



Pergamon

Journal of Retailing xxx (2003) xxx–xxx

**Journal of
Retailing**

An empirically derived taxonomy of retailer pricing and promotion strategies

Ruth N. Bolton^{a,*}, Venkatesh Shankar^{b,1}

^a Owen Graduate School of Management, Vanderbilt University, Nashville, TN 37203, USA

^b Robert H. Smith School of Business, University of Maryland, College Park, MD 20742, USA

Accepted 2 September 2003

10 Abstract

11 Most research categorizes grocery retailers as following either an Every Day Low pricing (EDLP) or a High Low (Hi-Lo) pricing strategy
12 at a store or chain level, whereas this paper studies retailer pricing and promotions at a *brand-store level*. It empirically examines 1,364
13 brand-store combinations from 17 chains, 212 stores and six categories of consumer package goods in five U.S. markets. Retailer pricing and
14 promotion strategies are found to be based on combinations of four underlying dimensions: relative price, price variation, deal intensity and
15 deal support. At the brand-store level, retailers practice five pricing strategies, labeled Exclusive, Moderately Promotional, Hi-Lo, EDLP, and
16 Aggressive pricing. Surprisingly, the most prevalent pricing strategy is not Hi-Lo pricing strategy as is widely believed. It is one characterized
17 by average relative brand price, low price variation, medium deal intensity, and medium deal support. The findings provide some initial
18 benchmarks and suggest that retailers should closely monitor their competitors' price decisions at the brand level.
19 © 2003 by New York University. Published by Elsevier.

20 *Keywords:* Retailing; Pricing; Promotion; Strategy; Multivariate data analysis

21 Introduction

22 Most research categorizes grocery retailers as following
23 either an Every Day Low pricing (EDLP) or High Low
24 (Hi-Lo) pricing Strategy at the store or chain level (Bell, Ho,
25 & Tang, 1998; Bell & Lattin, 1998; Hoch, Purk, & Dreze,
26 1994; Lal & Rao, 1997; Partch, 1992). However, many
27 market researchers have observed that grocery retailers'
28 pricing strategies and tactics are diverse and complex, in-
29 cluding decisions on the depth, frequency, and duration of
30 deals, feature advertising, and displays for myriad brands
31 and categories (Dhar & Hoch, 1997; Hoch et al., 1994;
32 Levy & Weitz, 1998). The purpose of this paper is to em-
33 pirically investigate grocery retailer pricing and promotion
34 strategies by analyzing pricing and promotion decisions
35 for an assortment of brands and categories at different
36 stores and markets. This study examines retailer promotion
37 decisions—specifically *deal intensity* (depth of deal dis-

count, frequency, and duration) and *deal support* (features 38
and displays)—as well as pricing decisions (relative price 39
and price variation). We explore the underlying dimensions 40
of retailer pricing decisions, classify the different types of 41
pricing strategies, and characterize their prevalence across 42
the brands and stores in our sample. 43

Our study investigates two broad research questions: 44

1. Are there a small number of stable underlying di- 45
mensions that characterize grocery retailers' observed 46
pricing decisions—despite the fact that these decisions 47
appear to be very complex and different across brands, 48
categories, and stores? 49

If the answer to this question is “yes,” the identifi- 50
cation of these dimensions will significantly enhance 51
our understanding of retailer strategies. In particular, it 52
will shed insight into how retailers' observed price and 53
price-promotion decisions are developed. 54

2. What are the different types of pricing strategies adopted 55
by grocery retailers? 56

Is a classification based on storewide policies (e.g., 57
EDLP/Hi-Lo) sufficient for decision-making, or does a 58
classification scheme based on brand-store combinations 59

* Corresponding author. Tel.: +1-615-322-5580; fax: +1-360-838-1844.
E-mail addresses: ruth.bolton@owen.vanderbilt.edu (R.N. Bolton),
vshankar@rshmith.umd.edu (V. Shankar).

¹ Tel.: +1-301-405-2175; fax: +1-301-405-0146.

60 provide additional information? What pricing strategies are
61 most prevalent among retailers at the brand-store level?
62 How closely coordinated are pricing and promotion (both
63 deal intensity and support) decisions?

64 We address these questions by developing an empirically
65 based taxonomy for grocery retailers' pricing and promotion
66 decisions. Prior research has developed theory based mod-
67 els that describe *firms'* pricing behavior (cf. Tellis, 1986), as
68 well as normative models that prescribe how firms should be-
69 have with regard to pricing (Lal & Narasimhan, 1995). There
70 are also descriptive studies of *retailer* pricing (e.g., Hulbert,
71 1981) and promotional strategies (e.g., Blattberg & Neslin,
72 1989; Fader & Lodish, 1990). Recent research focuses on
73 how retailers' pricing decisions (especially pricing levels)
74 are related to sales, customer variables, manufacturer (e.g.,
75 Farris & Albion, 1981; Lal & Villas-Boas, 1998), category,
76 competition, and market factors (e.g., Shankar & Bolton,
77 2002). A few studies have also developed optimal price and
78 promotion models (e.g., Achabal, McIntyre, & Smith, 1990;
79 Shankar & Krishnamurthi, 2003; Tellis & Zufryden, 1995).
80 In contrast, we do not develop a theory of how retailers
81 should make pricing decisions or identify market outcomes
82 (e.g., retailer price levels or dispersion).

83 Instead, the major contributions of our study are:

- 84 • An empirical identification of the dimensions of grocery
85 retailer pricing strategy
- 86 • Focusing on pricing and promotion (i.e., deal intensity
87 and support) decisions at the brand-store level, rather than
88 store/chain-wide or brand-specific pricing decisions
- 89 • Yielding a classification of retailer pricing strategies and
90 a description of their prevalence within our study sample.

91 Our empirical analysis is based on grocery store-level
92 scanner data on 1,364 brand-store combinations from 17
93 chains, 212 stores and six categories of consumer package
94 goods in five U.S. markets. We conduct the analysis in two
95 stages. First, we analyze retailers' observed pricing deci-
96 sions for different brand-store combinations using principal
97 component analysis and find that they reflected four un-
98 derlying dimensions: price variation, relative (brand) price,
99 deal intensity, and deal support. Second, we identify differ-
100 ent types of retailer pricing strategy by grouping brand-store
101 combinations and stores along these dimensions using clus-
102 ter analysis. In our concluding remarks, we discuss how
103 an understanding of underlying retailer pricing dimensions,
104 combined with our taxonomy of retailers' pricing strategies,
105 can provide benchmarks for retailers and manufacturers to
106 evaluate their decisions.

107 Perspective on retailer pricing

108 Although market researchers have observed that retailer
109 pricing can be quite different across brands and stores, there
110 is little research on this issue. A notable exception is a con-
111 ceptual article by Tellis (1986) that develops a taxonomy

112 that is intended to be applicable to all firms, not just retail-
113 ers. His pricing strategies are: differential pricing (random
114 discounting, periodic discounting, second market discount-
115 ing), competitive pricing (price signaling, penetration pric-
116 ing or experience curve pricing, and geographic pricing)
117 and product line pricing (image pricing, price bundling or
118 premium pricing, and complementary pricing). He explic-
119 itly considers how these strategies differ depending on the
120 existence of consumer segments, competitors in the market,
121 and product mix. He does not consider the complementary
122 role of promotion.

123 In this study, we are particularly interested in developing
124 a taxonomy based on grocery retailers' actual pricing *and*
125 promotion decisions. Relevant empirical research on retailer
126 pricing and promotion can be grouped into two streams: (1)
127 studies that have examined the determinants of price and
128 promotional elasticities (e.g., Bolton, 1989; Hoch, Kim,
129 Montgomery, & Rossi, 1995; Kirande & Kumar, 1995;
130 Mulhern, Williams, & Leone 1998; Narasimhan, Neslin,
131 & Sen, 1996; Shankar & Krishnamurthi, 1996) and (2)
132 studies that have considered how retailer pricing and pro-
133 motion tactics are related to purchase behavior, consumer
134 variables, competition, and market factors (e.g., Fader &
135 Lodish, 1990; Shankar & Bolton, 2002). Our research com-
136 plements the latter research stream in two important ways.
137 First, we identify the underlying strategic dimensions of
138 retailer pricing and promotion decisions across multiple
139 brands, categories, stores, and markets. Second, since pric-
140 ing decisions are made at different levels—typically the
141 brand level and sometimes the brand-size level (Kumar &
142 Divakar, 1999)—we identify clusters of underlying pricing
143 and promotion dimensions at both the store and brand level
144 and describe their prevalence.

145 Although supermarket chains have “category managers”
146 (Basuroy, Mantrala, & Walters 2001), our study focuses on
147 price and promotion decisions at the brand level for each
148 store (rather than each category level for each chain).² This
149 decision—a departure from most prior research—is based
150 on the following rationale. The most distinctive features of
151 market-driven organizations are their mastery of the market
152 sensing and customer linking capabilities that span the spec-
153 trum between external environment and the company, such
154 as pricing (Day, 1994). Hence, if retailers have a market ori-
155 entation, their pricing decisions are likely to be customized
156 to reflect differences in the store's clientele and competi-
157 tive environment (e.g., Alba et al., 1994; Moriarty, 1985;
158 Urbany & Dickson, 1990, 1991), as well as for each brand
159 and category (e.g., Farris & Albion, 1981). Retailers may
160 also price and promote differently for store and national
161 brands (Ailawadi, Neslin, & Gedenk, 2001; Sethuraman,
162 1996), but the differences between national and store brands
163 are not the focus of our study. Instead, we focus on how re-

² Since the prices of different flavors or colors of a brand (e.g., mouth-
wash or waffle SKUs, bathroom tissue SKUs) are often the same, price
decisions tend to take place at the brand level rather than the SKU level.

164 tailers typically formulate pricing strategies based on their
165 knowledge of consumer store choice, as well as brand choice
166 and quantity decisions. Store choice is driven by store loca-
167 tion, destination categories, store price perception, and store
168 service perception (Kumar & Leone, 1988). Some categories
169 serve as traffic-builders (Walters & Mackenzie, 1988) and
170 others act as cash cows. Thus, retailers are likely to have dif-
171 ferent pricing strategies for different category-store combi-
172 nations rather than have just one storewide pricing strategy.

173 To verify our prediction that retailers are customizing their
174 pricing decisions for different brand-store combinations, we
175 conducted interviews with the marketing and category man-
176 agers of a few retail chains. These managers suggested that
177 retailers are likely to make brand price decisions (as well
178 as category and store-level decisions) on the basis of visible
179 competitive activity, such as price and deal activity. Next,
180 we examined “raw” brand prices in a given week in our data
181 base (described in the following) and ascertained that they
182 vary across stores in the same chain, and across chains in
183 a market. We also examined the correlations among brand
184 prices in a given category across stores in the same chain, and
185 chains in the same market over the period of the data. These
186 correlations were significantly low, leading us to conclude
187 that the brand decisions are not always jointly determined
188 at the category level. Hence, our preliminary investigations
189 indicated that there is variation in retailer pricing decisions
190 at brand level, so our analyses begin by measuring price and
191 promotion decisions for each brand-store combination.

192 Underlying dimensions of retailers’ pricing decisions

193 This study begins by investigating whether retailers’ pric-
194 ing decisions—complex decisions that appear very different
195 across brands, categories and stores—can be captured by a
196 parsimonious set of *stable underlying dimensions*. In this
197 section, we describe our database, explain how we calculated
198 measures of retailers pricing decisions, and then conduct a
199 principal components analysis (PCA) of these measures.

200 The database

201 The database consists of multi-brand, multi-category,
202 multi-store scanner data drawn from six categories of
203 consumer-packaged goods in five U.S. markets that include
204 information about pricing and promotion at the retail level.
205 The categories are spaghetti sauce, bathroom tissue, liquid
206 bleach, ketchup, mouthwash, and frozen waffles. The cities
207 are New York, Los Angeles, Chicago, Marion (IN), and Pitts-
208 field (MA) and are thus fairly representative of both large and
209 small markets in the United States. The database describes
210 all major brands and stores in these categories and markets.³

³ To preserve the confidentiality of the data, this paper does not link pricing strategies to particular brands and stores. However, the database covers all major brands and stores in these categories and markets. Chains

211 There are 17 chains and 212 stores in the database. Alto-
212 gether, the database yields 1,364 brand-store combinations.
213 The weekly store-level scanner data were obtained from two
214 sources, A.C. Nielsen Company and Information Resources,
215 Inc. (IRI). Merging two different data sources makes it
216 possible to uncover systematic patterns that exist across
217 the different data collection and measurement conditions—
218 increasing our ability to generalize from the study findings.
219 To uncover stable underlying pricing dimensions and strate-
220 gies, we study average pricing decisions over a two-year
221 period (a maximum of 121 weeks in any particular store).⁴

222 The umbrella categories for these six categories are:
223 frozen breakfast foods (i.e., waffles), oral care (i.e., mouth-
224 wash), paper (i.e., bathroom tissue), laundry care (i.e.,
225 bleach), condiments (i.e., ketchup), and pasta (i.e., spaghetti
226 sauce). They are large categories and their roles represent
227 much of the spectrum of category roles in a typical store.
228 This notion is amply supported by penetration and fre-
229 quency of purchase data for these categories among U.S.
230 households (IRI Category Report, 1998). It is also sup-
231 ported by qualitative information obtained in an interview
232 conducted with the Marketing Director of a leading grocery
233 chain in the United States. He described category roles in
234 terms of the combination of the importance of sales and
235 profit margins. The importance of sales and profits can be
236 low or high, yielding four combinations: (1) support role
237 comprising low sales and low profits, (2) preferred role
238 consisting of low sales, but high profits, (3) destination
239 role comprising high sales, but low profits, and (4) ideal
240 role consisting of high sales and high profits. As shown in
241 Table 1, these particular categories are distributed across
242 the four different category roles. Hence, we believe that
243 these brands and categories are somewhat representative of
244 retailers’ product assortments, allowing us to make useful
245 generalizations about retailers’ pricing strategies.

246 Conceptualization and measurement of pricing decisions

247 A proposed conceptual framework that identifies the un-
248 derlying pricing dimensions to their measures is shown in
249 Fig. 1. We begin by developing granular measures that re-
250 flect retailers’ decisions concerning regular and deal prices.
251 We do not consider market measures such as absolute retail
252 price levels and price dispersion across retailers. Instead, we

include Albertson’s, A&P, Dominicks, Food Lion, Jewel, Kroger, Lucky, Pathmark, Stop and Shop, Safeway, and Von. Bathroom tissue brands include Charmin, Cottonelle, Northern, Scott, Waldorf, and White Cloud. Liquid bleach brands include Chlorox and Purex. Ketchup brands include Del Monte, Heinz and Hunts. Mouthwash brands include Listerine, Plax and Scope. Spaghetti sauce brands include Prego and Ragu. Waffle brands include Aunt Jemima, Downyflake, Eggo, and Roman Meal. The database also includes private label and generic brands in these stores and categories.

⁴ Average pricing measures are obtained by taking arithmetic means of the weekly measures subsequently provided in Table 2 over the period of the data.

Table 1
Category roles in the store

<i>Importance of Profits</i>	<i>Low</i>	<i>High</i>
<i>Importance of Sales</i>	Support Role Frozen Waffles	Preferred Role Mouthwash
Low		
High	Destination Role Bath Tissue	Ideal Role Spaghetti Sauce

Bleach
Ketchup

Low/high is relative to other categories in the store. Sales are in dollars, but are typically correlated with unit sales. Profit margins pertain to the category.

253 focus on measures of retailer pricing policy or format—that
 254 is, on specific measures of price and price-related promotion
 255 decisions. Retailer pricing policy or format has typically
 256 been labeled EDLP or Hi-Lo (Hoch et al., 1994). An EDLP
 257 policy involves offering consistently low prices on many
 258 brands and categories and is practiced by some supermarkets
 259 (e.g., Food Lion and Lucky). A Hi-Lo policy is characterized
 260 by steep temporary price discounts on high “regular” prices
 261 for many brands and categories and is adopted by other
 262 supermarkets (e.g., Kroger and Safeway). An EDLP policy

263 tends to draw price sensitive shoppers, whereas a Hi-Lo pol-
 264 icy often attracts cherry pickers (e.g., Lal & Rao, 1997). A
 265 store selects and communicates a pricing policy (EDLP or
 266 Hi-Lo) to signal the underlying consistency of its prices to
 267 consumers.

268 Our study departs from prior research concerning
 269 retailers’ pricing strategies in four significant ways. First,
 270 most prior studies consider pricing formats, such as EDLP/
 271 Hi-Lo, as storewide policies, whereas we develop mea-
 272 sures of retailers’ pricing strategies that are specific to the

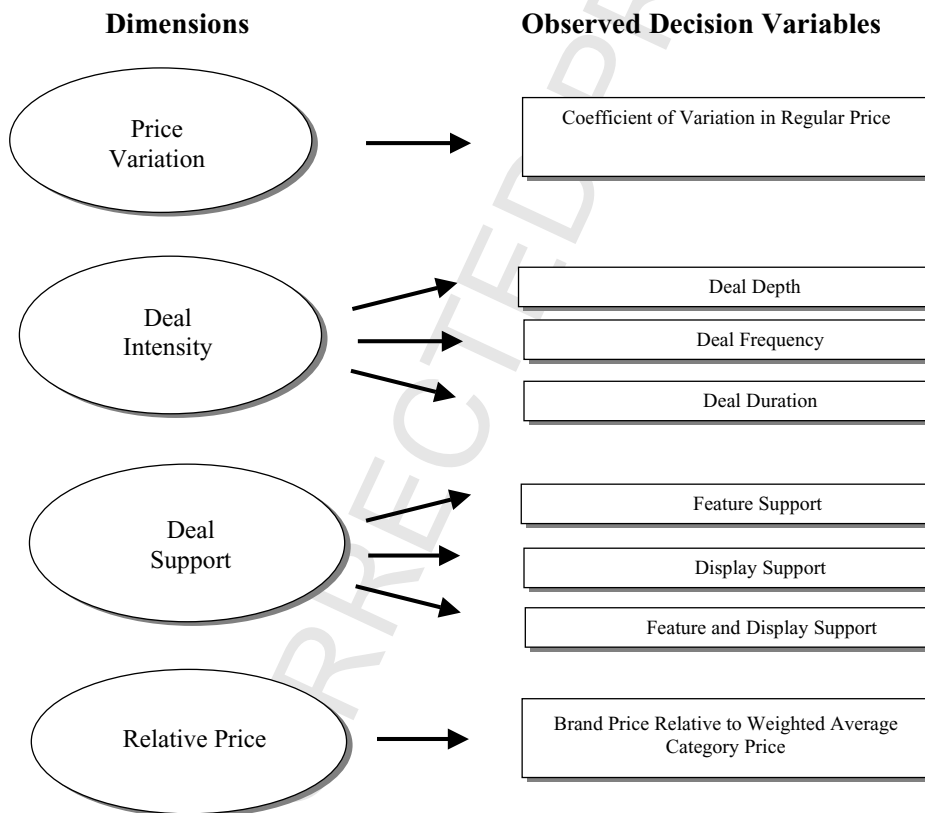


Fig. 1. Dimensions of retailer pricing strategy.

Table 2
Retailer pricing dimensions: measures and descriptive statistics

Pricing dimensions	Measures ^a	Mean (SD)
Relative price	Single variable/measure	
Average actual price of the brand relative to other brands in the category.	Average of brand price divided by the weighted average category price (where the weights are market shares within the store), over all the weeks.	1.00 (0.17)
Price variation	Single variable/measure	
Extent to which a retailer follows a pricing policy/format that is EDLP on one end and Hi-Lo on the other end of the continuum.	Coefficient of variation: standard deviation of the brand price divided by its mean over all the weeks (reverse coded in sign so that large numerical values imply less variation).	−0.05 (0.04)
Deal intensity	Four variables/measures	
The depth, frequency, and duration of price cuts or deal discounts for a given brand at the retail level.	(1) Deal depth 1: average deal depth (in cents) across all weeks,	0.12 (0.06)
	(2) Deal depth 2: average deal depth (in cents) across only deal weeks,	0.38 (0.17)
	(3) Deal frequency: percentage of weeks with deals,	0.35 (0.19)
	(4) Deal duration: average deal duration (in weeks).	0.11 (0.15)
	Each brand-store average is normalized by dividing by the category average to make it comparable across brand-stores.	
Deal support	Three variables/measures	
Complementary feature and/or display decisions for a given brand.	(1) Feature and deal: percentage of weeks with feature and deal,	0.08 (0.04)
	(2) Display and deal: percentage of weeks with display and deal,	0.06 (0.06)
	(3) Feature, display and deal: percentage of weeks with feature, display and deal.	0.03 (0.03)

^a Single overall measures for deal intensity and deal support are created by averaging the listed measures.

brand-store combination. Second, most prior studies view pricing policy as a dichotomous variable (EDLP or Hi-Lo). However, recent evidence suggests that EDLP and Hi-Lo maybe opposite ends of a continuum of pricing policy (e.g., Hoch et al., 1994), so we measure each retailer pricing decision on a continuum. Third, although price variation refers to stable prices, many retailers that have stable prices, have low stable prices, to stay competitive (e.g., Wal-Mart, Food Lion, and Lucky). Hence, we consider the brand's relative price level, as well as price variation. Fourth, we believe that promotion—both deal intensity and support—are important aspects of retailer pricing decisions. Thus, we identify four pricing dimensions and develop multiple measures to describe decisions at the brand-store level. Pricing dimensions, associated and descriptive statistics are displayed in Table 2.

Relative price

To develop measures of retailer pricing decisions, we begin by distinguishing between “pure price” and “promotion” decisions. A retailer's pricing strategy for a brand includes two pure price decisions: price level and price variation. First, we consider how to measure the retailer's decision about a brand's price level. Different stores have different price premiums or discounts for a brand relative to (category-level) reference prices. For example, a supermarket located in an upscale neighborhood may have a different price level for a particular brand than does a supermarket in a blue-collar neighborhood relative to category prices at the stores (Hoch et al., 1995). Hence, we measure the relative price of a brand as the average (over weeks in the store) of

the ratio of the brand price divided by the weighted average of all brand prices (where the weights are market shares of the brands within the category in that store), consistent with Bolton (1989). This measure can be interpreted as follows. Since we consider price level for a brand *relative to other brands in the category*, we are implicitly choosing to measure reference price effects that operate across brands and stores within a category. This feature is useful because consumer reference price is frequently considered to be a critical component of the price level for a brand at a given store over time (Winer, 1986), where reference prices influence brand choice at the retail level (Kumar, 1998). Note that we do not measure absolute price levels because they cannot be pooled and compared across the units of analysis (stores, brands, etc.).

Price variation

Second, we measure the price variation for a brand in a store by calculating the coefficient of variation (i.e., the ratio of the standard deviation of actual price over the mean actual price) for the period of the data (Shankar & Krishnamurthi, 1996). The value for a brand-store pair is a dimensionless ratio that enables to compare across different brand-store combinations. The less variation in price for the brand-store pair, the closer the ratio is to zero.

Deal intensity

A retailer's pricing strategy for a brand includes two promotion decisions: deal intensity (deal depth, frequency, and duration) and deal support (feature, display, both or neither) decisions. First, manufacturers offer trade deals that chains

Table 3
Correlation matrix of pricing measures^a

	Relative price	Price variation	Deal intensity				Deal support		
			Deal depth (all weeks)	Deal depth (deal weeks)	Deal frequency	Deal duration	Feature support	Display support	Feature and display support
Relative price	1	-0.04		-0.02					0.11
Price variation	-0.04	1		-0.07					0.06
Deal depth (all weeks)	-0.14	0.02	1						
Deal depth (deal weeks)	-0.05	-0.07	0.45	1					0.32
Deal frequency	0.01	0.07	-0.36	-0.46	1				
Deal duration	0.06	-0.14	0.17	0.12	-0.49	1			
Feature support	-0.11	0.10	-0.17	-0.07	0.39	-0.26	1		
Display support	-0.09	0.20	-0.10	-0.15	0.30	-0.28	0.51	1	
Feature and display support	-0.09	0.16	-0.17	-0.19	0.31	-0.28	0.64	0.83	1

^a The numbers in bold represent the correlation among the four dimensions, namely, relative price, price variation, deal intensity, and deal support.

(or stores) may pass along to customers—thereby influencing the pricing strategies of a store and its competitors. Stiff competition and value-driven consumers have created an environment marked by high markdowns and promotions (Kumar & Pereira, 1997; Levy, 1999). Thus, retailers’ pricing strategies include decisions on deal intensity—that is, the depth, frequency and duration of deals—ultimately determining the final price paid by the consumers for a brand. These decisions have important effects on the variability in category sales. Higher deal depth, greater deal frequency, and longer deal duration reflect higher overall deal intensity for a brand in a given category and store. These tactical decisions are interrelated for a given brand or category (Alba et al., 1994) and may be different for different brands within a category (Tellis & Zufryden, 1995), across categories and across stores. For example, deal frequency and deal magnitude may be negatively correlated for some brands (Alba et al., 1994). Hence, we calculate four measures of deal intensity: two measures of average deal depth (average over all weeks and average over only deal weeks), deal frequency and deal duration.

Deal support

Second, a retailer’s pricing strategy for a brand includes support of price discounts with newspaper features or displays (or both) during some weeks, but not in other weeks (Blattberg & Neslin, 1989, 1990; Inman & McAlister, 1993).

Deals, if supported by features or displays, may benefit both consumers (nearly half of whom are non-vigilant about prices) and the retailer (Dickson & Sawyer, 1990). We believe that the deal support across multiple brands within a category and across categories in a given store is an important complementary aspect of retailers’ pricing decisions. Retailers who provide higher deal support for a brand have a higher incidence of features and displays. We calculate three different measures of deal support: proportion of weeks with feature support, proportion of weeks with display support, and proportion of weeks with feature and display support.

Thus, we are able to obtain nine retail pricing measures from the data base: relative price, price variation, depth of deals during all weeks, deal depth during promoted weeks, frequency of deals, duration of deals, proportion of weeks with feature support, proportion of weeks with display support, and proportion of weeks with feature and display support (see Tables 2 and 3). Since our focus is on stable pricing dimensions and strategies, all nine measures are calculated over a two-year period.

Underlying pricing dimensions identified from the principal components analysis

Seven of the nine measures concern promotion decisions (deal intensity and support), rather than price decisions. Since there is likely to be redundancy in these measures, we

Table 4
Principal components analysis results

Variable	Factor1 (deal intensity) λ	Factor 2 (deal support) λ
Average deal depth across all weeks	0.72	0.31
Average deal depth across only deal weeks	0.71	0.10
Deal frequency	0.83	0.35
Deal duration	0.81	0.09
Percentage of weeks with feature and deal	0.06	0.87
Percentage of weeks with display and deal	0.08	0.80
Percentage of weeks with feature, display, and deal	0.06	0.93
Eigenvalue	2.38	2.51
Percent variance explained	30	40

Table 5
Pricing strategies and the mean scores on the dimensions (clustering by brand-store)^a

Cluster number (size)	Pricing dimensions (pricing strategy/cluster)	Relative price	Price variation	Deal intensity	Deal support
1 (102)	Exclusive pricing (7.5%)	1.407 (high)	0.048 (medium)	0.193 (low)	0.019 (low)
2 (192)	Moderately Promotional pricing (14.1%)	1.145 (average)	0.047 (medium)	0.309 (medium)	0.050 (medium)
3 (153)	Hi-Lo pricing (11.2%)	1.007 (average)	0.051 (high)	0.441 (high)	0.095 (high)
4 (613)	EDLP pricing (44.9%)	0.984 (average)	0.042 (low)	0.262 (medium)	0.061 (medium)
5 (304)	Aggressive pricing (22.3%)	0.792 (low)	0.052 (high)	0.243 (low–medium)	0.041 (medium)

^a Based on 1,364 brand-store combinations. Low, medium (average), and high labels are based on median scores on each dimension.

381 conducted a PCA, with a varimax rotation, to identify their
382 underlying dimensions. The results are displayed in Table 4.
383 As expected, we obtained two factors that explained 70% of
384 the variance. They are:

- 385 • *Deal intensity* and deal depth (both measures), deal fre-
386 quency, and duration of deals.
- 387 • *Deal support*: frequency of deal and feature, deal and
388 display, and deal, feature, and display.

389 Our measures of deal intensity and support are similar to
390 those used by Kumar, Ghosh, and Tellis (1992) in their study
391 of repeat purchase behavior.

392 The PCA results indicate that retailers intensively pro-
393 mote some brands or categories (i.e., higher composite of
394 deal depth, frequency, and longer duration) and do not pro-
395 mote others. They also indicate that retailers coordinate the
396 price and promotional activities in some brands or categories
397 much more closely than they do in others. Thus, deal inten-
398 sity and deal support—together with relative price and price
399 variation (each measured by a single item)—can be con-
400 sidered to represent four underlying dimensions of retailing
401 pricing strategies.⁵ For the purposes of this study, we chose
402 to measure deal intensity and deal support by three and four
403 item additive indices, respectively. We used additive indices
404 rather than factor scores because these are more easily in-
405 terpretable by managers.

406 *Examining the variability in the underlying pricing* 407 *dimensions*

408 We verified that there is considerable variability in
409 retailer's positions on these four dimensions and that the
410 underlying pricing dimensions are relatively distinct (i.e.,
411 non-overlapping) in the following way. First, we conducted
412 an analysis of variance (ANOVA) for each pricing dimen-
413 sion to test for differences across stores. The *F*-statistic
414 for each dimension was significant at $p < .001$. The R^2
415 ranged from a low of .20 for relative price to a high of
416 .43 for deal intensity. Thus, our ANOVA results indicated
417 the four retailer pricing dimensions (at the brand level) are

⁵ PCA results need not have conformed to the deal intensity and support classification scheme that was used in developing the measures. For example, a single factor might have been uncovered, or display items might have loaded together on one factor.

418 significantly different across the stores (including stores 418
419 within the same chain). We conducted the same analysis for 419
420 chains, and also found significant differences. 420

421 Next, we investigated the inter-relatedness of these four 421
422 pricing dimensions by calculating their correlations. The 422
423 correlations among the nine pricing measures, and the four 423
424 underlying pricing dimensions, are shown in Table 3. The 424
425 correlation of relative price with the other three underlying 425
426 dimensions is as follows: price variation (.04), deal intensity 426
427 (−.02) and deal support (.11). The correlation of price varia- 427
428 tion with the remaining dimensions is as follows: deal inten- 428
429 sity (−.07) and deal support (.16). The correlation of deal in- 429
430 tensity with deal support is the largest (.32) because the exis- 430
431 tence of some level of promotion is a necessary condition for 431
432 the existence of any deal support. Thus, the dimensions are 432
433 generally independent, although (not surprisingly) the corre- 433
434 lation between deal intensity and deal support is the highest.⁶ 434

435 **Types of retailer pricing strategies**

436 Retailers may choose different combinations of dimen- 436
437 sions, resulting in different types of pricing strategies. These 437
438 strategies may be specific to a brand-store combination or 438
439 simply to the store. Some strategies may be more prevalent 439
440 than others. To identify these strategies, we performed clus- 440
441 ter analyses at both the brand-store and the store levels. 441

442 *Brand-store-level strategies*

443 The results from the *k*-means cluster analysis for 443
444 brand-store combinations appear in Table 5.⁷ The results of 444
445 an analysis of variance indicate that the means of all the 445
446 four dimensions are significantly different ($p < .05$) across 446
447 the five clusters.⁸ 447

⁶ If our analyses use factor scores (rather than additive indices) to represent the pricing dimensions, we obtain substantively the same results. The reason is that the additive indices are (almost) uncorrelated, as the factors scores are (by definition).

⁷ Due to space limitations, only the aggregate results are shown. We also did a hierarchical cluster analysis (Ward's method). The results were similar.

⁸ The *F* tests described in this paper are used only for descriptive purposes and strictly speaking, cannot be interpreted as tests of the hypothesis that the cluster means are equal (Aldenderfer & Blashfield, 1984).

448 There are five clusters of pricing and promotion strate- 492
 449 gies at the brand-store level, labeled: Exclusive, Moder- 493
 450 ately Promotional, Hi-Lo, EDLP, and Aggressive pricing 494
 451 strategies. Table 5 shows a description of each strategy in 495
 452 terms of the combinations of pricing dimensions. It also 496
 453 shows the distribution of brand-store combinations across 497
 454 the five clusters, as well as each cluster's mean scores on 498
 455 each of the pricing dimensions. We classified each of the 499
 456 brand-store combinations as high, medium (average), or low 500
 457 on each of the four pricing dimensions based on their median 501
 458 scores. 502

459 A Hi-Lo pricing strategy (11.2%) is characterized by av- 503
 460 erage relative price, high price variation, high deal intensity, 504
 461 and high deal support. We use this term because this strategy 505
 462 is comparable to a storewide Hi-Lo pricing strategy, albeit at 506
 463 the brand-store level. This combination of dimensions and 507
 464 levels seems intended to make a retailer competitive with 508
 465 its rivals primarily through promotions. In other words, re- 509
 466 tailers use in-store merchandising within categories to price 510
 467 discriminate (Dhar & Hoch, 1997). Analogously, our EDLP 511
 468 pricing strategy (45%) consists of average relative price, low 512
 469 price variation, moderate deal intensity, and moderate deal 513
 470 support. As above, we use this term because this pricing 514
 471 strategy is comparable to a storewide EDLP strategy, albeit 515
 472 at the brand-store level. This combination of dimensions 516
 473 seems intended to offer value to customers. 517

474 Hi-Lo pricing and EDLP pricing are used by about half 518
 475 (56%) the brands in our database. However, the pricing and 519
 476 promotional strategies of almost half (44%) the brands in 520
 477 our stores do not correspond to practices currently recog- 521
 478 nized by marketing scholars and practitioners. For example, 522
 479 Aggressive pricing—which is utilized by nearly one-fourth 523
 480 (22%) of all brands in our stores—is not reported in the 524
 481 business press. With an Aggressive pricing strategy, retailers 525
 482 offer low prices and medium deal support, accompanied by 526
 483 high price variation and low–medium deal intensity—price 527
 484 rather than deal is used to greater extent as the weapon in this 528
 485 strategy. In summary, while chains and stores may use these 529
 486 positioning or signaling strategies, retailers practice differ- 530
 487 ent strategies at the brand-store level. Conventional wisdom 531
 488 states that retailers practice two pricing strategies along a 532
 489 continuum: EDLP and Hi-Lo pricing strategies. However, 533
 490 we do *not* find that EDLP and Hi-Lo strategies represent an 534
 491 underlying continuum. Instead, the strategies we uncovered 535

are combinations of the four independent pricing dimen- 492
 sions, where each dimension is a separate continuum. 493

EDLP pricing and Aggressive pricing are the most com- 494
 monly adopted pricing strategies at a brand-store level. We 495
 believe this reflects the competitive nature of the retail- 496
 ing landscape. Moderately Promotional pricing (14.1%)— 497
 corresponding to an undifferentiated strategy—is also fairly 498
 common. In contrast, Exclusive pricing (7.5%) is the least 499
 adopted strategy. Since it is characterized by low deal in- 500
 tensity, low deal support, and a high brand premium, this 501
 strategy can only be profitable for a small number of brands. 502
 We speculate that it is only appropriate for brands with high 503
 brand equity and manufacturer advertising. 504

Store-level strategies 505

The results from the *k*-means cluster analysis for store 506
 level appear in Table 6. There are five clusters of pricing and 507
 promotion strategies at the store level. We have labeled them: 508
 Exclusive, Premium, Hi-Lo, Low, and Aggressive pricing 509
 strategies. Table 6 shows the combinations of pricing dimen- 510
 sions for each pricing strategy. It also shows the distribution 511
 of stores across the five clusters, as well as each cluster's 512
 mean scores on each pricing dimension. Based on the re- 513
 sults from an analysis of variance, the means of all the four 514
 dimensions are significantly different ($p < .05$) across the 515
 five clusters. 516

The five clusters of pricing and promotion strategies at 517
 the store level are different from the five clusters identified 518
 in the brand-store-level analysis. Two clusters are somewhat 519
 similar at both levels: Hi-Lo (9.0%) and Exclusive pricing 520
 strategies (2.3%). Note that both these strategies are infre- 521
 quently practiced. The Hi-Lo strategy is characterized by 522
 high deal intensity and support, but it has medium price 523
 variation (*vis-à-vis* the brand-store case that is marked by 524
 high price variation). As expected, Exclusive pricing (2.3%) 525
 at the store level is the least adopted strategy because it 526
 is likely to be appropriate only for stores with upscale im- 527
 age and high-end clientele. The remaining three store-level 528
 strategies do not correspond to brand-store-level strategies. 529
 Hi-Lo and Low pricing are used by about half (52%) the 530
 stores in our database. Similar to the brand-store-level anal- 531
 ysis, the pricing and promotional strategies of almost half 532
 (48%) the stores do not correspond currently recognized to 533

Table 6
 Pricing strategies and the mean scores on the dimensions (clustering by store)^a

Cluster number (size)	Pricing dimensions (pricing strategy/cluster)	Relative price	Price variation	Deal intensity	Deal support
1 (5)	Exclusive pricing (2.3%)	1.402 (high)	0.012 (low)	0.150 (low)	0.023 (low)
2 (25)	Premium pricing (11.8%)	1.167 (high)	0.044 (medium)	0.275 (medium)	0.052 (medium)
3 (19)	Hi-Lo pricing (9.0%)	1.062 (average)	0.043 (medium)	0.380 (high)	0.082 (high)
4 (91)	Low pricing (42.9%)	0.922 (low)	0.045 (medium)	0.259 (low)	0.058 (medium)
5 (72)	Aggressive pricing (34.0%)	1.019 (average)	0.049 (high)	0.265 (low)	0.050 (medium)

^a Based on average scores of dimensions across brands in 212 stores. Low, medium (average), and high labels are based on median scores for each pricing dimension.

533 practices. These other strategies include Premium pricing
534 (11.8%), Aggressive pricing (34.0%), and Exclusive pricing
535 (2.3%).

536 Low pricing and Aggressive pricing strategies are adopted
537 by over three-fourths of the stores, reflecting the compet-
538 itive retail environment. For example, there is no strategy
539 corresponding to an EDLP pricing strategy cluster at the
540 store level. Among the five strategies identified at the store
541 level, the strategy closest to the commonly used term,
542 EDLP strategy, is Low pricing (42.9%)—but price variation
543 is moderate, not low, as the phrase “everyday low price”
544 would suggest. Again, we do *not* find that EDLP and Hi-Lo
545 strategies represent an underlying continuum. Instead, the
546 strategies we have uncovered are combinations of the four
547 independent pricing dimensions, where each dimension is
548 a separate continuum.

549 The strategies identified herein are consistent with pricing
550 practices of retailers as gathered from depth interviews with
551 managers (who wish to remain anonymous) of four retail
552 chains in our sample. Based on our interviews, the pricing
553 practice at a retail chain can be generally summarized as
554 follows. A chain classifies its stores into geodemographic
555 groups primarily based on location, demographics, and com-
556 petition. A chain has umbrella categories and categories (as
557 described earlier), with category managers for each. Each
558 category manager plans broad pricing strategies for her/his
559 category—and brands within it—including regular price
560 point and promotion type and level based on factors such
561 as past history, competition, and trade deals. These broad
562 strategies are made for key brands and stores, and include
563 such strategies or low stable prices (EDLP), or frequent pro-
564 motions (Hi-Lo) or maintenance of exclusive image/price.
565 Although the retailers we interviewed did not quite use
566 terms like Exclusive pricing and Aggressive pricing, they
567 do think along these lines by brand and store. For example,
568 some of the terms that we heard category managers use to
569 denote Aggressive pricing included “Sensitive pricing” and
570 “Deep” pricing. These pricing strategies are then translated
571 into specific decisions such as regular price, deal discounts,
572 and feature for all brands and all stores within the chain at
573 a weekly level based on some decision calculus—typically
574 through spreadsheets that involve adjustments to past pe-
575 riod decisions. Thus, we concluded that there is some face
576 validity to the identified pricing strategies.

577 *Summary*

578 Both brand-store and brand-level cluster analyses reveal
579 that retailers adopt a variety of pricing strategies that extend
580 beyond the conventional Hi-Lo and EDLP strategies. Some
581 strategies are more frequently adopted at the brand-store
582 level than at the store level and *vice-versa*. The distinctive na-
583 ture of the brand-store pricing strategies underscores the fact
584 that retailers customize their pricing strategies at the more
585 fundamental brand-store level, in addition to the store level.
586 Classification of retailer pricing strategies at the store level

cannot reveal these differences. Thus, our results suggest a
new level of complexity in pricing strategies, thereby extend-
ing Lal and Rao’s (1997) theoretical insight that retailers’
pricing strategies are based on a basket of brands and cat-
egories. They also extend Dhar, Hoch, and Kumar’s (2001)
finding that retailer pricing is not just storewide, but is
category-specific to show that retailer pricing is brand-store
specific. Surprisingly, when retailer pricing is considered at
the brand-store level, the most prevalent strategy is not Hi-Lo
as is widely believed at the store level. It is one characterized
by average relative brand price, low price variation, medium
deal intensity, and medium deal support.

Discussion of managerial implications

We have extended earlier research on the nature of
retailers’ pricing strategies in three ways. First, we have em-
pirically identified three new pricing dimensions—relative
price, deal intensity, and deal support—that complement
earlier research that has focused on pricing policy or price
variation (Hoch et al., 1994; Shankar & Krishnamurthi,
1996). The four pricing dimensions characterize pricing
strategy for a diverse set of brands, categories, stores and
geographic regions. Second, our results show that retail-
ers pricing practices vary within the same store—stores
do not follow uniform pricing practices across brands and
categories. Third, we have empirically described retailers
diverse pricing strategies (combinations of different levels
of dimensions)—with value pricing and aggressive pricing
are most prevalent—providing some empirical support for
Levy and Weitz’s (1998) observation of pricing diversity.

Pricing strategies are multi-dimensional

Prior research has focused exclusively on a single
dimension—price variation (i.e., EDLP vs. Hi-Lo pricing)—
implying a single pricing continuum. By examining a
broader set of measures, our results show that retailer pric-
ing strategies reflect a richer set of dimensions—including
relative price, deal intensity, and deal support. Each of these
dimensions is continuous, and can be combined with any
level of another dimension. Depending on the combina-
tion of the levels of these dimensions, retailers can utilize
diverse pricing strategies at the brand-store level—i.e., an
undifferentiated strategy such as Moderately Promotional
pricing, niche strategies such as Exclusive or Aggressive
pricing, or mass-customized strategies such as Hi-Lo and
EDLP pricing.

Underlying pricing dimensions are stable, but pricing strategies are brand-store specific

Although four pricing dimensions can be used to char-
acterize all retail pricing decisions, retailers do not use
the same pricing strategies for different brands, categories,

636 stores, and geographic regions. For example, a retailer will
 637 not necessarily offer consistently low prices for all brands
 638 and categories in a given market place. This result implies
 639 that retailers are using their intimate knowledge of brands
 640 and markets to customize their pricing strategies—either
 641 to stimulate the purchases of promotion merchandise or to
 642 encourage regular price merchandise purchases on the same
 643 shopping trip. Hence, there is an opportunity for manufactur-
 644 ers to develop and exploit information about retailers’
 645 pricing strategies across brands and categories to become
 646 a “category captain,” to support their brands with targeted
 647 marketing efforts, and to build better relationships with
 648 retailers. As a category captain for a retail chain, a manu-
 649 facturer, with its resources, can help the retailer better plan
 650 its pricing and promotions for all the brands in that category
 651 (based on store-level data) that moves the retailer toward a
 652 desirable pricing strategy for the manufacturer’s brands. For
 653 example, Johnson (1999) makes some pragmatic recom-
 654 mendations regarding how manufacturers can manage their
 655 brands when retailers begin to move toward a EDLP pricing
 656 strategy. For example, she suggested the manufacturer avoid
 657 price-related promotions and move toward on-pack promo-
 658 tions (e.g., collectibles linked to manufacturer advertising)
 659 that would attract switching consumers.

660 *Retailer pricing strategy is not restricted to EDLP or*
 661 *Hi-Lo pricing strategies*

662 Prior research and conventional wisdom assume that re-
 663 tailer pricing strategies fall under one of EDLP and Hi-Lo
 664 pricing strategies. This view of retailer pricing strategy is
 665 primarily at the store or chain level and is largely driven by
 666 the store or chain positioning. Chains typically communicate
 667 or signal their pricing policy as one of these two strategies.
 668 For example, Wal-Mart’s positioning slogan, “Low prices,
 669 always,” indicates an EDLP strategy. Similarly, Food Lion
 670 and Lucky have also positioned themselves as EDLP chains.
 671 However, the number of chains with EDLP positioning is
 672 small. Most of the grocery retail chains in the United States
 673 are positioned as Hi-Lo pricing chains (Partch, 1992). For
 674 example, 15 out of the 17 chains in our data base are posi-
 675 tioned as Hi-Lo chains (as determined by our examination
 676 of the company’s annual reports and other publicly available
 677 documents).

678 Our analysis of pricing decisions in 17 chains, 212 stores,
 679 six categories and five markets reveal some surprising in-
 680 sights about how retailers depart from overall Hi-Lo pricing
 681 and promotion strategies when they customize their deci-
 682 sions for a particular brand and store. First, it shows that at
 683 the brand-store level, retailers practice five types of pricing
 684 strategies, which we label as Exclusive, Moderately Promo-
 685 tional, Hi-Lo, EDLP, and Aggressive pricing—not just two
 686 types of pricing strategies as is widely believed. Second, an
 687 interesting finding is that the most prevalent pricing strategy
 688 is not any strategy close to Hi-Lo pricing strategy as casual
 689 observation of chains and their pricing may suggest. It is

a pricing strategy that is closer to EDLP strategy than any
 other strategy. The second most prevalent strategy, Aggres-
 sive pricing, is not close to a Hi-Lo pricing strategy either.
 These findings point out that although retailers may signal
 to consumers a positioning strategy of EDLP or Hi-Lo pric-
 ing strategy at the store or chain level, they actually engage
 in different pricing strategies at the brand-store level.

This apparent contradiction can be explained by the fact
 that EDLP is simpler to communicate internally and eas-
 ier to implement. However, Dolan and Simon (1996) ob-
 serve that pricing decisions—as opposed to other market-
 ing decisions—are the key to profitability for most com-
 panies, and nowhere is this more evident than in retailing
 with its accompanying razor-thin margins. Thus, retailers
 must become proactive—rather than passive price-takers—
 customizing price at the brand-store level to local condi-
 tions. This argument is particularly compelling for retail-
 ers who encounter dramatic differences in profitability as-
 sociated with different store-wide pricing policies (Hoch
 et al., 1994). Our study extends this argument by showing
 alternative ways that retailers—and their competitors—can
 (and do) customize their own pricing and promotion strate-
 gies to different brands and stores. Retailers should closely
 monitor competitor behavior—at specific stores, for specific
 brands—to see what pricing strategy is being adopted for a
 particular brand at a specific store. Only then, they can form
 reasonable managerial expectations about their competitor
 pricing, and develop their own strategies. In particular, the
 theoretical literature on price promotions emphasizes that
 competition among retailers is a critical determinant of op-
 timal pricing strategies (cf. Pesendorfer, 2002).

This study can help retailers better understand their cur-
 rent pricing strategies across brands and stores. We believe
 that our results generalize to other supermarket brands and
 categories because our analyses are based on a census of
 brands and stores in a representative cross-section of cat-
 egorical roles and markets. Hence, these results provide a
 benchmark for assessing an individual store’s pricing deci-
 sions. For example, retailers can use our taxonomy to clas-
 sify their pricing strategy for a particular brand-store com-
 bination (or store), and then compare it with the clusters of
 retailer pricing strategies described in Tables 5 and 6. This
 benchmarking procedure allows the retailer to think about
 how his/her pricing strategies may differ from competitors’
 pricing strategies. Retailers have pricing latitude when they
 differentiate themselves along non-pricing dimensions (e.g.,
 by coordinating price and promotion, emphasizing different
 categories, serving different clientele). Consequently, we ob-
 serve a diverse set of pricing strategies that are (apparently)
 successful in the marketplace.

A retail store can observe its closest competitor store’s
 pricing and promotion decisions over a period of time and
 infer the competitor’s pricing strategy. For example, in our
 data, a store in a non-metro market can observe that its
 closest competitor store (mid-large sized store belonging to
 a medium sized chain), for a leading brand of bleach, has

relative price of 0.993, price variation of 0.297, deal intensity of 0.488, and deal support of 0.182. Using Table 5, the store can infer that this observed pricing corresponds closest to a Hi-Lo strategy for this brand. However, there is an important caveat to such inferences. The retailer must be sensitive to the fact that retailer pricing strategies within a given market are interdependent. In other words, when a retailer observes its closest competitor's pricing and promotion decisions, it may well be observing some of the competitor's reactions to its own pricing (Coughlan & Mantrala, 1994; Dickson & Urbany, 1994; Shankar & Bolton, 2002). This paradox raises interesting questions for future research.

Nevertheless, based on the previous discussion, a retailer can develop useful benchmarks for its pricing and promotion strategies for each category through the following approach that could be undertaken by the appropriate category manager.

- Observe and record the weekly prices and deal depth of each brand-size within the category for each competitor, over a reasonable long time frame (typically a year to account for seasonality, holidays, and special events).
- Compute measures of the underlying pricing dimensions as specified in Table 2 (brand price can be computed as an average of price per unit weight across all the brand sizes. In the absence of market-share data of each brand at competitor stores, market shares of those brands in own store can be used as proxy).
- Classify the pricing strategy for each brand at each competitor store based on Table 5.
- Get a broader picture of the competitor pricing strategy for that category by comparing the pricing strategies across brands within the category across all competitor stores.
- Choose own pricing strategy for each brand within the category from the diverse set of possible combinations of levels of pricing dimensions based on how the strategy will match up with the closest competitors' pricing strategies.
- Observe and record changes in competitors' pricing strategies in response to own pricing strategies over the long-term (at least one quarter).
- Respond to competitors' reactions for those brands that may be appropriate in the long-term.

787 Limitations and future research

This study has limitations that suggest some interesting opportunities for future research. First, we believe that an important practical extension of our work would be the development of deal depth and deal support benchmarks for manufacturers and retailers.⁹ These benchmarks might describe the relative incidence of different deal depths and deal support levels. For example, a retailer might find it useful to know the percentage of deals that have (a) a deal depth

of 5% or less and (b) are accompanied by features only. This statistic could be accompanied by summary measures of the average deal duration and average time between promotions. This information could also be provided for categories and stores in different geographic regions, as well as broken down by category types (e.g., "destination category") and store types (e.g., "large urban store"). Such benchmark information would make it possible to say which pricing strategies are most prevalent for which categories (e.g., destination or support categories)—and describe exactly how they are implemented by retailers.

Second, this study describes five retailer pricing strategies—but it does not assess their profitability. Subsequent research might explore when and how these strategies are employed—and assess the profitability of implementing these strategies for different brands, categories and stores. Third, it would be useful to develop a model of optimal retailer pricing that extends Achabal et al.'s (1990) and Tellis and Zufryden's (1995) models of optimal depth and timing of promotions to include regular price decisions. The model by Shankar and Krishnamurthi (2003) is a step in this direction.

Fourth, our ability to generalize from our findings is limited by our data sources. Although the categories and markets we studied were reasonably diverse and the retail chains among the largest in the United States, it would be desirable if future research could replicate the study using a probability sample of categories and markets. Fifth, in the same way that Noble and Gruca (1999) broke new ground in industrial pricing, it would be particularly useful for researchers to investigate new domains, such as the pricing and promotion of non-grocery retailers, and of services. Sixth, retailer pricing in response to major retail competitive events may be quite different from retailer pricing in the stable environments that we studied. For example, Kroger and Safeway retail chains have drastically cut prices in response the entry of "Neighborhood Markets" grocery chain from Wal-Mart (Business Week, 2002). Studying such pricing decisions will contribute to a deeper understanding of retailer pricing strategies, and the dynamic way that they unfold.

Uncited references

Business Week (2001), Kahn and McAlister (1997), Neslin et al. (1994), and Weinstein (2000).

Acknowledgements

We thank the editors, three anonymous reviewers, and participants at presentations at Harvard University and INSEAD for useful comments. We also thank the Marketing Science Institute (MSI) for financial support, and Information Resources, Incorporated and the A.C. Nielsen Company for contributing the data sets. Our thanks are also due to

⁹ We are indebted to an anonymous reviewer for this suggestion.

846 Valerie Durrant, Xing Pan, and Ying-Ping Yu for their as-
847 sistance in assembling the data.

848 References

- 849 Achabal, Dale D., Shelby, McIntyre, & Smith, S. A. (1990, Winter). Max-
850 imizing profits from periodic department store promotions. *Journal of*
851 *Retailing*, 66(4), 383–407.
- 852 Alba, Joseph W., Broniarczyk, Susan M., Shimp, Terence A., & Urbany,
853 Joel E. (1994). The influence of prior beliefs, frequency cues, and
854 magnitude cues on consumers' perceptions of comparative price data.
855 *Journal of Consumer Research*, 21(2), 219–235.
- 856 Aldenderfer, M., & Blashfield, Roger. (1984). *Cluster analysis*. Beverly
857 Hills, CA: Sage Publications.
- 858 Ailawadi, Kusum L., Neslin, Scott A., & Gedenk, Karen. (2001). Pursuing
859 the value conscious consumer: Store brand versus national brand
860 promotions. *Journal of Marketing*, 65(1), 71–89.
- 861 Basuroy, Suman, Mantrala, Murali, & Walters, Rockney. (2001). The
862 impact of category management on retail prices and performance:
863 Theory and evidence. *Journal of Marketing*, 65(4), 16–32.
- 864 Bell, David R., & Lattin, James M. (1998). Grocery shopping behavior
865 and consumer response to retailer price format: Why 'Large Basket'
866 shoppers prefer EDLP. *Marketing Science*, 17(1), 66–88.
- 867 Bell, David R., Ho, Teck-Hua, & Tang, Christopher S. (1998, August).
868 Determining where to shop: Fixed and variable costs of shopping.
869 *Journal of Marketing Research*, 35, 352–369.
- 870 Blattberg, Robert C., & Neslin, Scott A. (1989). Sales promotion: The
871 long and short of it. *Marketing Letters*, 1(2), 81–97.
- 872 Blattberg, Robert C., & Neslin, Scott A. (1990). *Sales promotions:*
873 *Concepts, methods, and strategies*. Englewood Cliffs, NJ: Prentice
874 Hall.
- 875 Bolton, Ruth. (1989, Winter). Relationship between market characteristics
876 and promotional price elasticities. *Marketing Science*, 10(1), 24–39.
- 877 Business Week. (2001, December 10). *Retail reckoning* (pp. 73–77).
- 878 Business Week. (2002, April 15). *Wal-Mart is eating everybody's lunch*
879 (p. 43).
- 880 Coughlan, Anne T., & Mantrala, Murali K. (1994). Dynamic competitive
881 retail pricing with uncertainty and learning. *Managerial and Decision*
882 *Economics*, 15(1), 3–20.
- 883 Day, G. S. (1994, October). The capabilities of market-driven organiza-
884 tions. *Journal of Marketing*, 58, 37–52.
- 885 Dhar, Sanjay K., & Hoch, Stephen J. (1997). Why store brand penetration
886 varies by retailer. *Marketing Science*, 16(3), 208–227.
- 887 Dhar, Sanjay K., Hoch, Stephen J., & Kumar, Nanda. (2001). Effective
888 category management depends on the role of the category. *Journal of*
889 *Retailing*, 77(2), 165–184.
- 890 Dickson, Peter R., & Sawyer, Alan G. (1990, July). The price knowledge
891 and search of supermarket shoppers. *Journal of Marketing*, 54, 42–53.
- 892 Dickson, Peter R., & Urbany, Joel. (1994, Spring). Retailer's reaction to
893 a competitor's price change. *Journal of Retailing*, 70, 1–22.
- 894 Dolan, R. J., & Simon, H. (1996). *Power pricing: How managing price*
895 *transforms the bottom line*. New York: The Free Press.
- 896 Fader, Peter, & Lodish, Leonard M. (1990, October). A cross-category
897 analysis of category structure and promotional activity for grocery
898 products. *Journal of Marketing*, 54, 52–65.
- 899 Farris, Paul, & Albion. (1981). *The effect of manufacturer advertising on*
900 *retail prices* (MSI Working Paper).
- 901 Hoch, Stephen J., Dreze, Xavier, & Purk, Mary. (1994). The EDLP,
902 Hi-Low, and margin arithmetic. *Journal of Marketing*, 58, 16–27.
- 903 Hoch, Stephen J., Kim, Byung Do, Montgomery, Alan, & Rossi, Peter.
904 (1995). Determinants of store-level price elasticity. *Journal of Mar-*
905 *keting Research*, 32, 17–29.
- 906 Hulbert, J. (1981). Descriptive models of marketing decisions. *Marketing*
907 *decision models* (pp. 19–53). New York: North Holland.

- Inman, J. Jeffrey, & McAlister, Leigh. (1993, Fall). A retailer promotional
908 policy model considering promotion signal sensitivity. *Marketing Sci-*
909 *ence*, 12(4), 339–356. 910
- Johnson, Maureen. (1999). From understanding consumer behavior to
911 testing category strategies. *Journal of the Marketing Research Society*,
912 41(3), 259–288. 913
- Kahn, Barbara E., & McAlister, Leigh. (1997). *Grocery revolution: The*
914 *new focus on the consumer*. Reading, MA: Addison-Wesley. 915
- Kirande, Kiren W., & Kumar, V. (1995). The effect of brand characteristics
916 and retail policies on response to retail price promotions: Implications
917 for retailers. *Journal of Retailing*, 71(3), 249–278. 918
- Kumar, Pankaj, & Divakar, Suresh. (1999). Size does matter: Analyz-
919 ing brand-size competition using store level scanner data. *Journal of*
920 *Retailing*, 75(1), 59–76. 921
- Kumar, V. (1998). The impact of internal and external reference prices
922 on brand choice: The moderating role of contextual variables. *Journal*
923 *of Retailing*, 74(3), 421–426. 924
- Kumar, V., Ghosh, Amit, & Tellis, Gerard J. (1992). A decomposition of
925 repeat buying. *Marketing Letters*, 3(4), 407–417. 926
- Kumar, V., & Pereira, Arun. (1997). Assessing the competitive impact of
927 type, timing, frequency and magnitude of retail promotions. *Journal*
928 *of Business Research*, 40(1), 1–14. 929
- Kumar, V., & Leone, Robert. (1988). Measuring the effect of retail store
930 promotions on brand and store substitution. *Journal of Marketing*
931 *Research*, 25(2), 178–185. 932
- Lal, R., & Narasimhan, . (1995). The inverse relationship between manu-
933 facturer and retailer margins: A theory. *Marketing Science*, 15(2),
934 132–151. 935
- Lal, R., & Villas-Boas, J. Miguel. (1998). Price promotions and trade deals
936 with multiproduct retailers. *Management Science*, 44(7), 935–949. 937
- Lal, Rajiv, & Rao, Ram C. (1997). Supermarket competition: The case
938 of everyday low pricing. *Marketing Science*, 16(1), 60–80. 939
- Levy, Michael. (1999, September 20). Revolutionizing the retail pricing
940 game. *Discount Store News*, 38(19), 15. 941
- Levy, Michael, & Weitz, Barton A. (1998). *Retailing management* (3rd
942 ed.). New York: McGraw-Hill. 943
- Moriarty, Mark M. (1985). Retail promotional effects on intra- and inter-
944 brand sales performance. *Journal of Retailing*, 62(3), 27–47. 945
- Mulhern, Francis, Williams, Jerome, & Leone, Robert. (1998). Variability
946 of brand price elasticities across retail stores: Ethnic, income, and
947 brand determinants. *Journal of Retailing*, 3, 401–426. 948
- Narasimhan, Chakravarthi, Neslin, Scott A., & Sen, Subrata K. (1996).
949 Promotional elasticities and category characteristics. *Journal of Mar-*
950 *keting*, 60, 17–30. 951
- Neslin, Scott A., Shoemaker, Robert, & Krishna Aradhna. (1994). *The*
952 *relationship between edlp and repeat purchasing* (Working Paper). 953
- Noble, Peter M., & Gruca, Thomas S. (1999). Industrial pricing: Theory
954 and managerial practice. *Marketing Science*, 18(3), 435–454. 955
- Partch, Ken. (1992, October). Why the issue of EDLP won't go away.
956 *Supermarket business* (pp. 19–22). 957
- Pesendorfer, Martin. (2002). Retail sales: A study of pricing behavior in
958 supermarkets. *Journal of Business*, 75(2), 33–66. 959
- Sethuraman, Raj. (1996). A model of how discounting high-priced brands
960 affect the sales of low-priced brands. *Journal of Marketing Research*,
961 33, 399–409. 962
- Shankar, Venkatesh, & Bolton Ruth N. (2002). *An empirical analysis of*
963 *determinants of retailer pricing strategy* (Working Paper). University
964 of Maryland, College Park, MD. 965
- Shankar, Venkatesh, & Krishnamurthi, Lakshman. (1996). Relating price
966 sensitivity to retailer promotional variables and pricing policy. *Journal*
967 *of Retailing*, 72(3), 249–273. 968
- Shankar, Venkatesh, & Krishnamurthi Lakshman. (2003). *RETPRICE:*
969 *A retailer pricing and promotion decision support model* (Working
970 Paper). University of Maryland, College Park, MD. 971
- Tellis, Gerard J. (1986, October). Beyond the many faces of price: An
972 integration of pricing strategies. *Journal of Marketing*, 50, 160–246. 973

- 974 Tellis, Gerard J., & Zufryden, Fred. (1995). Tackling the retailer decision
975 maze: Which brand to discount, how much, when and why? *Marketing*
976 *Science*, 14(3), 271–299.
- 977 Urbany, Joel E., & Dickson, Peter R. (1990). Prospect theory and pricing
978 decisions. *Journal of Behavioral Economics*, 19(1), 69–80.
- 979 Urbany, Joel E., & Dickson, Peter R. (1991). Competitive price-cutting
980 momentum and pricing reactions. *Marketing Letters*, 2(4), 393–
402.
- Walters, Rockney, & Mackenzie, Scott B. (1988). A structural equation 981
analysis of the impact of price promotions on store performance. 982
Journal of Marketing Research, 25(1), 51–63. 983
- Weinstein, Steve. (2000, May). The price is righter. *Progressive Grocer*, 984
79, 89–94. 985
- Winer, Russell. (1986). A reference price model of brand choice for 986
frequently purchased products. *Journal of Consumer Research*, 13,
250–256. 987
988

UNCORRECTED PROOF

989 Executive summary

990 This article investigates two questions: (1) Are there a
 991 small number of stable underlying dimensions that charac-
 992 terize grocery retailers' observed pricing decisions—despite
 993 the fact that these decisions appear to be very complex and
 994 different across brands, categories and stores? (2) What are
 995 the different types of pricing strategies adopted by grocery
 996 retailers? This empirical analysis examines retailer promo-
 997 tion decisions—specifically, deal intensity (depth of deal
 998 discount, frequency, and duration) and deal support (fea-
 999 tures and displays)—as well as pricing decisions (relative
 1000 price and price variation). It explores the underlying dimen-
 1001 sions of retailer pricing decisions, classifies retailers' dif-
 1002 ferent pricing strategies, and characterizes their prevalence
 1003 across brands and stores. The large-scale study is based on
 1004 grocery store-level scanner data on 1,364 brand-store com-
 1005 binations from 17 chains, 212 stores and six categories of
 1006 consumer package goods in five U.S. markets.

1007 Four pricing dimensions—relative price, price variation,
 1008 deal intensity, and deal support can be used to characterize all
 1009 retail pricing decisions. Retailers do not use the same pric-
 1010 ing strategies for different brands, categories, stores, chains,
 1011 or geographic regions. For example, a retailer will not nec-
 1012 essarily offer consistently low prices for all brands and cat-
 1013 egories in a given market place. Retailers use their intimate
 1014 knowledge of brands and markets to customize their pric-
 1015 ing strategies—either to stimulate the purchases of promo-
 1016 tion merchandise or to encourage regular price merchandise
 1017 purchases on the same shopping trip. Hence, there is an
 1018 opportunity for manufacturers to develop and exploit infor-
 1019 mation about retailers' pricing strategies across brands and
 1020 categories to become a “category captain,” to support their
 1021 brands with targeted marketing efforts, and to build better
 1022 relationships with retailers.

1023 Prior research and conventional wisdom assume that re-
 1024 tailer pricing strategies are implemented at the chain level,
 1025 as either EDLP or Hi-Lo pricing. Our analysis of pricing
 1026 decisions in 17 chains, 212 stores, six categories and five
 1027 markets reveal some surprising insights about how retailers
 1028 depart from Hi-Lo pricing and promotion strategies when
 1029 they customize their decisions for a particular brand and
 1030 store. First, it shows that at the brand-store level, retailers
 1031 practice five types of pricing strategies, which we label as
 1032 Exclusive, Moderately Promotional, Hi-Lo, EDLP, and Ag-
 1033 gressive pricing—not just two types of pricing strategies as
 1034 is widely believed. Second, an interesting finding is that the
 1035 most prevalent pricing strategy is not any strategy close to
 1036 Hi-Lo pricing strategy as casual observation of chains and
 1037 their positioning of their pricing strategy may suggest. It is
 1038 a pricing strategy that is closer to EDLP strategy than any
 1039 other strategy. The second most prevalent strategy, Aggres-
 1040 sive pricing, is not close to a Hi-Lo pricing strategy either.
 1041 These findings point out that although retailers may signal
 1042 to consumers a positioning strategy of EDLP or Hi-Lo pric-
 1043 ing strategy at the store or chain level, they actually engage

in different pricing strategies at the brand-store level. 1044

This apparent contradiction can be explained by the fact 1045
 that EDLP is simpler to communicate internally and easier to 1046
 implement. Pricing decisions—as opposed to other market- 1047
 ing decisions—are the key to profitability for most compa- 1048
 nies, and nowhere is this more evident than in grocery retail- 1049
 ing with its accompanying razor-thin margins. Thus, retailers 1050
 must become proactive—rather than passive price-takers— 1051
 customizing price at the brand-store level to local condi- 1052
 tions. Our study shows alternative ways that retailers—and 1053
 their competitors—can (and do) customize their own pricing 1054
 and promotion strategies to different brands and stores. Re- 1055
 tailers should closely monitor competitor behavior—at *spe-* 1056
cific stores, for specific brands—to see what pricing strategy 1057
 is being adopted for a particular brand at a specific store. 1058
 Only then, can they form reasonable managerial expecta- 1059
 tions about their competitor pricing, and develop their own 1060
 strategies. 1061

These results provide a benchmark for assessing an indi- 1062
 vidual store's pricing decisions. For example, retailers can 1063
 use our taxonomy to classify their pricing strategy for a par- 1064
 ticular brand-store combination (or store), and then compare 1065
 it with the clusters of retailer pricing strategies described in 1066
 the article. This benchmarking procedure allows the retailer 1067
 to think about how his/her pricing strategies may differ from 1068
 competitors' pricing strategies. Retailers have pricing lati- 1069
 tude when they differentiate themselves along non-pricing 1070
 dimensions (e.g., by coordinating price and promotion, em- 1071
 phasizing different categories, serving different clientele). 1072
 Consequently, we observe a diverse set of pricing strategies 1073
 that are (apparently) successful in the marketplace. We of- 1074
 fer a systematic approach to benchmarking retailers' pricing 1075
 strategies. 1076

A retail store can observe its closest competitor store's 1077
 pricing and promotion decisions over a period of time and 1078
 infer the competitor's pricing strategy. However, the retailer 1079
 must be sensitive to the fact that retailer pricing strate- 1080
 gies within a given market are inter-dependent. In other 1081
 words, when a retailer observes its closest competitor's pric- 1082
 ing and promotion decisions, it may well be observing its 1083
 competitor's reaction to its own pricing. This paradox raises 1084
 interesting questions for future research. 1085