

Market Power Impact on Off-Invoice Trade Promotions in US grocery retailing

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Abstract

While many have proposed theories to explain trade promotion behavior by manufacturers, to date a lack of data has prevented any empirical assessment. This article employs survey data to explore the effect of manufacturer and retailer market power on trade promotion decisions in the US food sector. The survey respondents consist of retailers and manufacturers controlling fully 40% of retail sales in US supermarkets. Building on the results of others, we propose a simple economic theory to explain the negotiations between retailers and manufacturers, and test the implications. Greater retailer market power increases allocation of funds to off-invoice trade promotions. Greater manufacturer market power decreases the allocation of funds to off-invoice trade promotions, but to a lesser extent. We find clear evidence that the balance of power currently favors food retailers.

Key Words: industrial organization, food retailing, promotions.

JEL Codes: M310, L140

1. INTRODUCTION

Trade promotions comprise a growing category of manufacturer incentives directed to distribution channel members, such as wholesalers and retailers, rather than to consumers. These promotions are generally designed to influence resellers' sales and prices by providing various, sometimes complex, inducements. In recent years, manufacturers of consumer packaged goods (CPGs) have substantially increased the use of trade promotions (TPs) to distributors. Two decades ago, manufacturers allocated about 20% of their marketing budgets to TPs; today this share has reached 70%. From 1997-2003, trade spending as a percentage of CPG manufacturer gross sales grew from 13.5% to 17.4%, second only to spending on the goods themselves (Cannondale Associates, 2003). Merli (1999) reports that total spending for trade promotions in the grocery industry alone rose from \$8 billion in 1990 to more than \$75 billion by 1998, nearly a tenfold increase in eight years. Despite the magnitude of these promotional funds, virtually no empirical research has examined the structure of TPs or the factors influencing this structure.

Central to this dearth of research is the difficulty in gaining access to data from confidential supplier-retailer negotiations (Kasulis et al., 1999, Drèze and Bell, 2003). We employ a unique sample of manufacturers and retailers (representing 40% of total US supermarket sales) to examine the factors affecting TP negotiation and structure, shedding new light on this important marketing device. We find evidence to support the notion that retailers' market power alters the type of TPs manufacturers are willing to offer. In particular, we focus on the market power related factors that influence the share

of off-invoice allowances in the total promotional funds received by the retailer.

Manufacturer's market power appears to play less of a role in the formation of TPs.

2. TRADE PROMOTIONS AND MARKET POWER

Starting from one-time up-front payments in the 1970s (later called slotting allowances) and simple “cents-off” propositions in the early 1980s (Blattberg and Neslin, 1990, Scheffman, 2002), TPs today have evolved into many complex contractual alternatives that influence channel behavior and performance and thus have generated a rich literature. Drèze and Bell (2003) summarize several of the most prominent reasons for the growth of trade promotion expenditures. Manufacturers, desiring to counter the popularity of lower-price store brands, may want to pass along a discount to a particularly price sensitive segment of shopper (eg. via a frequent shopper program); manufacturers may wish to enhance brand exposure with target consumers; or, manufacturers may simply want to provide additional stimulus to move excess inventory. Retailers benefit from TP spending since it builds store traffic, increases retail margins, and because, generally, the majority of the costs (and risks) are borne by the brand manufacturer. Despite the general research conclusion that retailers are the chief beneficiaries of TPs, some research suggests that TPs can directly improve manufacturer performance as well. Aliwadi, Farris and Shames (1999, p. 92) conclude that certain TP strategies that link manufacturer and retailer objectives are an “effective way for a manufacturer to influence the retailer's selling activity and thereby coordinate the channel.”

Trade promotions have developed into many forms—off-invoices, bill –backs, free goods, co-op advertising, extended payment terms, and more (Blattberg and Neslin,

1990). Despite the proliferation of ever more creative forms of trade deals over the past 10 years—e.g., accrual funds, frequent shopper programs--at least until the mid-1990s more than 90% of trade promotions involved “off-invoice allowances,” straightforward reductions in price below the manufacturer’s listed wholesale price (Blattberg and Neslin, 1990.) A number of classification schemes for trade promotions have been proposed (Kasulis et al., 1999, Bell and Drèze, 2002). We divide TPs into two distinct groups: performance-based contracts and discount-based contracts.

Performance-based contracts increase retail incentives to push the manufacturer’s product and are tied to a measure of retailer performance (e.g., units sold, displayed or price discounts in effect during a given period). Essentially, manufacturers agree to reimburse the retailer a specified amount for each unit sold. On the other hand, discount-based promotions, primarily off-invoice allowances, tend to enhance the ability of retailers to make discretionary use of these funds, increasing the probability of opportunistic behavior from retailers. The mechanism for off-invoice allowances is simple: suppliers provide merchandise to retailers at a price discount, usually for a brief, specified period—two-three weeks is standard. Because of the greater number of degrees of freedom it affords them, retailers generally favor off-invoices over performance-based promotions while the opposite is true of manufacturers (Drèze and Bell, 2003). Greater market power should allow the manufacturer or retailer greater bargaining power in pushing for the most favorable form of TP. Using standard economic models, we outline this theory following a short literature review.

3. LITERATURE REVIEW

Three themes can be identified in prior trade promotion studies. First, researchers have examined the rapid growth of trade promotions and have determined the return on investment (e.g., Ailawadi, Farris and Shames, 1999, Tyagi, 1999, Drèze and Bell, 2003). In general, these studies indicate that current trade promotional practices cannot be shown to be efficient for the distribution channel, often suggesting improved TP designs. A second stream of research has developed theoretical models describing the extent to which retailers actually pass on trade promotions to consumers in the form of lower prices rather than retain some portion of the promotional funds to contribute to other retailer expenses or profits (Tyagi, 1999, Kumar, Rajiv and Jeuland, 2001, Besanko, Dube and Gupta, 2004). These studies have identified the need for further efforts to conduct empirical tests on pass through.

Third, a strain of research primarily from industrial organization economics, examines the causes and consequences of trade promotions as a function of the relative retail-supplier power balance in the distribution channel (see, for example, Cotterill, 2001, Patterson and Richards, 2000, Sullivan, 2002, Scheffman, 2002, Young and Hobbs, 2003, Hamilton, 2003). Whereas the first two themes examine the problem from the perspective of a retail manager, the latter market power theme has focused more on issues arising from industry structure, system performance, and public policy consequences. Much of this literature finds demand distortions that result from TPs and non-optimal allocation of resources leading to inefficiency. Kasulis et al. (1999) argue that different trade promotions can produce dissimilar channel performance and consumer impacts as a

result of the market power of channel participants. Hamilton (2003), however, concludes that certain promotion funds, particularly so-called slotting allowances, may actually be motivated by suppliers, not retailers. He notes that these allowances may be employed by suppliers to better coordinate channel activity, ending in greater supplier sales and improvements in consumer welfare.

Studies on market power in trade promotions develop rigorous models based on microeconomic theory, yet empirical studies on the subject are scarce (Kasulis et al., 1999). In particular, extant literature does not model the influence of the balance of market power between manufacturers and retailers on the allocation of dollars across alternative TP activities. We follow Drèze and Bell (2003), Kasulis et al. (1999) and Gerstner and Hess (1995) to develop a theory of managing TPs in the context of market power. Kasulis et al. (1999) argue that horizontal market power of retailers (i.e., the market power within the retail industry) should have a large impact on the effectiveness, and therefore structure of TPs. A retailer with greater market power will exert greater control over its sale promotions, and provide greater exposure for the promoted brands. In this article, we test the arguments posited by Kasulis et al. (1999). We focus on off-invoice TPs, which are more beneficial to the retailers, as they do not require attitudinal commitment (i.e. increased sales to the end consumer). It is of great importance for manufacturers to be able to monitor off-invoice TPs, and for retailers to determine the appropriate amount of spending by manufacturer.

4. MODEL AND DATA

4.1 Theory

Greater market power of the retailer should result in higher share of off-invoice promotions in the promotional mix. Conversely, a manufacturer with market power would reduce the share of off invoice promotions in favor of pay for performance promotions (e.g., scan-backs, bill-backs). The rationale underlying our theoretical framework is that off invoice promotions allow retailers to forward buy (i.e., buy in excess during the promotional period at lower wholesale prices) and that the retailer's ability to forward-buy is constrained by the cost of inventory holding.

Building on earlier work by Gerstner and Hess (1991) and by Drèze and Bell (2003) we examine optimal pricing decisions based on microeconomic theory. We consider off invoice promotions between a single manufacturer and a single retailer and we assume that the retailer applies a markup rule to set retail prices. Our model considers short run relationships (when both retail and wholesale prices are fixed outside of promotional offers). Let ε_p be the price elasticity of demand, and w the wholesale price. The optimal retail price (p^*) in a single period when both the wholesale and retail prices are constant is given by $(w \cdot \varepsilon_{p^*}) / (1 + \varepsilon_{p^*})$. However, the manufacturer may offer a per-unit off invoice m to the retailer during a period of time $t_m < T$. In this case, where retailers are offered performance-based incentives, let the retailers' decision be given by

$$\max_{p_m, p_r} \Pi_t = \int_0^{t_m} Q(p_m) \cdot [p_m - (w - m)] dt + \int_{t_m}^T Q(p_r) \cdot [p_r - w] dt, \quad (1)$$

where p_r and p_m represent regular and promotional retail prices, respectively, w is wholesale price, $Q(p)$ is the demand curve, and $[0, T]$ is the time period during which the retailer must set a constant retail price. Drèze and Bell (2003) show that the optimal regular and promotional retail prices are given by the expression $(w \varepsilon_{p^*}) / (1 + \varepsilon_{p^*})$ and $[(w-m) \varepsilon_{p^*}] / (1 + \varepsilon_{p^*})$, respectively.

The solution to equation (1) assumes no forward buying on the part of the retailer. However, off invoice promotions generate incentives for the retailer to forward-buy as long as the cost savings of buying excess product during the trade promotion period do not exceed the additional costs of handling excess inventory (Blattberg and Levin, 1987). Define $C(w, t)$ as the unitary cost of holding inventory purchased at price w for a period of time t , with $\partial C(\cdot) / \partial t > 0$ (i.e., inventory cost increases as items are stored for more time). The retailer will forward-buy for a period of time z such that $C(w-m, z) < C(w, 0) = w$, or up to the point in time when savings equal cost of holding excess inventory. As a result, the forward-buy period is $t_f = t_m + z$ and the retailer's costs of goods sold become time dependent. Moreover, in addition to the pricing decisions p_m and p_r , the retailer must decide the length of time of the retail promotion t_p . That is, the inventory costs are sufficiently low so that forward buying allows the retailer to extend retail promotions beyond the promotional period t_m . Therefore, the retailer maximizes the following profit function

$$\begin{aligned} \max_{p_m, p_r} \Pi_t = & \int_0^{t_m} Q(p_m) \cdot [p_m - (w - m)] dt + \int_{t_m}^{t_p} Q(p_m) \cdot [p_m - C(w - m, t - t_m)] dt \\ & + \int_{t_p}^{t_r} Q(p_r) \cdot [p_r - C(w - m, t - t_m)] dt + \int_{t_r}^T Q(p_r) \cdot [p_r - w] dt \end{aligned}$$

(2)

The solution to this maximization problem is $p_p = (\overline{w}_p \varepsilon_{p^*}) / (1 + \varepsilon_{p^*})$ and $p_r = \overline{w}_r \varepsilon_{p^*} / (1 + \varepsilon_{p^*})$, where \overline{w}_p and \overline{w}_r are average per-unit cost of goods sold at promotion and regular prices, respectively (see proof in Appendix A.2 of Drèze and Bell, 2003). These average per-unit costs are function of t_p , $C(\cdot)$ and t_m .

Equations (1) and (2) allow us to compare off invoices and performance-based promotions. A retailer maximizing (1) does not forward buy, its solution corresponding to TPs based on performance. In contrast, equation (2) describes the retailer response to off invoice TPs. Drèze and Bell (2003) compare costs and profits between equations (1) and (2) and their solutions to show that retailers prefer off invoice TPs and manufacturers prefer performance-based TPs. While our objective in this study is not to develop a thorough mathematical proof, we illustrate this result in Figure 1. By forward buying, the retailer can obtain additional unit-cost savings equivalent to area A + B. Nevertheless, actual savings for the retailer are represented by area A, given that area B represents the per-unit cost of holding excess inventory (a deadweight loss for the channel). Conversely, a manufacturer prefers performance-based TPs because in such case it is not optimal for the retailer to forward-buy and the manufacturer increases its profits by the area A + B. This economic model informs our empirical analysis of the factors that influence the

allocation of trade promotion funds across competing alternatives in the context of market power.

[Figure 1 About Here]

4.2 Empirical Model

We examine the percentage of trade promotions allocated to off-invoice allowances as a function of (1) the horizontal (over all ‘peers’) market power of the retailer; (2) the horizontal market power of the manufacturer; and (3) the relative power between the specific negotiating dyad of manufacturer and retailer (i.e. dyad M-R). Following Kasulis et al. (1999), we posit that the allocation of TP funds is a direct function of the market power of the retailer and the manufacturer. We focus exclusively on off-invoice TPs, estimating the reduced form equation

$$TP_offinvoice = f(Market_Power_R, Market_Power_M, Relative_Power(R / M))$$

(3)

where *TP_offinvoice* is the percentage of promotional funds allocated to off-invoices, *Market_Power_R* is the horizontal market power of the retailer, *Market_Power_M* is the horizontal market power of the manufacturer, and *Relative_Power* is a measure of the specific balance of power in the dyad (Figure 2).

[Figure 2 About Here]

Market power of retailer is expected to be positively related to the percentage of funds allocated to off-invoice TPs. Theory tells us as that when the retailer has increased

market power, it can increase profits by increasing the allocation of off-invoice TPs (Kasulis et al., 1999; Drèze and Bell, 2003). Factors affecting retailer's market power include the outlet distinctiveness of the retailer (e.g. commercial type), its competitive position, the product category importance, and the level of consumer loyalty. Competitive position of retailer can be measured with constructs such as value-added capabilities (e.g. advertising support, loyalty card, merchandising expertise, cost-saving programs, every day low prices), financial data (e.g. market share, sales growth, etc.), share of private labels that the retailer carries, and the product category.

Market power of the manufacturer should be negatively related to the share of off-invoices in total TP expenditures. The manufacturer can increase profits by using performance incentives instead of off-invoice TPs. This happens because off invoice TPs allow forward buying by retailers (carrying excess inventory during discount period), diverting (the retailer resells the discounted product to other retailers at a higher price) and inventory management cost (resulting from the excess inventory carried by the retailer) (Drèze and Bell, 2003). Factors affecting the manufacturer's horizontal market power include brand distinctiveness (e.g. price difference compared to other brands), life cycle of manufacturer's brand, product category importance and consumer loyalty. The competitive position of manufacturer can be measured in terms of value-added capabilities (e.g. advertising support, merchandising expertise, cost-saving programs) and in financial data (e.g. market share, sales growth, etc.).

The relative power (R/M), gives the balance of power in the specific dyad of the manufacturer and the retailer that is negotiating for a trade promotion contractual

arrangement. The relative power can be measured as the share of the manufacturer brand on the retailer's product category sales, the retailer's perceived ability to choose the TP from, and the formal policies of both parties for the negotiation of trade promotions.

4.3 Data

We employ a unique data set collected from 43 supermarket companies and 12 food manufacturers operating in the US and representing about \$250 billion of annual sales, about 40% of the total US supermarket sales. These data were obtained by the Food Industry Management Program (FIMP) at Cornell University in 2003, Trade Promotion Study. Each company provided data for 2002 related to its trade promotions for the leading brand, the second brand, and a growing brand (i.e. a brand that has gained substantial market in recent years/months), for two product categories randomly selected from a total of six (ready-to-eat cereal, frozen dinners/entrees, coffee, laundry detergent, pet food, and chocolate bars).

Our data set contains information on the amount of trade promotion dollars received from suppliers, the percent allocation of these funds across trade promotion activities (off-invoices versus pay-for-performance contracts), the policies in place regarding the negotiation of TPs, and the perceived impacts of each type of TP. The managers responded on the *actual* allocation of TP spending and not on their willingness to accept or change them. Additionally, we collected relevant variables from secondary sources concerning manufacturers and supermarket companies in our sample. The survey employs brand as the unit of observation.

The survey was not specifically designed for the current analysis, and there is the possibility of selection bias in our data, as we have a sample of convenience. However, it is the first and only time that trade promotion data have been collected from food retailers and it is therefore the best available. Further, our data represent close to 40% of retail sales in the supermarket sector, thus we expect these data to be representative of at least the most important TP relationships. Table 1 contains a list of variables used in our analysis and accompanying descriptions.

[Table 1 About Here]

We measure horizontal market power of retailers constructing measures of customer loyalty, retailer's competitive position and type of retailer. Data on customer loyalty for the retailer are from published Consumer Reports (2003) that measure the customer satisfaction of 25,000 individuals. Scores are on a scale of 0 to 100% and indicate general satisfaction with the shopping experience. We measure competitive position of the retailer using data on share of private label in product category sales, on annual sales and on the average sales growth in the last 3 years. Retailer sales data were obtained from publicly available financial reports of the firms and private label shares are from the trade promotion survey. Our sample consists of two commercial types of retailers, namely those that are only retailers ('Pure') and those that have integrated wholesaling activities as well as retailing ('Hybrids'). Thus we create a dummy variable to identify type of retailer.

We capture horizontal market power of manufacturer (Market_Power_M) employing share of brand in the national market (Grocery Headquarters, 2004), average

percent sales growth in the last three years and total sales in 2003. Sales data were obtained from publicly available financial reports of the firms. These variables allow us to measure competitive position of the manufacturer. We argue that brand share in the product category's national market serve also as a proxy for the consumer loyalty to the manufacturer. While this is not a perfect measure of consumer loyalty, it should be highly correlated with consumer attachment to a particular manufacturer or group of brands. Additionally, we created a measure of brand distinctiveness as the price difference between the manufacturer brand and the average price of rival brands.^a

We measure relative power of the manufacturer/retailer dyad using manufacturer brand's position in the retailer's product category, ability of retailer to influence the negotiation of TP contracts, as well as the existence of formal policies for the negotiations of trade promotions. These data were elicited from retailers in the trade promotion survey. To capture the influence of brand position, we constructed dummy variables for three brand types "leading brand," "second brand" and "growing brand." Retailer ability to influence the TP form is estimated through the answers to the survey and includes the percent of times the retailer initiates and/or selects the TP type. Regarding TP policies, our data set includes dummy variables measuring whether the manufacturer has TP policies favoring pay-for-performance promotions, whether the retailer has TP policies favoring off-invoice contracts and whether the manufacturer-retailer dyad has TP policies favoring co-marketing contracts. Including company policy is a key contribution of our research, because policies can serve as a framework for

^a Price differences of the brands are calculated as [(price of brand - average product category price)/average

measuring relative power. For instance, a manufacturer may define its TP policy on a case by case basis, allowing for more flexibility in the negotiation with retailers that have market power. Our sample consists of 185 observations from the survey.

Table 2 displays summary statistics for all relevant variables. We find that just over 25% of trade promotions are off-invoice agreements, which is comparable to current industry wide estimates (AC Nielson, 2003). Our sample reflects a share of private label sales of 6.6% which is just slightly lower than the average found in the literature (CITE). Consumer loyalty measures display similar properties for both imputed and non-imputed values. This provides a convenient check that the imputed values do not create statistical outliers. There is extreme variation in the size of retailers, ranging from \$1 billion to over \$50 billion in annual sales. This heterogeneity reflects the fact that our sample contains both regional and national companies, representing a wide range of manufacturing-retail arrangements. On average, the retailer selects the TP type 60% of the time, suggesting a great degree of power in the negotiating process. Lastly, we find that few companies have policies governing TPs, about 12% and 11% for retailers and manufacturers respectively.

[Table 2 About Here]

In addition, we analyze one subset of the data including only the ‘pure’ retailers, as we hypothesize that wholesaling activities could influence TP behavior. Table 3 shows the descriptive statistics for this sub-sample, which contains 136 observations.

[Table 3 About Here]

product category price] $\times 100$.

We estimate the relationships described in the previous section using a simple linear representation of the function in (1). We have a *censored sample* as our dependent variable, percent of off-invoice dollars from the total TP expenditure, is constrained to be non-negative. Thus, we use maximum likelihood Tobit estimation (Tobin, 1958).

Slightly less than 30% of the retailer's *consumer loyalty* responses were missing. In order to reduce efficiency losses, we replaced missing observations with conditional mean imputed values based on dependent and independent variables (see Little, 1992 for a thorough discussion of this method). This method generates missing independent variables employing a weighted least squares regression on all other variables, and replacing the missing values with the predicted values from the regression. The original and the imputed values of customer loyalty are shown in Table 2. Because this procedure induces heteroscedastic errors, we obtain robust estimates of the Tobit model.

Most contractual arrangements result from the simultaneous interactions of both parties and their corresponding preferences. Here we have modeled TPs as if they are designed and offered by a manufacturer, and the retailer has the opportunity to reject the TP. Our model assumes that TP allocation is determined primarily by market power of the manufacturer and the retailer. We suppose that market dominance is determined prior to the negotiation of TPs, and is therefore exogenous. Still, some variables present the potential for endogeneity. In particular, consumer loyalty and retailer sales may affect one another. Controlling for this possible endogeneity is impossible within the constraints of our current article. Further, because of the lagged effect of investment on consumer

loyalty, it is likely that the endogeneity effect will be small relative to the bias introduced by omitting these variables.

We estimate the following three Tobit models: (1) a model for the total sample without the *consumer loyalty* variable; (2) a model for the total sample with imputed *consumer loyalty* replacing missing values; and (3) a model for the subset including only the ‘Pure’ retailers with consumer loyalty (same variables as in model 2).

5. DISCUSSION OF RESULTS

We present our results in Table 4. All components of retailer’s market power are significant across all three models and have the hypothesized signs, indicating that greater retailer power results in significant increases of the allocation of funds to off-invoice TPs. In addition the ability of the retailer to influence the TP decision (retailer selects) is significant and large across all models. Price differentials, manufactures annual sales and retailer’s average sales growth were dropped from the model because they exhibit a high degree of collinearity with other explanatory variables, inflating the standard error of the estimated parameters.

[Table 4 About Here]

In contrast, it is interesting that few variables describing market power of the manufacturer are significant in TP negotiations. Specifically, only the share of the manufacturer’s brand in the national market is significant across all models, confirming the trend cited in the literature of shifting of the *balance of power* from manufacturers toward retailers. Our results suggest that increases in the market power of manufacturers

have a modest effect on reducing the amount of funds allocated to off-invoice TPs (in contrast to the significant power of the retailer).

Formal TP policies of manufacturers (increasing allocation to pay-for-performance TPs) are significant across all models. Likewise co-marketing policy variables are significant in model 1 and model 2. The magnitude of the coefficients on manufacturer policies is large in comparison to the coefficients measuring the effect of market power of the retailer. Our estimates show that manufacturers can use TP policies to augment their negotiating power in favor of pay-for-performance promotions.

Consumer loyalty of retailer is significant in model 3, but not nearly so when hybrid companies are included in the sample. A possible explanation is that the hybrid companies have integrated wholesaling and retailing activities and may base their market power more on their economies of scale and not on the end consumer. Product categories are not significant, apart from pet food, which appears to suggest greater market power of pet food manufacturers. Hybrid retailers are significantly more influential across all models, reflecting the fact that cost structure and economies of scale are usually more favorable to hybrid companies than to companies that engage in retail only. It is surprising that the increased ability of a retailer to select the type of TP has a significant negative effect on the amount of funds allocated to off-invoice TPs. These results might be due to endogeneity, or may reflect deeper problems with the current economic models of TP behavior.

In the previous section, we grouped variables by their influence on important variables in our economic model (see Table 1). Using this grouping, we conduct joint

tests of the elements of each hypothesis using Wald tests (modified to allow a one tailed test of hypotheses with inequalities as the null). The market power of the *retailer* should increase the percentage of off-invoice TP. A joint test that retailer sales, share of private label of retailer and consumer loyalty (for models 2 and 3) are negative rejects at the 1% level for all three models, confirming our hypothesis.

Secondly, the market power of the *manufacturer* should decrease the percentage of funds allocated to off-invoice TPs. A joint test that the share of manufacturer's brand in national market and manufacturer sales growth are positively related to off-invoice TPs fails to reject. While all variables have the expected sign, the standard errors are somewhat large. Insignificance may be primarily a result of a small data set or problems with quality of the data. Still our results provide compelling evidence that the so-called *balance of power* lies with supermarket companies, rather than manufacturers.

Third, formal policies for negotiation of TPs of the retailer should increase the percentage of off-invoice TPs, whereas the policies of the manufacturer and the cooperation through co-marketing should decrease the percentage of off-invoice TPs. A joint test that the retailer policy dummy, manufacturer policy dummy and co-marketing dummy have the anticipated signs rejects in favor of our hypothesized relationship across all models, at the 1% level of confidence.

6. CONCLUSIONS

Our results provide industry executives and public policy makers a better understanding of key factors driving trade promotion negotiations, and how these factors differ by product category and company. Such understanding is essential for private firm

profitability, improved food distribution system coordination and performance. The methodology that we employ illustrates the importance of retailer and manufacturer's market power as well as their relative position in the supply chain in the formulation and structure of TPs. Our results suggest that market power of retailers positively affects the amount of funds that manufacturers allocate to off-invoice TPs. In contrast, our findings show that market power of manufacturers has a weaker influence on expenditures. This result confirms the apparent trend of power shifting across the supply chain to retailers. This lack of bargaining power by manufacturers can be overcome by constructing formal policies governing the negotiation of trade promotions. Finally, there is a great need for further improvement in the quality and quantity of data, allowing more robust estimation procedures commonly used in estimating joint bargaining relationships. By illuminating the process by which TPs are negotiated and the factors affecting power sharing, greater efficiency within the supply chain can be achieved.

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Table 1. Variable Descriptions.

Variables	Explanation
% Off-invoice TP	Share allocation of Off-invoice Trade Promotion from Total TP expenses
Market Power of Retailer	
<i>Outlet distinctiveness</i>	
‘Hybrid’ Retailer Type	Type of retailer (1-grocery, 2- warehouse, 3-hybrid)
<i>Consumer Loyalty</i>	Scores are on as scale of 0 to 100% and indicate general satisfaction with the shopping experience (Consumer Reports, 2003)
<i>Competitive position</i>	
Retailer Sales*	Retailer annual sales, 2002 (Financial Statements of firms)
Share of Private Label	Share of retailer’s private label on product category sales, 2002
Retailer Sales Growth*	Retailer average sales growth in the last 3 years (Financial Statements of firms)
Market Power of Manufacturer	
<i>Brand distinctiveness</i>	
Share of Manufacturer Brand in National Market*	Manufacturer’s brand share in the pc’s national market (Grocery Headquarters, 2003)
Price difference	[(price of brand - average prod cat price)/average product category price]
<i>Competitive position</i>	
Manufacturer Sales*	Manufacturer annual sales, 2002 (Financial Statements of firms)
Manufacturer Sales Growth*	Manufacturer average sales growth in the last 3 years (Financial Statements of firms)
Relative Power (R/M)	
<i>Brand’s Relative Importance:</i>	
Leading Brand	1 if leading brand; zero otherwise
Second Brand	1 if second brand; zero otherwise
<i>Ability to influence</i>	
Retailer Initiates TP procedure	Percent of times retailer initiates TP procedure
Retailer Selects TP type	Percent of times retailer selects TP type
<i>Policies</i>	
Retailer Policy dummy	1 exists TP policy of retailer for increasing <u>off-invoice</u> ; zero otherwise
Manufacturer Policy dummy	1 exists TP policy of retailer for increasing <u>pay-for-performance</u> ; zero oth.
Co-marketing dummy	1 exists co-marketing policy of R & M; zero otherwise
Product Category Dummies	
Coffee	1 if product category is coffee; zero otherwise
RTE	1 if product category is ready-to-eat cereal; zero otherwise
Pet	1 if product category is pet food; zero otherwise
Laundry	1 if product category is Laundry; zero otherwise
Frozen dinner	1 if product category is frozen dinners & entrees; zero otherwise

* Note: these variables are from secondary sources; the rest are from the Cornell 2003 Trade Promotion Study.

Table 2. Descriptive Statistics for Sample with Both Retailer Types ('Pure' and 'Hybrid').

Variables	Obs.	Mean	Std. Deviation	Min	Max
<i>Dependent Variable</i>					
% Off-invoice TP from Total TP expenses	185	0.257	0.323	0	1
<i>Explanatory variables</i>					
Market Power of Retailer					
<i>Outlet distinctiveness</i>					
Type of Retailer categorical variable	186	1.484	0.858	1	3
<i>Consumer Loyalty R</i>					
Consumer Loyalty	144	73.666	3.162	68	82
Consumer Loyalty <i>Imputed*</i>	186	73.773	2.843	68	82
<i>Competitive position</i>					
Retailer Sales	186	9.508	10.679	1	51.8
Share of Private Label of Retailer	183	0.066	0.061	0	0.3
Retailer Sales Growth	186	2.430	6.114	8.4	17.7
Market Power of Manufacturer					
<i>Brand distinctiveness</i>					
Share of Brand in National Market	185	17.974	13.169	1	46.3
Price Difference	185	-1.315	31.633	-65	147.8
<i>Competitive position</i>					
Manufacturer Sales	185	15.025	14.305	.002	50.7
Manufacturer Sales Growth	185	4.706	9.566	-22.9	55.6
Relative Power (R/M)					
<i>Brand's Relative Importance:</i>					
Leading Brand	186	0.333	0.473	0	1
Second Brand	186	0.333	0.473	0	1
<i>Ability to influence</i>					
Retailer Initiates TP procedure	185	0.498	0.238	0	1
Retailer Selects TP type	183	0.589	0.269	0	1
<i>Policies</i>					
Retailer Policy dummy	186	0.123	0.330	0	1
Manufacturer Policy dummy	186	0.107	0.310	0	1
Co-marketing dummy	186	0.0860	0.281	0	1
Product Category Dummies					
Coffee	186	0.161	0.368	0	1
RTE	186	0.258	0.438	0	1
Pet	186	0.129	0.336	0	1
Laundry	186	0.145	0.353	0	1
Frozen dinner	186	0.242	0.429	0	1

* Includes imputed values based on dependent and independent variables (see Little, 1992)

Table 3. Descriptive Statistics for Subset Including Only ‘Pure’ Retailers.

Variables	Obs.	Mean	Std. Deviation	Min	Max
<i>Dependent Variable</i>					
% Off-invoice TP from Total TP expenses	140	0.288	0.332	0	1
<i>Explanatory variables</i>					
Market Power of Retailer					
<i>Outlet distinctiveness</i>					
Only ‘Pure’ Retailers included	Na	Na	Na	Na	Na
<i>Consumer Loyalty</i>					
Consumer Loyalty with Imputed	141	73.586	3.195	68	82
<i>Competitive position</i>					
Retailer Sales	141	9.296	11.775	1	51.8
Share of Private Label of Retailer	138	0.0713	0.066	0	0.3
Retailer Sales Growth	141	4.651	4.840	-3.6	17.7
Market Power of Manufacturer					
<i>Brand distinctiveness</i>					
Share of Brand in National Market	140	17.320	12.460	1.5	46.3
Price Difference	140	0.084	32.317	-44.7	147.8
<i>Competitive position</i>					
Manufacturer Sales	140	15.492	14.547	0	50.7
Manufacturer Sales growth	185	4.706	9.566	-22.9	55.6
Relative Power (R/M)					
<i>Brand’s Relative Importance:</i>					
Leading Brand	141	0.333	0.473	0	1
Second Brand	141	0.333	0.473	0	1
<i>Ability to influence</i>					
Retailer Initiates TP procedure	140	0.497	0.252	0	1
Retailer Selects TP type	139	0.599	0.288	0	1
<i>Policies</i>					
Retailer Policy dummy	141	0.142	0.350	0	1
Manufacturer Policy dummy	141	0.113	0.318	0	1
Co-marketing dummy	141	0.092	0.290	0	1
Product Category Dummies					
Coffee	141	0.170	0.377	0	1
RTE	141	0.276	0.448	0	1
Pet	141	0.127	0.335	0	1
Laundry	141	0.127	0.335	0	1
Frozen dinner	141	0.276	0.449	0	1

Table 4. Tobit Estimates.^b

Explanatory variables:	(1)	(2)	(3)	Expected sign
Market Power of Retailer				
<i>Outlet distinctiveness</i>				
‘Hybrid’ Retailer Type	-0.145** (0.073)	-0.151** (0.073)	Na	+/-
<i>Consumer Loyalty</i>				
Consumer Loyalty with Imputed	Not used	0.014 (0.0114)	0.018 (0.0029)***	+
<i>Competitive position</i>				
Retailer Sales	0.009*** (0.0028)	0.010*** (0.0028)	0.013*** (0.637)	+
Share of Private Label of Retailer	2.615*** (0.602)	2.635*** (0.600)	2.889*** (0.637)	+
Market Power of Manufacturer				
<i>Brand distinctiveness</i>				
Share of Manuf. Brand in National Market	-0.003 (0.0037)	-0.003 (0.004)	-0.007* (0.004)	-
<i>Competitive position</i>				
Manufacturer Sales growth	-0.003 (0.003)	-0.003 (0.003)	-0.0024 (0.004)	-
Relative Power (R/M)				
<i>Brand’s Relative Importance:</i>				
Leading Brand	0.033 (0.092)	0.034 (0.092)	0.103 (0.100)	+/-
Second Brand	-0.0087 (0.082)	-0.008 (0.082)	0.037 (0.091)	+/-
<i>Ability to influence</i>				
Retailer Initiates TP procedure	0.107 (0.155)	0.088 (0.155)	-0.043 (0.159)	+/-
Retailer Selects TP type	-0.242* (0.127)	-0.232* (0.127)	-0.239* (0.130)	+
<i>Policies</i>				
Retailer Policy dummy	0.087 (0.107)	0.058 (0.109)	0.0781 (0.107)	+
Manufacturer Policy dummy	-0.336*** (0.119)	-0.334*** (0.119)	-0.363*** (0.130)	-
Co-marketing dummy	-0.271* (0.139)	-0.236* (0.142)	-0.156 (0.149)	-
Product Category Dummies				
Coffee	-0.134 (0.149)	-0.156 (0.150)	-0.267 (0.229)	+/-
RTE	-0.102 (0.135)	-0.088 (0.135)	-0.123 (0.215)	+/-
Pet	-0.299* (0.169)	-0.279* (0.169)	-0.298 (0.239)	+/-
Laundry	-0.066 (0.152)	-0.048 (0.152)	-0.099 (0.228)	+/-
Frozen dinner	0.094 (0.168)	0.102 (0.168)	-0.038 (0.229)	+/-
Constant	0.198 (0.170)	-0.828 (0.872)	-1.041 (0.236)	
Number of obs	180	180	136	
Pseudo R2	0.2539	0.2597	0.3228	
Left censored	63	63	43	
LR chi2	LR chi2(17) = 62.59	LR chi2(18) = 64.02	LR chi2(17) = 61.09	
Log likelihood	-91.96214	-91.242877	-65.35671	

^b Standard errors in parentheses; *** p-value<0.01; ** p-value<0.05; * p-value<0.10;

Figure 1. Retailer Gains from Off Invoice Trade Promotions.

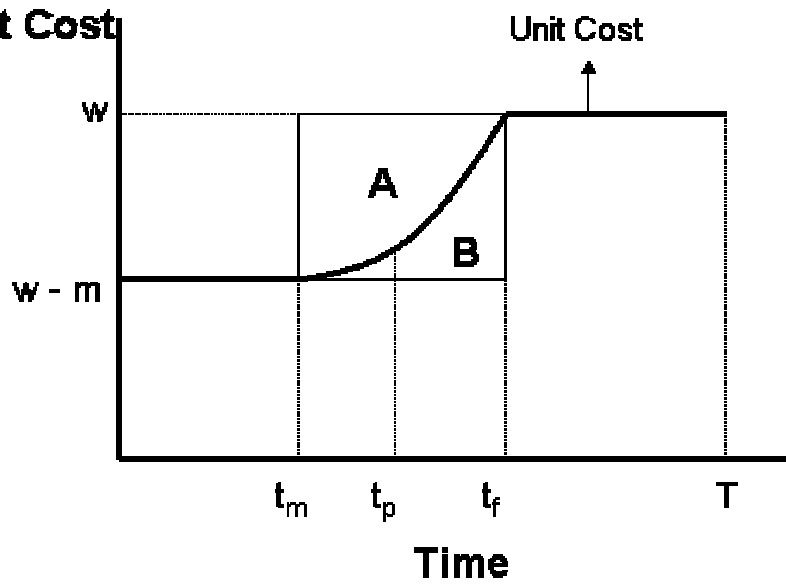


Figure 2. Economic Factors Affecting the Structure of Trade Promotions.

(1) TP_offinvoice Market_Power_R Market_Power_M

Relative_Power(R/M)

- % Off-Invoice from total TP expenditure
- Outlet distinctiveness_R
- Competitive position_R
- Category importance_R
- Consumer loyalty_R
- Brand distinctiveness_M
- Competitive position_M
- Category importance_M
- Consumer loyalty_M
- Brand's Relative Importance
- Ability to influence
- Policies