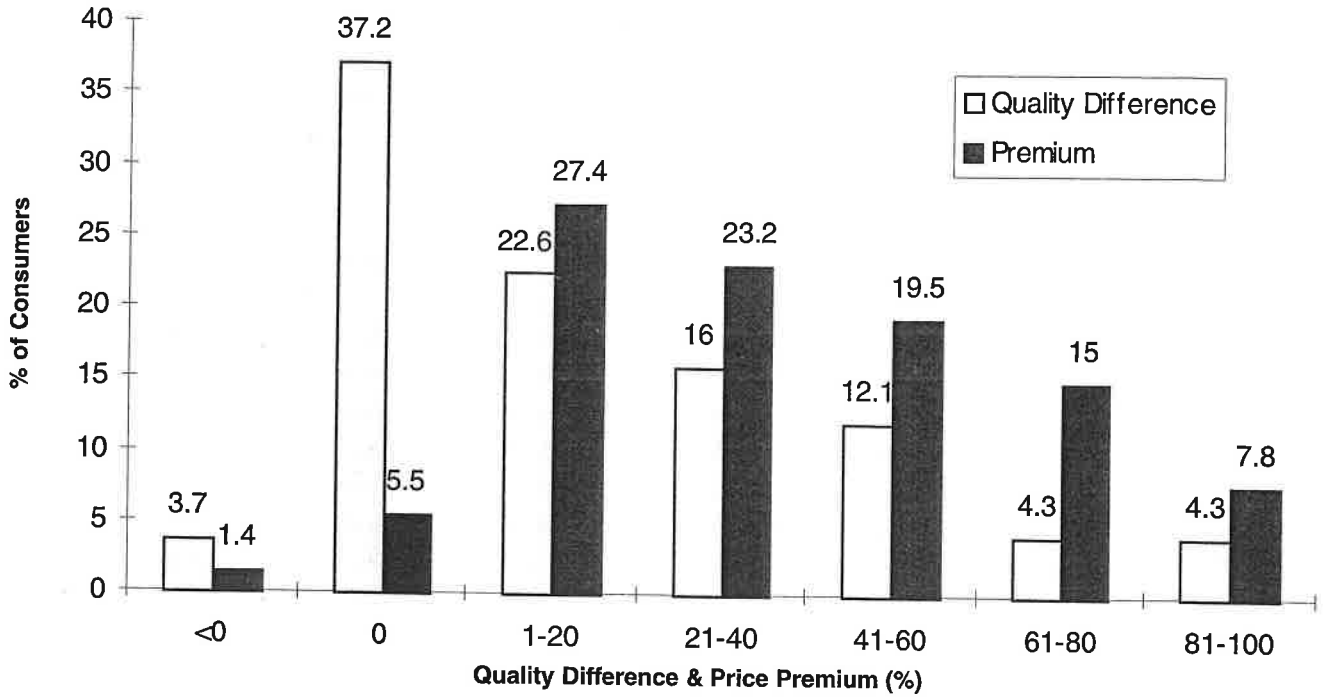
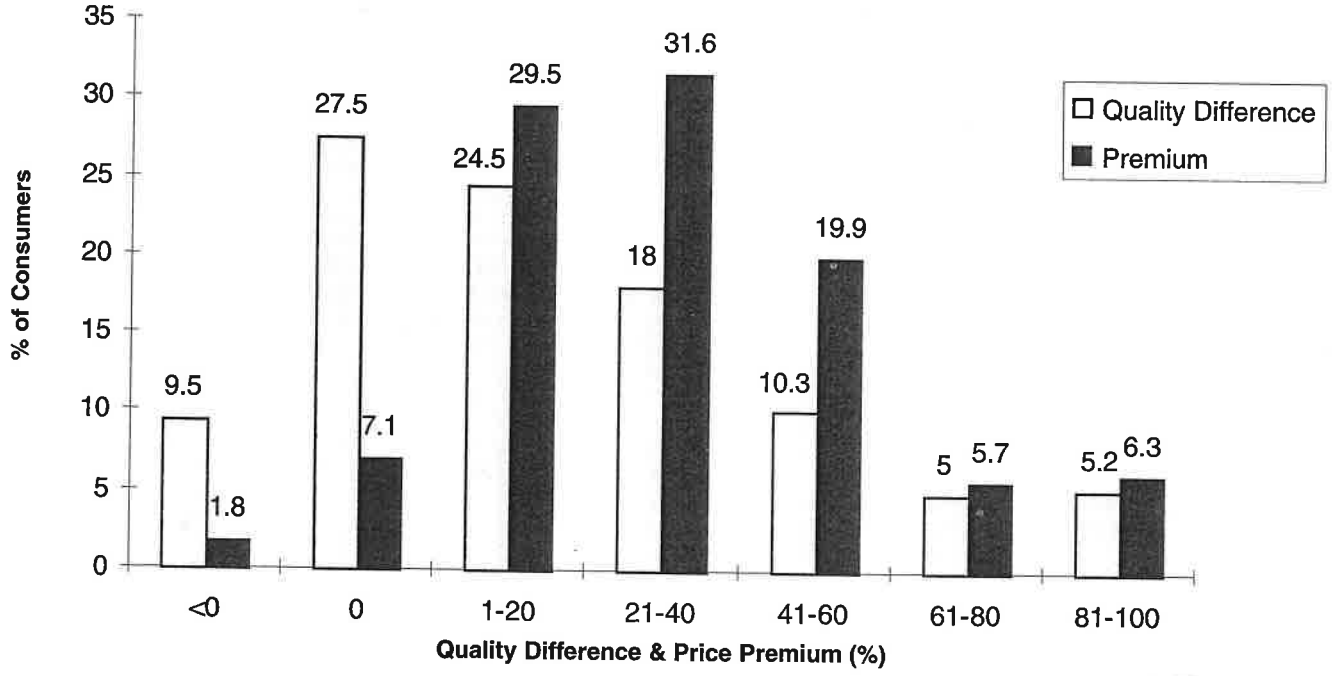


Figure 2. Distribution of Quality Differential and Price Premium (Study 2)



The mean price differential across all observations is 35%. Figure 1 also gives the distribution of price premiums. While in over 40% of the observations, consumers perceive the store brands to be equal to or higher in quality than national brands, in only 7% of the cases are they willing to pay the same or higher price for the store brand. This is also consistent with the positioning of store brands as comparable quality brands at lower prices.

Correlation Analysis

Table 2 classifies the products according to their mean quality differential and price premium. As would be expected, in commodity products such as flour, rice, milk, sugar, and bleach, consumers perceive very little quality differential. On average, there is also little quality differential perceived in some fresh bakery products such as fresh pie and pastry. Most other product categories have perceived quality differentials between 10% and 40%. While there is a general positive relationship—i.e., categories with higher perceived quality differentials also have higher reservation price differentials—there are substantial variations. For instance, consumers will pay about the same premium (20-30%) for flour, sour cream, and aluminum foil even though these products' perceived quality differentials are different. Similarly, consumers will pay different premiums for national brands of sour cream, analgesics, and jams/jellies, even though the perceived quality differentials between national brands and store brands are about the same (10-20%).

Table 2. Quality Differential and Price Premium (Study 1)

Price Premium (%)	0	10	20	30	40	50
60		Shelf stable dinner, peanut butter, toothpaste				
50		Crackers, gelatin, hot cereal, jams/jellies, frozen waffles, frozen novelties	Potato chips, cold cereal, cookies, mouthwash, cat food, garbage bags, laundry detergent	Soft drink, salad dressing, barbecue/ spaghetti sauce, frozen dinner, personal soap, deodorant, dog food	Toilet tissue, shampoo, diaper	
40	Pastry	Butter, cheese, whip cream, orange juice, yogurt, candy, dried fruits, canned fruits, Mexican food, pickles, popcorn, cooking oil, cat litter, all purpose cleaner, analgesics	Mayonnaise, ketchup, canned soup, tuna, bacon, deli/lunch meats, snack nuts, maple syrup, tea bags, ice cream, fabric softener	Frankfurters, dish washing liquid, facial tissue, paper towel, ground coffee, frozen pizza, sanitary napkins	Cigarettes	
30	Carbonated water, flour, rice, fresh pie, milk, sugar, liquid bleach	Snack cakes, bread, cottage cheese, sour cream, cake mix, gravy mix, gum, bottled juices, canned beans, frozen vegetable	Margarine, frozen orange juice, paper plates, aluminum foil	Sausage		
20	Salt	Baking chocolate, pasta				
10						

Quality Differential (%)

The correlation between quality differential and premium across all 3,749 observations is .44. That is, while perceived quality differences are positively related to price premiums, quality differences account for only at best a moderate amount (18%) of the variations in price premiums.

Why is the correlation not high? Is it because of the particular measure we used in Study 1? Is it because there are several other factors besides quality differential that influence reservation price differential? If so, what are those factors? We investigate these questions in Study 2.

Study 2

Objectives

The objectives of the study are:

1. To provide a detailed investigation of the relationship between perceived quality differential and price premium across products and consumers. In particular, we assess the strength of the relationship between quality differential and price premium with a different sample and more refined measures.

2. To identify some managerially relevant consumer and product characteristics that influence the size of the premiums that consumers are willing to pay for national brands. In the next section, we present the variables we investigate in our study and the related hypotheses.

Category/Consumer Variables Investigated and Hypotheses

Given a certain level of quality differential, when will consumers pay a larger or smaller premium for the national brand? Conceptually, we can state that the premium a consumer is willing to pay for a national brand depends on the perceived risk associated with the store brand. Perceived risk arises from a consumer's perceptions about the magnitude of the adverse consequences and the probabilities that these consequences may occur if the store brand is purchased (Bauer 1960). Although risk can be of many types (i.e., performance, financial, social, time, and safety), Dunn, Murphy, and Skelly (1986) find that the first two types—performance and financial risks—are most closely associated with the store brand/national brand choice. Performance risk refers to the performance consequences of a product failure as well as to the probability that these consequences will occur; financial risk refers to the monetary consequences of product failure as well as to the probability that these consequences will occur (Grewal, Gotlieb, and Marmorstein 1994). We use the concepts of perceived performance and financial risk to develop hypotheses about which variables may influence the price premium; however, we do not measure perceived risk directly.

Table 1 (page 4) lists the variables we investigate. We describe the objective category variables first, then the consumer perceptual factors, and finally the objective characteristics of the consumers.

Objective Category Variables

Average Purchase Price. Consumers' perception of financial risk increases as the product price increases (Grewal et al. 1994; Dowling and Staelin 1994). That is, consumers may hesitate to buy store brands in high-priced product categories because if the brands do not perform satisfactorily, they have lost a relatively large amount of money.

H_1: Other things equal, consumers will pay larger price premiums in high-priced product categories than in low-priced product categories.

Purchase Frequency. The adverse consequences of buying a lower quality brand can last for a shorter or longer period of time. For instance, if an item is bought every week (say, frozen vegetables), a slightly lower quality item has to be endured for only one meal or one week, whereas if an item is bought once every month (say, laundry detergent), the lower quality brand has to be endured for one month. Thus as the interpurchase time increases, consumers should attribute more performance risk to store brands and as a result will pay higher premiums for national brands. This hypothesis is consistent with prior work. Narasimhan, Neslin, and Sen (1996), for example, find that consumers' response to promotions increases as the category's average interpurchase time decreases.

H_2: Other things equal, the price premium a consumer will pay for a national brand increases as the purchase frequency decreases.

Consumer Perceptual Variables

Consumption Pleasure. While some goods are consumed for their usefulness (utilitarian goods), other goods are consumed for their ability to provide pleasure (hedonistic goods) (Richins 1994). Consumers may attribute high performance risk to store brands in hedonistic product categories because they worry that store brands cannot deliver the desired emotional benefits. As a result, they may pay larger premiums for national brands.

H_3: Other things equal, the premiums consumers will pay for national brands increases as the consumption pleasure or hedonistic value of the product increases.

Price-Quality Inference. Rao and Monroe (1989) find that for consumer products, the relationships between price and perceived quality are positive and statistically significant. Consumers who feel higher quality brands are in general higher priced (who believe in "you get what you pay for") will be more likely to pay greater premiums for national brands. Perhaps these consumers believe that a higher price reduces performance risk.

H_4: Other things equal, the price premium consumers will pay for a national brand increases as their beliefs in price-quality relationships become stronger.

Perceived Deal Frequency. Several studies have shown that consumers' price expectations decrease for brands that are perceived to be frequently on deal (e.g., Kalwani and Yim 1992; Krishna 1994). Hence, they would pay a lower price premium for national brands that are perceived to be frequently discounted.

H_5: Other things equal, as the perceived frequency of deals for national brands increases, the price consumers will pay for national brands decreases.

Store Brand Familiarity. Previous research has established that brand familiarity affects price perceptions and consumers' willingness to pay for brands (Rao and Monroe 1988; Biswas 1992). As consumers become more familiar with a brand, their knowledge structure about the brand changes so that their uncertainty about the brand decreases (Alba and Hutchinson 1987). Havlena and DeSarbo (1991),

for example, find in the luxury car market that new brands are perceived as more risky than existing brands. In the supermarket industry, as consumers' familiarity with store brands increases, the perceived performance risk should decrease because uncertainty is reduced. Monroe (1976) finds that levels of past experience affected housewives' preferences for national and store brands. In the context of national vs. store brand competition, we posit that:

H_6: Other things equal, price premiums decrease as consumers' familiarity with the store brands increase.

Objective Consumer Characteristics—Demographic Variables

We also test whether there are systematic variations in the premium consumers are willing to pay due to the following demographic variables—annual household income, family size, age, gender, and education level of respondent.

Annual Household Income. On the one hand, consumers with lower income may pay a higher premium for national brands, as insurance against product failure. Low income consumers will regret the wasted money more than higher income consumers. Thus, because low income consumers may associate higher performance risk with store brands than higher income consumers, they may pay a higher premium for national brands.

On the other hand, conventional economic wisdom suggests that consumers with higher income have a higher utility for the high quality national brand, can afford to pay a higher premium, and will be less price sensitive. Consistent with this argument, Hoch (1996) finds that in areas with higher household income, price sensitivity is lower and private labels do not perform very well. Based on this argument and evidence, we hypothesize that:

H_7: Other things equal, consumers with higher household income will pay a larger premium for national brands than consumers with lower income.

Family Size. For a given income, larger families should be more price sensitive since the fixed income has to be divided among a larger number of people. Consistent with this argument, Hoch (1996) finds that trading areas populated by large households are more price sensitive and more prone to purchasing private labels.

H_8: Other things equal, large families will be willing to pay smaller premiums for national brands than small families.

Age. Preliminary research suggests that brand loyalty increases as people age (Cole and Balasubramanian 1993). Thus, younger consumers may be willing to pay smaller premiums for national brands, because their preferences are not as strongly formed as older consumers. This prediction is consistent with the Szymanski and Busch (1987) meta-analysis finding that, across eight studies, age had a small, but negative influence on propensity to purchase generic brands.

H_9: Younger consumers will pay smaller premiums for national brands than older consumers.

Education. An opportunity cost argument suggests that those with higher education have greater opportunity costs for time and hence will not spend time looking for good deals. That is, they are less price sensitive (Becker 1965; Hoch 1996). As a result, consumers with higher education will pay greater premiums for national brands than less-educated consumers.

On the other hand, more-educated consumers are likely to be better informed about the relative quality of private labels compared to national brands (Hoch 1996). Hence, their perceived risk associated with store brands may be lower and they may not be willing to pay a high premium for national brands. Thus the influence of education on premium is ambiguous.

Gender. We do not have specific predictions about the effects of gender on willingness to pay a higher premium for national brands.

Survey Design and Measures

We test the hypotheses using a consumer survey that asks questions about 20 of the 88 products explored in Study 1. To obtain variety and heterogeneity, we select 1 or 2 products from each cell in Table 2. The measures used for each hypothesized variable are explained below.

Price Premium. In Study 1, we used an unbalanced comparative rating scale where we fixed the price of the national brand (at, say, $.99) and asked consumers to indicate the price at which they would buy the store brand. In addition to the possible bias introduced with the unbalanced scale discussed earlier, our measure may have introduced bias by specifying the average price of the national brand. So, on the second questionnaire, we state that the price of the national brand in a product category is 100 (100 can be taken as their normal purchase price for the national brand). We ask respondents to indicate on a scale ranging from -100 to 100 (with intervals of 10), the price they will pay for store brands. If X is the price they say they will pay for the store brand, then the premium consumers are willing to pay for the national brand is computed as PREMIUM = 100 - X.

Quality Differential. In Study 1, we used a 7-point unbalanced itemized comparative rating scale and assumed it to be an interval scale for assessing the relationship between quality difference and premium. The use of an unbalanced scale may bias the response while questionable scale transformation (imputing interval scale properties to an essentially ordinal scale) may weaken the magnitude of the correlation. To avoid these problems, and to correspond to the premium question above, we state to the consumers that the quality of national brands is 100 and ask them to rate the quality of the store brand on a scale between -100 and 100 with intervals of 10. For variation, we use a thermometer scale for indicating higher and lower quality. Since we are interested in their opinions/perceptions rather than actual knowledge, respondents are encouraged to answer the comparison questions even if they have not bought a national or a store brand, but have an opinion about it. If Y is the quality of the store brand perceived by the consumers, quality differential is computed as QUALDIF = 100 - Y.

Average Price per Purchase. Respondents indicate the average price per purchase for each product category on a 5-point scale:

> 1= About $1 ($.50-$1.49); 2=About $2 ($1.50-$2.49); 3 = About $3 ($2.50-$3.49); 4 = About $4 ($3.50-$4.49); 5 = Over $4.50.

Purchase Frequency. Respondents indicate how often they purchase each product category on a 5-point ordinal scale: 1 = at least once every two weeks; 2 = once every 3-5 weeks (about once a month); 3= once every 6-10 weeks (about once in two months); 4 = once every 10-14 weeks (about once in three months); 5 = less often than once every three months; DB = never (don't buy).

Consumption Pleasure. Consumers indicate how much consumption pleasure they derive from the product category by responding to two phrases on a 3-point scale: 1 = very true for me; 2 = somewhat true for me; and 3 = not true for me: (1) the product is "fun to have" and (2) the product "gives me pleasure."

Price-Quality Inference. We measure price-quality inference on a 7-point Likert scale ranging from strongly agree (1) to strongly disagree (7) for the following two statements:

> "In this product category, the higher the price for a brand, the higher is the quality of the brand."
>
> "In this product category, it is certainly true that you get the quality that you pay for."

Perceived Deal Frequency. We measure perceived deal frequency on a 7-point Likert scale ranging from strongly agree (1) to strongly disagree (7) for the following two statements:

> "In this product category, the brands I normally buy are frequently on deal."
>
> "In this product category, I usually wait for a sale to buy the brand I want."

Store Brand Familiarity. We measure store brand familiarity for each product category on a 3-point ordinal scale: (1) very familiar with the store brand, (2) somewhat familiar with the store brand, and (3) unfamiliar with the store brand.

Demographic Variables. Age, education, income, and family size are measured as follows:

Age:	under 18, 18-22, 23-40, 41-60, over 60
Education:	high school graduate, college graduate
Annual household income:	under $15,000, $15,000 - $24,999, $25,000 - $34,999, $35,000 - $49,999, $50,000 - $74,999, $75,000 - $99,999, over $100,000
Family size:	number of people living in the household

A sample of 350 randomly selected households from a medium-sized Midwest metropolitan area received the questionnaire. Respondents could receive $10 for completing the questionnaire. One hundred and forty-two questionnaires were returned of which 140 were usable. In the following sections, we present our analysis. First, we analyze the data with respect to the first objective—investigating the strength of the relationship between quality differential and premium. Then, we analyze the data with respect to our second objective—identifying other factors that influence premium paid.

Relationship Between Quality Differential and Premium

Data and Descriptive Statistics

There are 140 respondents, each providing answers for up to 20 product categories (maximum of 2,800 observations in total). Several consumers did not respond to some product categories because they did not buy them and some consumers did not provide information on quality differential and/or premium. Thus there are 2,279 observations for investigating the relationships.

The mean quality differential across the 2,279 observations is 20.2% and the mean price premium is 35.8%. These means and the distribution of responses, shown in Figure 2 (page 9), are very similar to those from Study 1, where the mean quality differential was 21% and the mean price premium was 35%. In about 40% of the observations, consumers state that the private labels are equal or superior in quality to national brands. However, in only 9% of the observations are they willing to pay equal or higher prices for the store brands.

The mean quality differential and premium for each product category are given in Table 3. Mean quality differential ranges from 3.2% for bleach to 49% for dog food. More quality-differentiated product categories such as dog food, shampoo, and soft drinks have the highest quality differentials (over 30%), whereas commodity products such as flour, frozen vegetables, and bleach have the lowest quality differentials (less than 10%).

Table 3. Mean Quality Differential and Premium by Product (Study 2)

Product	N (# obs.)	Mean Quality Difference (%)	Mean Premium (%)
Aluminum foil	132	16.3	33.3
Analgesic (pain/fever medicine)	121	10.4	29.7
Bleach (liquid)	108	3.2	35.7
Cake mix	105	15.6	33.8
Cereal (cold)	127	28.0	39.6
Cheese	132	14.1	27.0
Coffee (ground)	94	27.7	34.3
Cookies	117	15.5	37.4
Dishwashing liquid	130	23.7	37.0
Dog food	35	49.0	45.5
Fabric softener	93	16.5	36.7
Flour	120	5.7	34.8
Frozen pizza	97	26.7	33.6
Frozen vegetables	126	9.4	30.1
Jams/jellies	111	16.2	36.5
Ketchup	122	27.5	38.9
Orange juice	121	15.0	29.6
Shampoo	128	33.8	43.4
Soft drink	125	36.5	44.5
Toilet tissue	134	31.2	41
Total/Average	2279	20.1	35.8

The mean premium ranges from 27% for cheese to 45% for dog food. The more-quality-differentiated products such as soft drinks, shampoo, and dog food have the highest price differential (over 40%). An interesting aspect is that the mean premium is around 30% even in commodity products where the quality differential is less than 10%.

Correlation Analysis

The correlation between premium and quality differential across all 2,279 observations is .39 (i.e., quality differential explains about 16% of the variation in premium). This number is about the same as in Study 1 (18%). We investigate whether the correlation increases if we use alternate measures or functional forms. First, our measure of premium is based on percentage price differential. It is possible that consumers switch between brands on the basis of absolute ($) price differential instead of percentage price differential. Hence, we compute the correlation of quality differential with absolute premium. Absolute premium is computed by multiplying the % premium by the average category price. For instance, if the premium consumers are willing to pay for the national brand is 20% and the average price per purchase of the category is $2, then average absolute premium is $.40. The mean absolute premium is $.94 or, on average, in these 20 product categories, consumers will pay about a dollar more for the national brand. The correlation between quality difference and absolute price difference is .38 or quality difference explains 15% of the absolute premium.[2] Because the percentage premium measure is easier to compare across categories and the model performs at least as well as absolute premium model, we use percentage premium as the dependent variable in subsequent analysis.

Next we investigate some alternate functional forms besides the linear model. In particular, we compare the linear model (where the dependent variable is QUALDIF) with the square root model (where the dependent variable is $\sqrt{\text{QUALDIF}}$) and the squared model (where the dependent variable is QUALDIF^2). However, because the alternate models can only be estimated for non-negative values of QUALDIF, we must delete the 10% of observations with negative values resulting in 2,062 observations. The linear model using these 2,062 observations performed better (R^2 = .24) than both the square root model (R^2 = .22) and the squared model (R^2 = .19). Thus, we conclude that the linear model performs at least as well as the other two models. Furthermore, the linear model with only non-negative values performs better than the one with all observations. However, because we believe that those with negative QUALDIF values are legitimate observations, we include all 2,279 observations in our subsequent analysis.

Summary of Results

In summary, the results from Study 2 are quite consistent with those from Study 1. The key results are as follows:

1. The mean quality differential between national brands and store brands is about 20% and the mean premium that consumers are willing to pay for national brands is about 35%.

2. In about 40% of the observations, consumers state that the private labels are equal or superior in quality to national brands. However, in less than 10% of the observations, consumers say they will pay equal or higher prices for the store brands.

3. The average correlation between premium and quality differential is about .4, or quality differential explains about 16% of the variation in premium across consumers and categories.

We now investigate how other hypothesized factors influence the price premium.

Investigating Other Factors That Influence Price Premium

Data

The hypothesized factors are H_1: Average price per purchase (AVPRICE), H_2: Purchase frequency (PURFREQ), H_3: Consumption pleasure (PLEASURE), H_4: Price-quality inference (PRIQUAL), H_5: Perceived deal frequency (DEALFREQ), H_6: Store brand familiarity (SBFAMIL), H_7: Annual household income (INCOME), H_8: Family size (FAMSIZE), H_9: Age (AGE). PRIQUAL and DEALFREQ were each measured by two intervally-scaled items. The correlation between the two items for PRIQUAL is .81 and for DEALFREQ is .76. We average the score from the two items to obtain a measure of each of the two constructs.

In the case of PLEASURE, the two items for hedonism (fun and pleasure) correlate .82 and over 80% of the observations are diagonal elements in the cross-tab between fun and pleasure items—i.e., if a consumer checked 2 (somewhat true) to the fun question, s/he checked 2 to the pleasure question. We combine the two items as follows. If the respondent answers 1 (very true) on both items, then hedonism is taken as high (1); if the respondent answers 3 (not true) on both items, then hedonism rating is taken as low (3); otherwise, the rating is taken as moderate (2). All other variables are single-item measures and kept as such.

Regression Analysis

In total, there are 2,156 observations for testing the hypotheses. First, we run a "full information" regression model with PREMIUM as the dependent variable and the hypothesized factors and other demographic variables as the independent variables.[3] The R^2 for this full model is .23. The R^2 for the model with only QUALDIF is .16. That is, the 11 additional variables, accounting for 7% of the variation in the price premium, explain a statistically significant amount of additional variation [$F(30,2124) = 6.67$, $p < .01$]. The estimates and the unique variance (variance explained by a variable after accounting for variation due to other variables) as well as mean premiums and frequencies for each variable are given in Table 4.

Table 4. Regression Results—Full Information Model

Variable	Group	Freq. (# obs.)	Mean Premium %	Regression Result: Estimate (Std. Err)	Regression Result: t-stat	Regression Result: Var. (%) explained
Quality differential	(Ratio scale)	—	—	.32 (.017)	17.8**	11.5
Average price	$1	479	33.4	-1.03 (1.0)	-1.02	.13
	$2	726	34.2	-1.94 (1.78)	-1.09	
	$3	492	36.1	-2.19 (1.86)	-1.18	
	$4	217	37.5	-1.06 (2.16)	-.49	
	$5 or more	242	41.9	base	—	
Purchase frequency	≤ 2 wks	456	33.9	-5.3 (1.72)	-3.08**	.61
	2-6 wks	551	36.4	-.07 (1.75)	-.04	
	6-10 wks	449	35.8	.41 (1.64)	.25	
	10-14 wks	294	35.1	-.44 (1.76)	-.25	
	> 3 months	406	35.0	base	—	
Consumption pleasure	very true	229	39.2	4.63 (1.97)	2.35**	.38
	somewhat	979	34.9	.95 (1.09)	.87	
	not true	948	34.0	base	—	
Price-quality inference	(interval)	—	—	-.64 (.35)	-1.83**	.12
Perceived deal frequency	(interval)	—	—	-.08 (.28)	-.29	0
Store brand familiarity	very fam.	603	31.5	-.76 (1.41)	-.54	.04
	somewhat	828	33.7	-1.35 (1.26)	-1.07	
	unfamiliar	725	41.6	base	—	
Income	< $15k	263	44.5	17.0 (2.97)	5.72**	2.3
	$15-25k	396	35.1	8.8 (2.79)	3.15**	
	$25-35k	347	30.2	5.6 (2.79)	2.01**	
	$35-50k	339	30.5	4.9 (2.75)	1.78**	
	$50-75k	478	40.6	12.3 (2.56)	4.81**	
	$75-100k	226	37.7	10.4 (2.80)	3.72**	
	> $100k	107	25.0	base	—	
Age	18-22 yrs	93	44.2	10.5 (3.14)	3.34**	1.38
	23-40	904	38.8	10.5 (1.73)	6.08**	
	41-60	836	35.4	7.6 (1.74)	4.36**	
	>60	323	25.4	base	—	
Family size	1	413	31.7	.52 (4.33)	.12	.66
	2	886	36.2	5.42 (4.07)	1.33	
	3	371	35.4	.71 (4.18)	.17	
	4	328	36.6	4.67 (4.21)	1.11	
	5	119	40.3	1.48 (4.63)	.32	
	6	39	26.4	base	—	
Gender	Female	1527	36.3	3.12 (1.33)	2.35**	.25
	Male	629	34.0	base	—	
Education	College	1337	35.7	1.25 (5.43)	.23	.04
	High school	819	35.5	base	—	

**Significant at 5% level (one-tailed test)

Perceived quality differential is the most dominant variable among the ones we considered in explaining the variation in price premiums across categories and consumers. It uniquely accounts for 12% of the variance and for 16% of the common variance. Demographic variables appear to be next most important. Together, they account for about 4.5% of the variance. Of the demographic variables, income and

age explain the most variance. Inspection of the estimates reveal that the relationship between income and the premiums consumer are willing to pay is non-monotonic. The low income households ($0-25K) and the high income households ($50-100K) will pay higher premiums than the middle income households ($25-50K). Older consumers will pay smaller premiums than younger consumers. In particular, elderly consumers (over 60) will pay much smaller premiums than others, a finding consistent with the observations of Hoch (1996). In addition, females will pay larger premiums for national brands than males.

The other statistically significant results are as follows: Consumers who buy a category very frequently will pay lower premiums for national brands than those who buy less frequently than once every two weeks. The premiums increase as the levels of consumption pleasure associated with product categories increase. Finally, consumers are willing to pay larger premiums for national brands when they believe that price and quality are positively related.

Although not statistically significant in the full model, we notice that the means suggest that consumers will pay larger premiums for high priced products than for low priced products. They are also likely to pay smaller premiums in categories where their familiarity with store brands is higher.

Note from Table 4 that a number of variables such as income, age, and family size are classified into as many as four to seven groups. Use of several groups reduces error degrees of freedom, can lead to fewer observations in some groups, and can reduce interpretability of the results. Therefore, we combine some categories by inspecting frequencies, means, and regression coefficients. We combine two groups if the means/regression coefficients are similar and if the categories in the revised model have reasonable numbers of observations. Thus, for instance, the seven income groups are combined into three income classes (low: $0 to 25K, medium: $25-50K, and high: over $50K).

In the revised model, we reduce the number of parameters from 31 to 14. The R^2 for the parsimonious model with combined groups is .21. The estimates are provided in Table 5. Seven of the nine hypothesized variables showed significant influences on premium.

Table 5. Regression Results—Parsimonious Model

Variable	Group	Hypothesis Hyp. #	Hypothesis Exp. Sign	Regression Est. (Std. Err)	Regression t-stat
Quality differential	Ratio		+	.33 (.018)	18.5**
Average price	< $3	1	-	-1.69 (1.27)	-1.33*
	≥ $3		base	0	.
Purchase frequency	≤ 2 weeks	2	-	-4.95 (1.30)	-3.82**
	> 2 weeks		base	0	.
Consumption pleasure	very true	3	+	4.74 (1.68)	2.82**
	other		base	0	
Price-quality inference	interval	4	-	-.83 (.34)	-2.47**
Perceived deal frequency	interval	5	-	.00 (.30)	.00
Store brand familiarity	familiar	6	-	-1.36 (1.16)	-1.17
	unfamiliar		base	0	.
Annual income	< $25K	7	-	-.48 (1.41)	-.34
	$25-50K		-	-7.2 (1.33)	-5.4**
	> $50K		base	0	.
Family size	single	8	+	-1.33 (1.58)	-.84
	couple		+	2.14 (1.21)	1.77**
	family (> 2)		base	0	.
Age	< 40 years	9	-	5.09 (1.08)	4.70**
	≥ 40 years		base	0	.
Gender	Female	None	?	2.49 (1.14)	2.19**
	Male		base	0	.
Education	College	None	?	.64 (1.14)	.56
	High school		base	0	.

**Significant at 5% level; *Significant at 10% level.

Summary of Results

The key results are as follows:

1. Overall, perceived quality differential uniquely accounts for 12-16% of the variation and is by far the most important variable in explaining variation in price premiums across consumers and product categories.

2. Demographic variables appear to be next most important, accounting for about 5% of the variation. In particular:

   - The middle income households ($25-50K) are willing to pay smaller price premiums than either the higher income (> $50K) or lower income (<$25K) households (partially supporting H_7)

   - Younger consumers are willing to pay larger price premiums than older consumers (not supporting H_9).

   - Couples are willing to pay larger premiums than singles or those with larger families (partially supporting H_8).

   - Females are willing to pay larger price premiums than males.

3. Consumers will pay higher premiums for national brands
   - if they spend more money on the purchase in that product category (supporting H_1),
   - if they purchase the product category less frequently (supporting H_2),
   - if the categories are consumed for pleasure (supporting H_3), and
   - if the price-quality inference is strong (supporting H_4).
4. The additional 11 variables besides quality differential account for about 5-7% variation in price premiums.

The finding that overall quality differential accounts for considerably more variation than all other variables put together suggests the need for studying the relationship between quality differential and price premium in greater depth. In the next section, we perform some additional category analyses to gain further insights.

Quality Differential and Premium: Analysis by Product

In this section, we interpret the coefficients of the quality differential model, propose a measure of brand equity, and explore some product-category differences in the strength of the premium-quality differential relationships.

Interpretation of Coefficients

The estimated linear quality difference model is as follows (standard errors in parentheses):

(1) PREMIUM = 29.6 + .31 * QUALDIF + error; R^2 = .16 n = 2279.
(.59) (.015)

The slope (.31), which states that a 1% increase in quality differential increases the price premium by .31%, can be interpreted as quality sensitivity. The intercept term represents the premium consumers are willing to pay when the perceived quality differential between store and national brands is zero. That is, on aggregate, consumers will pay 29.6% more for national brands *even when they perceive that the quality of the store brands is the same as that of the national brands.*[4]

The intercept term may represent a measure of national brand strength or equity. Brand equity, which has been broadly conceptualized as the value that a brand name adds to a product, can be viewed as both a financial asset and a set of favorable associations and behaviors. Consistent with this view, brand equity can be measured in dollar terms or in psychological terms (for excellent reviews and recent works on measuring brand equity, see Aaker [1991]; Keller [1993]; Sood [1995]). In the context of national brand vs. store brand competition, brand equity could be measured by the price premium consumers will pay for a national brand over a store brand. This premium arises because of perceived quality differences and what Keller (1993) calls brand knowledge. The intercept term measures the premium consumers will pay after accounting for quality differences, that is, even when there are no perceived quality differences. It can therefore be thought of as *non-quality-related national brand equity*, which we call *NQNB Equity.*

At the mean values of premium and quality differential, Equation (1) can be written as follows:

(2) Mean (Premium) = 35.8 = 29.6 + .31 * Mean (Qualdif) = 29.6 + .31*20.2 = 29.6 + 6.2 = 35.8.

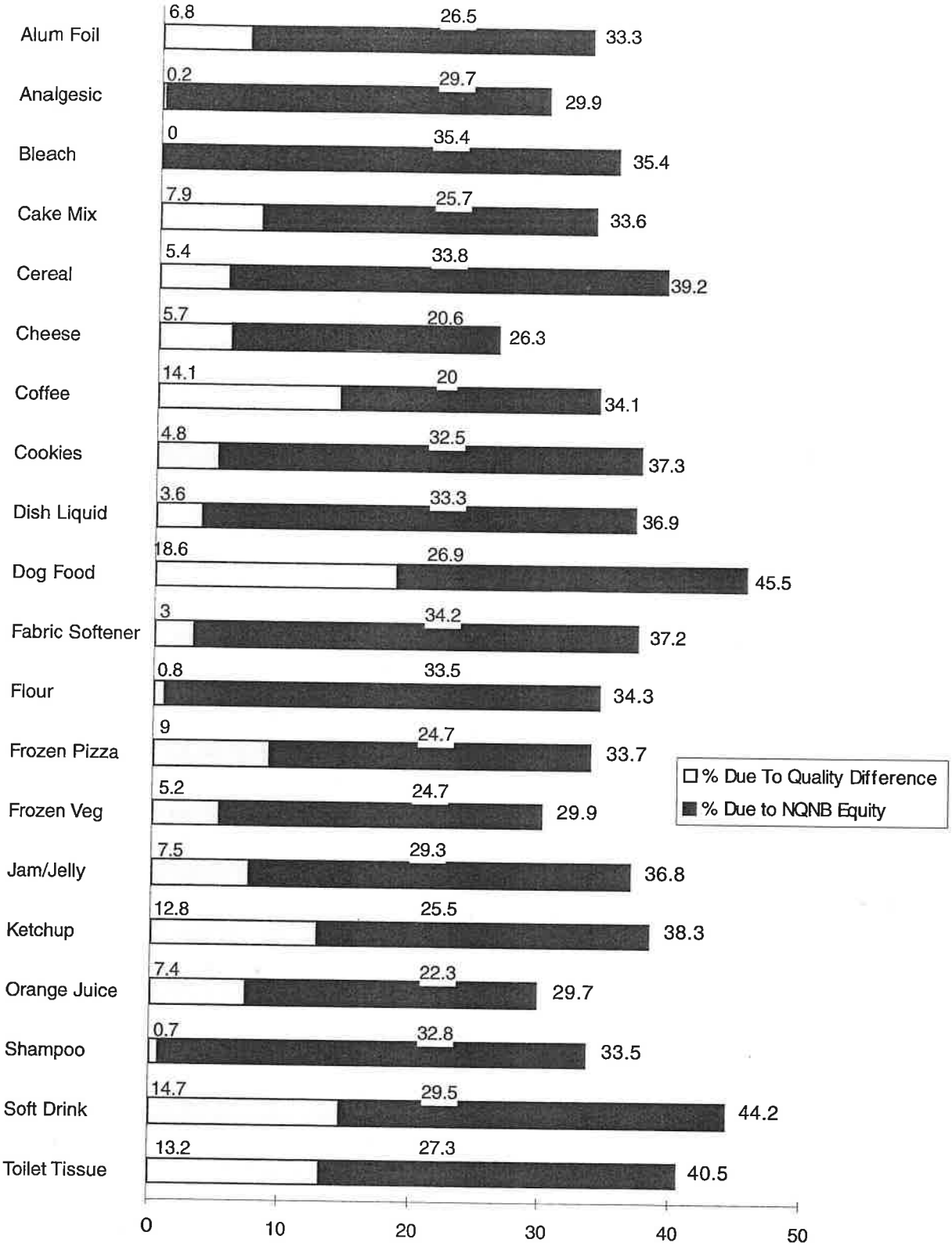
Thus the aggregate premium of 35.8% is decomposed into the premium arising due to quality differential (6.2%) and the premium that consumers will pay even when there is no perceived quality difference, NQNB Equity (29.6%). Note that 81% of the percentage premium that consumers will pay for national brands will be paid even if there are no perceived quality differences. NQNB Equity appears even more dominant as we look at each product category.

Table 6. Distinguishing Products with Low and High R^2

Product	# obs.	R^2	PREMIUM Mean %	QUALDIF Mean %	AVPRICE $	PURFREQ Weeks	PLEASURE 1=high; 3=low	PRIQUAL 1=high; 7=low	SBFAMIL 1=high; 3=low
Products with Low R^2									
Bleach	102	0.006	35.4	2.75	1.69	12.6	2.8	4.89	1.89
Analgesic	115	0.01	29.9	11.1	3.49	11.5	2.74	4.51	1.84
Flour	113	0.03	34.3	5.5	1.64	12.3	2.58	4.58	1.87
Dish liquid	123	0.05	36.9	23.9	2.08	10.4	2.76	3.93	2.41
Cereal	120	0.06	39.2	29.9	3.33	6.12	2.04	3.63	2.06
Fabric softener	88	0.06	37.2	16.3	2.45	10.9	2.66	4.07	2.31
AVERAGE			35.5	17.3*	2.6	10.2	2.56*	4.14*	2.1
Products with High R^2									
Cookies	111	0.16	37.3	16.5	2.45	8.81	1.57	3.45	1.93
Shampoo	121	0.16	33.5	34.6	3.26	10.2	2.21	3.09	2.52
Frozen pizza	94	0.19	33.7	26.5	3.37	9.12	1.85	2.91	2.19
Soft drink	118	0.19	44.2	37.7	3.09	5.47	1.57	2.93	2.04
Cheese	124	0.2	26.3	14.9	2.72	6.3	2.04	3.42	1.72
Jam/jelly	105	0.22	36.8	17.5	2.12	11.7	2.13	3.62	2.05
Coffee	90	0.24	34.1	27.7	4.24	10.3	1.93	3.2	2.26
Frozen veg.	119	0.24	29.9	10	2.02	7.92	2.43	3.59	1.69
Cake mix	96	0.26	33.6	16.5	1.64	12.7	1.97	3.89	2.19
Alum foil	126	0.27	33.3	15.7	2.07	13	2.8	4.22	2.02
Toilet tissue	128	0.28	40.5	32.1	2.32	7.59	2.52	2.97	2.26
Ketchup	115	0.31	38.3	27.8	1.97	11.2	2.27	3.34	2.1
Orange juice	114	0.37	29.7	16	2.02	6.14	1.96	3.18	1.74
AVERAGE			35.5	22.6	2.56	9.27	2.1	3.37	2.05

* = Average significantly different from average of products with high R^2

Figure 3. Premium Paid for National Brands over Store Brands Due to Quality Difference and NQNB Equity



NQNB Equity: Non-Quality-Related National Brand Equity. Premium consumers would pay for national brands even when they perceive no quality differential.

Table 6 provides the R^2 values for the quality differential model for each product category (arranged in ascending order of R^2).[5] Although quality differential accounts for a very small portion (<6%) of the premium consumers are willing to pay in a number of product categories including analgesics, dishwashing liquid, and bleach, it accounts for a relatively large portion of the variation (>25%) in other categories such as orange juice and ketchup. The average variance explained across categories is 15.5%. Figure 3 decomposes the average premium into that due to perceived quality differences and that due to NQNB Equity. In products such as analgesics, bleach, and flour, consumers will pay about 30% more for national brands, but very small portions of these price premiums are explained by perceived quality differences. The premium in these products are nearly 100% NQNB Equity driven. At the bottom are products such as ketchup, toilet tissue, and orange juice where quality differences explain a considerable proportion of the price premiums, but even in these cases, NQNB Equity accounts for over 50% of the premium. An interesting question, explored in the next section, is: In what type of product categories will perceived quality differential not be a good predictor of the price premium?

Exploring Characteristics of Low Quality Sensitive Products

There are six categories in which the R^2 was below the mean of .155 (Table 6)—in fact the R^2 was less than .07. They were classified as "low quality sensitive" products. We classify the 13 categories with R^2 above the mean (.16 or more) as "high quality sensitive" products.[6]

How do these two groups of products differ? In order to answer this question, we first need to ascertain which measured variables are category specific and which are consumer specific. In the introduction section, we had taken, for instance, purchase price as predominantly a category characteristic based on our intuition and past literature (Narasimhan, Neslin, and Sen 1996; Sethuraman 1992). Here, we base our classification directly on consumers' perceptions. A variable is more category specific (consumer specific) if category (consumer) differences explain relatively greater proportions of the variation in the characteristic than consumer (category) differences. Using an ANOVA design described in the Appendix, we compute the ratio as:

$$\text{Specificity index} = \frac{\textit{variance explained by category differences}}{\textit{variance explained by consumer differences}}$$

If the index is more (less) than 1, the variable is more category (consumer) related. Using this procedure, we find that average price, frequency of purchase, consumption pleasure (hedonism), quality differential, price-quality inference, and store brand familiarity are relatively more category specific with specificity index around 2 or more.[7] We use all the above variables for understanding the characteristics that distinguish products with low and high quality sensitivity (R^2).

Table 6 provides the means for these variables. It appears that quality differential explains little variation in the price premiums in product categories where consumers believe (1) that there are not many quality differences between store brands

and national brands (QUALDIF), (2) that they purchase the product for utilitarian purposes instead of for pleasure (PLEASURE), and (3) that there is not much relationship between a brand's price and the brand's quality (PRIQUAL). These are typical characteristics of commodity products. In these product categories, consumers are willing to pay a premium for national brands, but this willingness is unrelated to perceived quality differences.

Why might this pattern occur? Consider a low-quality-differential product such as bleach with a mean quality difference near zero. Most consumers vary (say) ± 10% around the mean or (-10% to 10%). In this range, the magnitude of the quality differential is so low that consumers are not sensitive to quality changes because all brands fall within an acceptable range. That is, consumers who think the perceived quality differential is 10% probably would not pay any more for a national brand than those who perceive a quality differential equal to 0%, especially when the product primarily serves a functional need. In addition, if consumers make weak price-quality inferences, the consumers will not use price as a signal of quality and thus will not use quality differential to determine the premiums that they are willing to pay.

Summary of Key Results

1. We interpret the premium consumers will pay for national brands even when they perceive no quality difference as non-quality-related national brand equity or NQNB Equity. Overall, 81% of the aggregate premium that consumers are willing to pay for national brands is due to NQNB Equity.

2. In some categories such as analgesic, bleach, and flour quality differences explain very little of the variation in price premiums. Exploratory analysis reveals that such products have lower quality differential, are consumed less for pleasure, and the price-quality inference is weaker.

Discussion of Results and Managerial Implications

By understanding what factors influence the size of the price premiums consumers are willing to pay for national brands, national brand managers can better develop effective brand strategies. In the following discussion, we use the results from our survey to make recommendations about when national brand managers should pursue aggressive price reduction strategies and when they should use advertising strategies to compete with private label brands.

Perceived Quality Differential

On the one hand, quality differences account for only one-sixth of the variation in price premiums. On the other hand, out of all the variables considered, quality differences explain the most variation in price premiums. Our study validates the conventional wisdom that perceived quality is an important determinant of price premiums (Stern 1966). Generally, national brand managers should strive to enhance the quality of their brands relative to private label brands. In addition, they should pursue strategies that increase the likelihood that consumers will notice these quality differences. These strategies could include package design, advertising, and sampling.

However, additional analysis revealed that how important perceived quality is in explaining variation in price premiums depends on product category characteristics. In particular, perceived quality differences explain small amounts of the variation in the price premiums for commodity type products. Because the price premium that consumers will pay for national brands is still considerable in these product categories (about 30%), we speculate that some aspect of store brand performance, other than quality difference, is increasing the perceived risk of store brands. It may be, for example, that the information consumers store in memory about national and store brands is very different. Frequent national brand advertising may leave consumers with rich memory nodes that are characterized by strong, favorable, and unique associations. In contrast, consumers may store information about unadvertised store brands in memory nodes that are characterized by weak, general store-related associations (Keller 1993; Krishnan 1996).

Consumers' willingness to pay price premiums for national brands in commodity categories is good news for national brand managers because it allows them to command a reasonable premium even when the quality of national and store brands is the same. National brand managers could enhance their brand equity through emotional advertising that shows consumers what type of people use the brand, and when and where they use it.

Even in product categories where perceived quality differences explain considerable portions of the premium, equity is a dominant factor. In these categories, managers

can adopt a two-pronged strategy. First they can increase objective quality through product improvements and then use informational advertising to educate consumers. Because the product categories are often consumed for pleasure, however, they should investigate ways of improving a brand's quality by improving the brand's ability to provide this pleasure (e.g., Jello gelatin is "fun" to serve as dessert; thus, improving quality may mean packaging animal-shaped Jello molds with large boxes of Jello). Second, they can increase NQNB Equity through emotional advertising.

Other Variables

Table 7 lists the variables from our research that seem to influence the price premium consumers are willing to pay. Consider first the findings related to *average price*. We found that, as predicted, consumers will pay higher price premiums in relatively expensive product categories. We reasoned that, for consumers purchasing the store brands in the low price categories, there are lower perceived financial risks than for those consumers purchasing store brands in the high priced categories. This means that in these low priced categories, national brand managers should use pricing tactics to reduce national brand prices with coupons, temporary discounts, or other price reductions. The finding and recommendation with regard to *purchase frequency* is similar: consumers pay lower premiums in categories that they purchase more frequently (once every two weeks or less) than in categories that they purchase less frequently. Consequently, national brand managers should adopt a more aggressive pricing strategy in more frequently purchased categories.

Table 7. Significant Variables and Their Managerial Implications

Variable	Finding	Key Managerial Implications
Average purchase price	Consumers would pay lower percentage premium for national brands in low priced grocery items (<$3), than in high priced purchases.	National brand managers should price more aggressively against the store brands (reduce price, offer temporary discount) in low priced product categories than in high priced categories.
Purchase frequency	Consumers would pay less premium in products that they purchase more frequently (once every two weeks) than in products that they purchase less frequently.	National brand managers should adopt a more aggressive pricing strategy in the more frequently purchased categories than in less frequently purchased categories.
Consumption pleasure	Consumers would pay a higher premium in categories that are high on consumption pleasure (more hedonistic goods) than those that are low on pleasure (more functional goods).	National brand managers should adopt a more aggressive pricing strategy in functional goods but can maintain a premium strategy in more hedonistic goods. Managers should also attempt to increase the hedonistic value of the goods through emotional advertising that enhances consumption pleasure.
Price-quality inference	Consumers would pay more premium for national brands if they perceive high quality is associated with a higher price.	National brand managers should develop advertising campaigns that enhance price-quality association or emphasize the notion that cheaper products tend to be lower in quality.
Household income Family size Age of respondent Gender	Low and high income consumers, couples, younger consumers, and females would pay more premium for national brands.	Managers of premium national brands may be better off targeting these segments when competing with store brands.

The finding regarding *consumption pleasure* is interesting: consumers will pay a higher premium for national brands as consumption pleasure for the product category increases. As a result, national brand managers can maintain a premium pricing strategy in product categories consumed for hedonistic reasons. National brand managers can increase the hedonistic value of their brands through emotional advertising that shows consumers using the brand to meet emotional needs. We also found that consumers will pay a higher premium for national brands if they perceive that high quality is associated with high price *(price-quality inference).* National brand managers should develop advertising campaigns that enhance the price-quality association or emphasize the notion that cheaper products tend to be lower in quality.

The lack of significance of the perceived deal frequency variable is somewhat surprising. Conventional wisdom suggests that deal frequency is likely to erode national brand equity. In addition, consumers expect to be able to buy the brand at lower prices, so they should be willing to pay smaller premium if they perceive the deal frequency to be higher. The null result may be explained in two ways. One reason may be that conventional belief is wrong. A recent study (Dekimpe et al. 1996) finds that, contrary to popular belief, brand loyalty has not eroded despite greater price competition in recent times. The other reason is that we may not have measured the construct appropriately. While our hypothesis is based on perceived deal frequency of national brands, our empirical measure was at the category level—perceived deal frequency of the brands that they normally buy, which can include both national brands and private labels.

The *demographic variables* that were significant in our analysis are important because they suggest targeting strategies. Both low income consumers (less than $25K income) and high income consumers (>$50K) are willing to pay larger premiums for national brands than middle income consumers. A possible explanation is that the low income consumers may have less knowledge about the relative quality and may regret the potential waste of money if the store brand does not perform. Alternatively, they may be more influenced by the imagery associated with national brands. High income consumers will pay larger premiums simply because they can afford it. Middle income consumers have both knowledge about quality differential and are somewhat price sensitive. Because of these two factors they act as "smart" consumers and are likely to pay lower premiums. Our finding suggests that national brand managers should focus more on low and high income consumers than on middle income consumers. In addition, we find that younger consumers and females will pay larger premiums for national brands. Managers of premium national brands may be better off targeting these segments when competing with store brands.

Conclusions

In this section, we highlight the key results, point out the limitations of our study, and discuss some directions for future research under three headings: (1) quality differential and premium, (2) other variables influencing premium, and (3) brand equity.

Quality Differential and Premium

Our key finding is that quality differential dominates the other considered variables as a determinant of the variation in price premiums by explaining about one-sixth of the observed variation. However, in some categories—especially commodity products—quality differential explains very little of the variation in price premiums.

An important limitation of this analysis is that our measure of price premium is based on self-reported measures. We measure stated price premium, not the actual premium, that consumers are willing to pay. Consumers' intentions may not match their actual behavior. We believe this limitation would have been more of a problem if we had analyzed just the price premiums. However, it may be less of an issue when analyzing the correlation between quality differential and premiums because it is unclear why consumers would exaggerate one variable, but not the other. Furthermore, the actual price differential across 116 grocery products observed at the national level in Sethuraman (1992) is 32.2%. It suggests that the mean premium of 35% in our data is in the ball park.

Nevertheless, in the future, it would be useful to obtain measures of the price premium that would be closer to their actual/intended behavior. One method is to look at actual purchase data. However, such data reveal only the premium consumers have paid (actual price differential), not what they are willing to pay (reservation price differential). Experimental approaches dealing with actual money may better capture the premium consumers are willing to pay.

Our result is based on two studies from one market. We have also considered national brand and private labels as single identities, although there are likely to be differences among national brands and private labels (e.g., regular private labels and premium private labels). Future research can study other markets and consider individual national and store brands.

Another interesting question for future research is to test whether there is anchoring effect—i.e., whether the estimates of quality differential and price premium will change if we set private label at 100 instead of national brand. To explore this issue, we conducted an additional follow-up study. We asked a group of 64 consumers to indicate the price and quality differentials for national brands and store brands of four product categories: analgesics, bleach, cookies, and soft drinks. Half the consumers (32) had questionnaires with national brands as the anchor (set at 100); half had questionnaires with store brands as the anchor.

We found that the average quality differential across the four products was statistically smaller when the anchor was the national brand than when the anchor was the store brand. [Anchor national brand: average quality differential = 26.3%; anchor store brand: average quality differential = 39.3%. The difference is statistically significant: $t(63) = 2.62$, $p < .05$]. However, the average price premium across the four products did not vary by anchor [Anchor national brand: average price differential = 34.6%; anchor store brand: average price premium = 37.7%. The difference is not statistically significant: $t(61) < 1.0$]. More research is needed on the effect of anchoring.

Other Variables

Eight additional variables had a significant influence on price premiums. However, these variables together explained no more than 7% of the variation in premium left unexplained by quality differential. While much of the variation in premium may be due to "random" factors, we believe there are several variables that we have not considered. For instance, involvement, like perceived risk, may be an underlying construct that may explain premium differences. Our finding that premium is more a consumer-specific variable (see Appendix) suggests that there may be several deeper consumer characteristics (e.g., life style, personality traits) that may explain premium differences. Studying more variables with different research designs is an important area of future research.

Brand Equity

We define the premium consumers will pay even when there is no quality difference as non-quality-related national brand equity (NQNB Equity) and find that much of the stated premium that consumers will pay for national brands can be attributed to this brand equity. This finding raises a number of questions. Is it specific to the national brands and store brands in this market? Is it specific to store brands or would we find similar results if we considered another low quality national brand? Would this equity be higher for leading national brands than for other brands? What is the source of this equity? Is it market expectation (that store brands are anyway priced lower), or is it due to inertia, loyalty, or imagery associated with national brands? These are useful questions for future research.

Summary

In summary, returning to the question of whether national brand managers should adopt an aggressive pricing strategy, our study finds that for low priced, frequently purchased products that are consumed more for functionality than for pleasure, and where the price-quality inference is weak, managers should adopt aggressive pricing strategies. With respect to the question of what nonprice strategies to adopt, our study finds that brand managers can use emotional advertising to increase perceived quality differential, strengthen the perceived price-quality relationship, and increase the hedonistic value of products. In addition, managers of premium national brands may be better off targeting the younger, high income, and female consumers.

Appendix

Classifying Variables as Category or Consumer Specific

Procedure. A variable is more category specific (consumer specific) if category (consumer) differences explain a relatively greater proportion of the variation in the characteristic than consumer (category) differences. An ANOVA where the dependent variable is the variable to be classified (e.g., quality differential) and the discrete independent factors are (20) categories and (131) consumers gives the proportion of variation explained by category and consumer differences. The sum of squares (SSR) gives the total variation explained by the factors. Division by degrees of freedom normalizes and accounts for differences in the number of levels of the factors that are used to explain the variation. Thus the mean squared regression (MSR = SSR/degrees of freedom) in some sense indicates the average proportion of variation explained by consumer and category differences. The ratio [MSR (category) / MSR (consumer)] gives an indication of whether the variable is more category specific or more consumer specific and we call it the *specificity index.* If the index is larger than 1, then the variable is more category specific. If the ratio is smaller than 1, then the variable is more consumer specific.

Illustration for Quality Differential

Source	Degrees of Freedom	Sum of Squares	Mean Square	Ratio or Specificity Index
Category	19	226637	11928	2.54
Consumer	130	610252	4694	

Classification of Variables (Specificity Index Given in Parentheses)

More Category Specific

Purchase Price (12.1)
Purchase Frequency (11.9)

Consumption Pleasure (7.9)

Quality Differential (2.5)
Price-Quality Inference (2.0)
Store Brand Familiarity (1.8)

Deal Frequency (1.05)

Premium (.5)

More Consumer Specific

It is interesting to note that while quality difference is more category specific, premium is more consumer specific, implying that consumer differences affect premium more than category differences.

Notes

1. Later, we will describe a method for empirically classifying them as category or consumer specific.

2. We have assumed here that the average category price is the average national brand price. Furthermore, for the 10% of observations in which consumers indicated their average price per purchase is $4.50 or more, we used $5 as their purchase price. We also tried $6 and $7 instead of $5 and model fit ($R^2$) was inferior in both cases.

3. The highest correlation among the independent variables is .41 between quality differential and price-quality inference.

4. The estimate is consistent with the mean premium of 28.8% over the 596 observations in which consumers actually stated they do not perceive any quality differences between store and national brands.

5. While all other products had about 90 or more observations, dog food had only 33 observations, hence the product is not included in this analysis.

6. For dog food the R^2 was moderate (.11) and there were few observations (n=33). Hence the product is not included in this analysis.

7. For this analysis, average price in dollars, frequency of purchase in weeks, consumption pleasure (hedonism), and store brand familiarity are also treated as interval scales.

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