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THE RELATIONSHIP BETWEEN ADVERTISING AND SALES FOR SELECTED CONSUMER GOODS

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This paper examines the normally taken-for-granted reciprocal relationship between advertising and sales utilizing data from three types of Philippine consumer goods. "Excessiveness" of advertising expenditures is also explored by comparing optimal and actual industry advertising intensity ratios. Results reveal that the relationship is not reciprocal: advertising positively influences firms' sales but sales do not influence advertising. Furthermore, results on the test of excessiveness of advertising expenditures show that Philippine companies need to advertise more.

I. INTRODUCTION

While there already is a tremendous array of products in the consumer goods market, rapid socio-economic developments act as the catalyst in the battle to bring newer products into the marketplace. These developments also bring about the fast-aging route of existing consumer products out of the market. As a result, firms have to join another race of safeguarding and maintaining their market shares. These firms turn to strategies that would preserve or differentiate themselves from the growing competition in the market. As a contingency, firms and industries engage in advertising activities because of the belief that advertisements affect the purchase decision of consumers toward a product or service (Peter and Olson, 1999). This belief must be widely accepted because, to some extent, industries have been observed to engage in too much or "excessive" advertising activities.[1]

The advertising business in the Philippines is a thriving billion-peso industry. An AC Nielsen survey of advertising media showed that consumer products are highly advertised (Appendix A). Each year, Philippine firms spend ever-larger amounts in advertising these products. There is, however, little progress in the country with regard to the study of the economic effects of advertising on the sales of products or services, nor is there publicly available research exploring the excessiveness of advertising practices of producer firms. In business policy, advertising strategies may prove crucial to the profitability of the firm or an industry. Investigating this area is thus worthwhile.

This paper aims to examine the current effect of advertising on sales of some consumer goods. It also seeks to explore the intensity of advertising practices of producers in line with the issue of "excessiveness." This issue will be investigated using the concepts of optimal versus actual expenditures on advertising.

This paper is organized as follows: section 2 provides the literature review and the description of the sample industries. Section 3 presents the methodology; namely the data, the hypotheses and regression models used as theoretical framework in the empirical investigation. Section 4 discusses the results and section 5 presents the conclusions and directions for future research.

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II. ADVERTISING LITERATURE

Economic literature shows that advertising has its roots in the theory of economic man and his need for information. The theory describes that an individual maximizes his utilities, given the available information about the needs and the needs-satisfying ability of the available scarce resources. It emphasizes the rational aspect of a consumer as one who consciously considers functional cost-utility information in his purchase decision. The theory highlights that information is vital to an individual in making rational decisions. Information about price, quality and other product attributes enables buyers to utilize their income/wealth as they select the product with the right mix of price and quality. Improved choices lead to larger gains (Beasles, Craswell and Salop, 1981).

Firms provide information through advertising. Advertising is a business activity that serves as a communication tool to inform consumers about a product or service and, to a certain extent, persuade consumers to prefer a firm's product or service over its rival products in the market. Advertising is used to differentiate one product from another, to shift the taste of consumers toward a particular product or service. In short, advertising is an economic activity designed to increase the demand by shifting consumers' tastes or informing them of opportunities (Carlton and Perloff, 2000; Kotler and Armstrong, 1998).

According to Resnik and Stern (1977), an advertisement needs only to supply one piece of information to be considered informative. Although this area is debatable because of the type of information in advertisements (i.e., objective versus subjective advertising), studies show that advertisements in America, Europe and some parts of Asia contain at least one to six pieces of objective information (Resnik and Stern, 1977; Ward and McQuirk, 1987; Weinberger and Spotts, 1989; Mueller, 1991; Keown et al., 1992).

In marketing, advertising plays a central role in the business strategies of firms because of the belief that advertising affects consumer choice. This can be observed from the vast resources that firms spend on advertising. Kotler and Armstrong (1998) and Peter and Olson (1999) provide a comprehensive discussion of the role of advertising in business management.

The relationship between advertising and profitability is another issue that has occupied the attention of economists and practitioners. The catalyst for this attention is the postulated null hypothesis that advertising has no effect on profitability. A number of authors have, on the other hand, argued the plausibility of the alternative hypothesis that advertising does affect profitability. This relationship is commonly tested using demand variables such as sales to measure the behavior of profit on the basis that sales and profit have a direct relationship. In financial terms, higher demand leads to higher sales and consequently to higher profit on the assumption that all fixed expenses remain constant (Horngren, Sundem and Stratton, 2002).

One of the pioneer models that support the alternative hypothesis is the Dorfman-Steiner (1954) model. This model of homogeneous products postulates that the quantity demand facing the firm is a function of price and advertising, where price and advertising, respectively, share a negative and positive relationship with demand. Through optimization of profit objectives, the model derives the optimal advertising/sales ratio for firms.

Grossman and Shapiro (1984) extended the Dorfman-Steiner model to a hete-rogeneous market for welfare analysis. Utilizing the theory of product differentiation, the authors studied the role of promotional expenditures by sellers through location and the probability of full or partial information, and found that decreased advertising costs reduce profits by increasing the severity of price competition. With this finding, the

authors confirmed that firms have an incentive to advertise. In order to soften price competition, firms producing similar goods must locate themselves as far away from each other as possible, if not physically, then in the minds of their consumers. This way, consumers are prevented from considering the goods as substitutes of one another.

Tirole (1988) presented "experienced goods" as a specific example of how advertising could facilitate differentiation among different product categories. For this type of good, informational differentiation may arise from the consumers' imperfect knowledge of the product. Consumers who learn their utility of consuming a good from experiment generally know about only one brand or a few others because experimenting is costly. Thus, consumers do not treat products they have experienced and those they have not as identical. There is room for differentiation and thus, for advertising.

Other studies on advertising deal with its impact on profitability, which revolve on the former's effect on entry barriers and ease of collusion. The literature offers two polar sides on this issue, described by Tirole (1988) as the adverse view and the partial view on advertising. Proponents of the adverse view believe that advertising creates differentiation that may distort real information leading to the reduction of product competition. On the other hand, the partial view argues that advertisements inform consumers about the product's price, location, and attributes, which gives firms an incentive to compete and to improve their offerings (Beasles et al., 1981).

Schmalensee (1976, 1986), on the other hand, cautions that the relationship between advertising and profitability should not be interpreted as being causal. The correlation between the two variables depends on exogenous factors. Despite this, the author provided a study significant to this paper, in which he discovered that "in broad samples of manufacturing industries, especially those producing consumer goods, advertising intensity is positively related to industry average profitability."

The Consumer Goods Market

The Philippine economic environment offers a large and growing market for consumer goods and retailing. In 2001, National Statistics Office (NSO) data show that demand for consumer products accounts for 42.5 percent of GDP[2] and is expected to grow by an estimated 6 percent per annum. Demand can also be translated to the huge consumer base of over 80 million Filipinos, whose collective personal consumption for these goods totals about 80 percent of their monthly income. On the supply side, the whole consumer goods market is composed of sub-industries with their respective participation as follows: food and beverage (33%), pharmaceuticals (17%), optical (10%), wholesale trade (8%), retail trade (15%), and other industries (17%).

Consumer goods were selected for a certain reason: the consumer goods industries are, in general, the most intensive advertisers - where intensity of advertising is measured by ratio of advertising to sales. For the Philippines, such expenditures can be gauged only through the sporadic reporting of some government agencies stated in percentage increase or decrease of a base year. Such data is quite difficult to obtain since the government does not regulate the advertising industry. Data is privately owned by each player in the market and seldom shared in most cases for obvious reasons of competition and high data acquisition costs.

Three consumer goods industries were studied, namely, the beverage industry, the pharmaceuticals industry and the home care products industry.

The Beverage Industry

The beverage industry is composed of several non-alcoholic beverages (Appendix B). These include carbonated drinks, fruit juices, bottled water and other non-alcoholic beverages (i.e., ice candy, ice *buko*, ice drop,

etc.). Total household expenditures reached P24.7B in 2000, up 25 percent from 1997's P19.7B. Of the total expenditures, carbonated drinks accounted for 58 percent of the total; fruit juices, 29 percent; bottled water, 10 percent; and others 3 percent. These goods are sold and priced by the case or by the box. Cases and boxes are of different sizes depending on the container size and weight of the products. Producers have their own delivery system and employ both wholesaler and retailers to distribute their products. The distribution channels include all consumer goods stores, i.e., grocery stores, supermarkets and "*sari-sari*"[3] or convenience stores.

In the cola sub-group, Coca-Cola Bottlers Inc. is the country's traditional leader in production and distribution. Pepsi Cola Products Phils, Inc. is a distant follower. Cosmos Bottling Corporation is believed to be second to Coca-Cola as the former has been aggressively eating market share.[4] The market for softdrink is quite price-sensitive, as evidenced by the success of Cosmos' low price strategy to steal market share in the 1990s.

In the fruit juice sector, La Tondeña Distillers, Inc. is currently the largest producer in the country with its acquisition of Sugarland International. Its competitors include multinationals such as Kraft (Tang) and local companies such as Zest-O Corporation (Zest-O) and Selecta Dairy Products, Inc. (Sunkist) and smaller players (Appendix B).

There are four major companies in the bottled water industry, but there is a multitude of small operators. The major players are Metro Bottled Water Corporation, Nestle Corporation, La Tondeña Distillers and Asia Brewery Inc. The market for bottled water has been the fastest growing segment in the beverage industry. Such rapid growth is due mainly to the industry's relatively small size and the insufficient supply of potable water in some parts of the country.

In 2000, total spending on processed powdered coffee, tonic drinks, processed cocoa and processed tea amounted to P17.5B. The bulk was accounted for by processed coffee (58%) and processed tonic drinks (38%). In soluble coffee, Nestle enjoys 90 percent of the market.

The Pharmaceutical Industry

The pharmaceutical industry (Appendix C) is comprised of the producers and distributors of pharmaceutical goods (i.e., medicines and supplements) and related products (ointments and creams). There are 63 local and multinational companies operating in the industry. An indication of the pricing practices in the industry can be gauged from a newspaper article involving the industry in the period covered by this study. There was an "overpricing" issue against the industry, with the drug companies allegedly earning as much as 500 to 1000 percent. Congressional legislators eyed a 30 percent price reduction. It was suggested "that the high costs of medicines in the local market is a function of the pharmaceutical industry's dependence on marketing, advertising and promotions as a tool to ensure steady sales" (Nazareno and Gonzales, 1999). This is a clear indication of the impact of advertising on the business strategies of firms in this industry.

The distribution of pharmaceutical goods in the market is quite specialized. Some products may be bought over the counter at supermarket shelves, but the majority of sensitive medications (i.e., prescription drugs) can only be bought at drugstores, pharmacies and hospitals. The common sales strategy utilizes a sales representative assigned to a specific geographical area of responsibility.

The Home Care Industry

Several products fall under the category of home care products but this paper focuses on laundry soaps alone (Appendix D). Household goods account for 5.5 percent of personal expenditures.[5] Multinational companies are the key players in this industry,

dominated by Unilever Philippines, Inc. and Procter and Gamble Philippines, Inc. These two players comprise 85 percent of the sales of laundry soaps. The distribution channel is similar to the beverage industry where both wholesalers and retailers play a big role. Likewise, pricing is by the box, with each product having a predetermined size and number of specific laundry soaps.

II. METHOD

The Data

The advertising expenditures data of each sample producer firm from the different consumer industries for the sample period was provided by Allgemeine Geschäfts-bedingungen (AGB) Philippines. The other variables (i.e., sales, income, total assets and equity) were derived from the financial statements of the firms published in *Top 7000 Firms* and *Business World's Top 1000 Firms*. The sample period covered three years, from 1999 to 2001. The data was pooled using firm-specific information from different industries and organized in cross-section, time series form.

Since no price listings are publicly available for the industries, the author used the consumer price index (CPI) from the *2000-2002 NSO Statistical Yearbook* in lieu of average selling price of goods in each industry. The CPIs of "beverages", "chemicals" and "chemicals including animal fats and oils" were used to represent beverage, pharmaceuticals and home care products industries, respectively.

Not all firms in each industry were included (Appendix E and F). The sample firms were selected because they already represent at least 80 percent of both the industry's sales and advertising expenditures.

The Hypotheses

Following the Dorfman-Steiner Model and its extensions, this paper also assumes that advertising activities convey relevant information, which enable consumers to arrive at rational purchase decisions to buy a particular consumer good. In the Philippine context, this assumption was established from the observation that most local advertisements were adopted from their foreign counterparts, hence containing on the average at least one information about the product. Many products in the sample industries are produced by multinational companies which attempt to create a standard image for their products across nations (Kotler, 2000). Advertisements are "localized" without losing the original concept or image of the product, thereby preserving the informational content of the ads. Localization is achieved using Filipino models, language and situations.

Given this assumption, the paper tests the null hypothesis that advertising expenditures do not affect the sales of consumer goods. The alternative hypothesis is that advertising expenditures do affect the sales of consumer goods. The theoretical expectations are positive signs for advertising expenditure in all the equations, which implies the rejection of the null and the acceptance of the alternative hypothesis.

Test of Hypotheses

Existing studies of the impact of advertising on demand lean toward a linear relationship but non-linear models were also studied. Empirical studies by Metwally (1976) and Schroeter, Smith and Cox (1987) employed non-linear models to estimate the effect of market advertising intensity on the firms' demand elasticities. With this same rationale, the paper postulates a non-linear demand function for the Philippine sample firms. This will derive the demand elasticities with respect to price and advertising variables, which are the key variables in estimating the

optimal advertising intensity of the sample firms.

Moreover, to strengthen the inquiry on the relationship between advertising and sales, a simultaneous equation model is called for. This type of equation is chosen to acknowledge the rule-of-the-thumb budgeting practice of consumer good producers — that is, setting the advertising budget on the basis of a fixed ratio to sales.[6] The use of such budgeting procedure implies a relationship that advertising appears to be dictated by sales and not the other way around. A single equation regression model with quantities sold as the dependent variable and advertising as one of the independent variables is likely to give a biased estimate with respect to the regression coefficient for advertising. The simultaneous equation would test if the relationship between the two variables is reciprocal.

This paper employs a two-stage least squares (2SLS) regression via the Eviews program to test the simultaneous relationship between advertising and sales variables. A simultaneous model would be of the following form:

Quantities Sold = *f*(Advertising, Price, total GDP)
Advertising = *f*(Quantities Sold, Income, Profitability)

The regression models for which the parameters are estimated are as shown in equations below.

$$(1a)\quad \ln Q_{it} = \beta_o + \beta_1 \ln P_{it} + \beta_2 \ln A_{it} + \beta_3 \ln GDP_{it} + e_t$$

$$(1b)\quad \ln A_{it} = \alpha_o + \alpha_1 \ln Q_{it} + \alpha_2 \ln Y_{it} + \alpha_3 \ln Y/S_{it} + u_t$$

To test each industry's advertising behavior, Equation 1a was reconstructed where dummy variables were used to represent each sample industry's advertising behavior, with the beverage industry as the base variable. The regression equation is tested using the ordinary least squares (OLS) test with the parameters below:

$$(2)\quad \ln Q_{it} = \gamma_o + \gamma_1 \ln P_{it} + \gamma_2 \ln A_{it} + \gamma_3 DP_P(\ln P_{it}) + \gamma_4 DP_{HC}(\ln P_{it}) + \gamma_5 DA_P(\ln A_{it}) + \gamma_6 DA_{HC}(\ln A_{it}) + \nu_t$$

Where:

Q_{it} Quantities sold of the *ith* firm in period *t* measured by sales over CPI, where *i* = individual firms in each industry; *t* = 1999, 2000, 2001

P_{it} Average selling price of the *ith* firm's product in period *t*

A_{it} Advertising expenditure of the *ith* firm in period *t*

GDP_t Real gross domestic product

Y_{it} Net income of the *ith* firm

Y/S_{it} Net income of the *ith* firm over sales

DP_P Dummy for price of pharmaceutical industry, where 1= pharmaceutical industry, 0 = otherwise

DP_{HC} Dummy for price of home care industry where 1= home care industry, 0 = otherwise

DA_P Dummy for advertising expenditure of pharmaceutical industry

DA_{HC} Dummy for advertising expenditure of home care industry

e_t, u_t, ν_t Error terms

Equation 1a is similar to the demand function prescribed by Dorfman and Steiner where the main determinants of demand are price and advertising efforts of firms.[7] Their model assumes monopoly power, but this can still be applicable to the sample firms as advertisements are known to provide monopolistic powers to firms engaging in advertising activities. Demand is the dependent variable (Q_{it}) measured by the quantities sold by the sample firms. This is equal to the *ith* firm's sales in period *t* over the industry's CPI in period *t*. The independent variables are average selling price (P_{it}) of the *ith* firm represented by the

industry-specific CPIs, the advertising expenditure (A_{it}) of the *ith* firm in period *t* and total gross domestic product in period *t*.

Equation 1b is the test for the simultaneous effect of quantities sold, income and income over sales ratio parameters to advertising expenditures. In the two SLS test, advertising and sales are treated as endogenous variables. The exogenous variables, namely, price, total gross domestic product, firms' income and income over sales ratios acted as the instruments for the test.

Equation 2 is comparable to those found in studies of Tesler (1962), Palda (1964) and Metwally (1976). These authors included the advertising expenditures of competing brands to measure industry-wide advertising effect on demand. Another common denominator among these studies is their utilization of a distributive lagged model. Succeeding studies, however, rejected such lagged models on the basis that advertising's effect on sales for most industries occur almost entirely within a one year period after the advertising outlay is made (Wilder, 1974). Landes and Rosenfield (1994) confirmed that the effect of advertising is short-lived. Boyd and Seldon (1990) found that advertising effects are gone within a year. The paper followed the latter studies of not including lagged models with the rationale that the average life span of a television ad in the Philippine market is only three to six months.[8]

The Dorfman-Steiner Model was able to derive the optimal advertising-to-sales ratio by maximizing the profits of firms given their specified demand function. The optimal advertising-to-sales ratio is equal to the ratio of the elasticities of demand with respect advertising and price. Actual ratio figures are a straightforward computation of the advertising expenditure over sales. The coefficients of price and advertising in Equation 2 are equivalent to the elasticities of demand with respect to the same variables, thus, yielding the optimal advertising-to-sales ratio.[9] The optimal figure will then be compared to the actual figures of the sample firms.

III. RESULTS AND DISCUSSION

The simultaneous test on the relationship of advertising expenditures and sales yields the theoretical expectations: advertising expenditures of firms (A_{it}) positively influences the quantities sold by the firms and the results are highly significant at one percent level of confidence (see Table 1). We therefore reject the null and accept the alternative hypothesis. The price variable (P_{it}) and the total GDP variable are not significant. The price variable exhibits the expected negative sign of the effect of prices on demand.

Results of Equation 1b show that sales measured as quantities sold do not simultaneously affect advertising (see Table 2). Likewise, the other variables showed insignificant coefficients. The outcome illustrates that the sample firms do not automatically tend to increase advertising expenditures when sales increases.

Equation 2 incorporated dummy variables to provide a picture of industry behavior effects. The OLS test reveals that industry's advertising behavior also affects products' sales (see Table 3). The pharmaceutical industry behaves differently relative to the beverage industry. The dummy coefficient for the home care industry is not significant. This implies that the home care industry behaves relatively similarly to the beverage industry since the latter is the base variable.

It can be noted that the sign of the advertising variable became negative for the pharmaceutical industry. Unfortunately, this result goes against both the null and the alternative hypothesis. A study by Brush (1976) deliberately excluded the pharma-

ceutical industry because this industry tends to have exceptionally high advertising intensities. The author stressed that information on this industry tends to be flawed because they lumped over-the-counter drugs together with ethical drugs. These same conditions apply to the sample data of this paper since disaggregated data was difficult to obtain. The author therefore advises caution in the interpretation of this particular finding. Future research should employ disaggregated data to establish a more concrete result.

In dealing with the issue of "excessiveness", the coefficients derived from Equation 2 are interpreted as the price and advertising elasticities of demand (see Table 4). Since the dummy coefficient of the home care industry is not significant, it assumes the behavior of the base variable, which is the beverage industry.[10] This means that the home care products industry behaves like the beverage industry in terms of advertising expenditures.

Applying the Dorman-Steiner Model's derivation of the optimal advertising over sales ratio using the advertising and price elasticities, Table 5 presents the comparison of the industries' actual and the optimal ratios. Despite the huge resources allotted to advertising activities, advertising expenditures in the Philippines prove to be less than the optimal. The sample firms are advertising less than the profit-maximizing level. Interestingly, this is contrary to findings of Metwally (1991) and Brush (1976) where both authors found that their sample firms' actual advertising intensity ratios are higher than the optimal ratios. Noticeably, the behavior of the pharmaceutical industry can be described as "out-of-bounds", corroborating the findings of Brush (1976). The 95-percent figure is high compared to industry standards, where cost of goods sold is usually in the range of 20 to 30 percent only (Metwally, 1976).

The nature of the sample industries could explain the results above. Although the consumer goods industry faces a growing demand, it can be observed that the sample industries are in the mature and stagnant markets, specially those existing brands in the beverage and laundry soap markets. Most of the brands have been in the market for more than 50 years. When goods are in this product life cycle stage, Kotler and Armstrong (1998) recommend intensive advertising activities to help sustain producers' market share, which could sufficiently increase a firm's optimal level of advertising.

It can also be inferred that the sample firms do not fully appreciate the power of advertising. Though advertising is economically profitable through its influence in sales, the results of the simultaneous test provides evidence that increased sales do not necessarily lead to increased advertising. This reflects that the rule-of-the-thumb advertising budgeting process may be more of a convenience policy rather than a reality.

IV. CONCLUSIONS AND DIRECTIONS FOR FUTURE RESEARCH

The paper, despite its data limitations, provides distinct results in some Philippine consumer goods with regard to the effectiveness of industries' advertising activities. The paper is able to empirically demonstrate the alternative hypothesis that advertising expenditures influence sales by positively affecting quantities sold by the firms, particularly in the beverage and laundry soap sectors. The paper also showed, through the simultaneous equation method, that the relationship between advertising and quantities sold is not reciprocal: sales do not affect advertising expenditures. Lastly, the comparison between optimal and actual advertising intensity may be surprising — there is actually a need for local firms to advertise more, especially in the face of

maturing and stagnating markets. Firms need to recognize that advertising has economic benefits.

Areas for further study include the need for disaggregated data to derive a more specific result for an inquiry into specific industries' advertising behavior. Specifically, in the pharmaceutical industry, there is a need to segregate data of different product lines. Also, a longer time horizon could enhance future results since this study, because of availability of data, used only three years. The effect of advertising expenditures in each advertising medium (i.e., television, newspaper and radio) may also be explored. This will provide critical data to business policy-makers on which medium to concentrate on, given their product or industry. This suggestion arises from the findings of Esteban, Gil and Hernandez (2001) that the degree of media specialization is directly related to the consumer's valuation of the good. They found that the transition from mass to target advertising could affect market outcomes. Target advertising entails concentrating advertising activities in a medium that is accessible and widely used by target consumers (Kotler, 2000). Appendix 1 provides an outlook on which medium is less exploited for advertising activities, and this could help firms in reevaluating their media placements.

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NOTES

[1] The Philippine Congress held several hearings on this issue of "excessive advertising" in one of the consumer product industries in 1999. Dependence on advertising expenditure was cited as the culprit in the increased costs, which led to the overpricing of pharmaceutical goods in the market. (Nazareno and Gonzales, 1999).

[2] *The Economist*, May 19, 2003.

[3] "Sari-sari" stores pertain to the ubiquitous and small retail stores in the Philippines residential areas. "Sari-sari" is a Filipino term literally meaning "variety", or "varied".

[4] *The Economist,* May 19, 2003.

[5] Ibid.

[6] The budgeting practice toward advertising activities was derived from interviews with marketing practitioners of some sample firms. They confirmed that such practice is common in the industries. Academicians, on the other hand, prefer the objective task-method of budgeting (Kotler, 2000).

[7] According to Dorfman and Steiner, the demand facing a firm is a function of price and advertising so that $q = D(p,s)$ where q is the quantity demanded at price p and at advertising level s. The monopolist's profit becomes $\Pi^m(p,s) = p\,D(p,s) - C(D(p,s)) - s$.

The first-order conditions for the maximization with respect to p and s are:

$D(p,s) + p\,D_p(p,s) - C'(D(p,s))\,D_p(p,s) = 0$ or $q + p\,\partial D/\partial p - C'(q)\,\partial D/\partial p = 0$; an

$p\,D_s(p,s) - C'(D(p,s))\,D_s(p,s) - 1 = 0$ or $p\,\partial D/\partial s - C'(q)\,\partial D/\partial s - 1 = 0$.

Let $\varepsilon_A \equiv -(\partial D/\partial p)(p/q)$ and $\varepsilon_P \equiv (\partial D/\partial s)(s/q)$ denote the elasticities of demand with respect to price and advertising. Rearranging the two first-order conditions yields the desired optimal advertising over sales ratio equal to: $s/pq = \varepsilon_A/\varepsilon_P$.

[8] The life span figure is an approximation of industry practices and provided by interviews with Philippine advertising executives.

[9] Using the beta coefficients of Model 1b, the demand elasticities with respect to price and advertising for the three industries are as follows:

$\varepsilon_{PB} = \gamma_1$ $\varepsilon_{AB} = \gamma_2$ $\varepsilon_{PP} = \gamma_1 + \gamma_3$

$\varepsilon_{AP} = \gamma_2 + \gamma_5$ $\varepsilon_{PHC} = \gamma_1 + \gamma_4$ $\varepsilon_{AHC} = \gamma_2 + \gamma_6$

Where ε_{PB} and ε_{AB} = price and advertising elasticities of beverage industry, respectively
ε_{PP} and ε_{AP} = price and advertising elasticities of pharmaceutical industry, respectively
ε_{HC} and ε_{AHC} = price and advertising elasticities of home care industry, respectively

[10] Elasticities were computed as follows:

$\varepsilon_{PHC} = \gamma_1 + \gamma_4 = -1.699 + 0 = -1.699$

$\varepsilon_{AHC} = \gamma_2 + \gamma_6 = 0.825 + 0 = 0.825$

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Table 1: Results of Equation 1a

Y = ln(Q) Instruments: lnP_{it}, $lnGDP_t$, lnY_{it} and lnY/S_{it}		
Variables	Beta Coefficient	P-Value
Constant	-19.453	0.856
lnA_{it}	1.225	0.0000***
lnP_{it}	-1.344	0.2751
$lnGDP_{it}$	1.148	0.895
	Adjusted R-Square = 0.626	

*** Significant at $\alpha = 0.01$

Table 2: Results of Equation 1b

Y = ln(Advertising Expenditures) Instruments: lnP_{it}, $lnGDP_t$, lnY_{it} and lnY/S_{it}		
Variables	Beta Coefficient	P-Value
Constant	7.104	0.183
lnQ_{it}	-0.501	0.617
lnY_{it}	-0.754	0.453
lnY/S_{it}	1.096	0.253
R-Square	0.335	

Table 3: Results of Equation 2

Variables	Y = ln(Q) Equation 1b Beta Coefficient	P-Value
Constant	4.048	0.104
lnP_{it}	-1.699	0.098*
lnA_{it}	0.825	0.0007***
$DP_P(lnP_{it})$	1.968	0.081*
DP_{HC} (lnP_{it})	1.164	0.226
DA_P (lnA_{it})	-0.569	0.058*
DA_{HC} (lnA_{it})	-0.351	0.166
R-Square	0.443	

*** Significant at $\alpha = 0.01$, *Significant at $\alpha = 0.10$

Table 4: The Elasticities for the Optimal Ratio from Model 1b

Industry	Advertising Elasticity of Demand (ε_A)	Price Elasticity of Demand (ε_P)
Beverage	0.825	-1.699
Pharmaceuticals	0.256	0.269
Home Care	0.825	-1.699

Table 5: Optimal Versus Actual Advertising Intensity

Industry		Actual Advertising over Sales Ratio	Optimal Advertising over Sales Ratio = $\varepsilon_A/\varepsilon_P$
Beverage	1999	8.75	48.55
	2000	7.96	
	2001	9.75	
Pharmaceuticals	1999	37.17	95.16
	2000	36.03	
	2001	39.29	
Home Care Products	1999	30.91	48.55
	2000	28.78	
	2001	29.60	

Appendix A
Philippine Advertising Expenditure on Consumer Goods

Media	2001 PhP(000)	2000 PhP(000)	YOY % Change
Terrestrial TV	859,463	759,639	13%
Cable TV	48,513	30,581	59%
Newspaper	145,665	139,806	4%
Magazine	49,593	51,902	-4%
Radio	250,766	209,729	20%
Cinema	-	-	-
Others	-	-	-
Total	PhP 1,354,000	PhP 1,191,657	14%

Source: www.ACNielsen.com

Appendix B
Key Players: Ready-To-Drink Juices

Company	Brand/s
Doypack:	
Zest-O Corporation	Zesto, Sun-Glo, Big 250, Plus, Sunburst
La Tondeña, Distillers, Inc.	FunChum
Taiyu Food Products, Corp.	Jumbo, Fruit-C
Traditional Food Corp.	Jungle Juice
Tetra Pack:	
Coca-Cola Bottlers Phils. Inc.	Hi-C
La Tondeña Distillers, Inc.	Magnolia
Selecta Dairy Products, Inc.	Sunkist
Powdered	
Sugarland Multifood, Inc.	Eight O'Clock, Ice Coldmix, Ponkana
Kraft Foods (Phils.)	Tang, Kool-Aid
La Tondeña Distillers, Inc.	Fresh n' Ripe
Phil. Health Food Mfg., Ctr.	Calciumade, Cetrin
Procter & Gamble Phils., Inc.	Nutri-Delight
Selecta Dairy Products, Inc.	Sunkist
Zest-O Corporation	Sunglo
Concentrates	
7D International	Mango 7D
Marina Sales, Inc.	Sunquick
Foodworld Mfg. Corp.	Sunny
M.V. Food Industries	Ritchie's
Philippine Health Food Mfg. Ctr.	Cetrin
RAM Food Products	RAM
MLM Foods, Inc.	Katas
Canned	
Del Monte Phils., Inc.	Del Monte, Today's
Dole Philippines	Dole
Zest-O Corp.	Zest-O
Cenmaco, Inc.	Gina, Luzona
KLT Fruits	Mabuhay
Quantum Foods, Inc.	Seasons
Nutrilicious Foods Corporation	Nutrilicious

Source: Center for Food and Agribusiness, University of Asia and the Pacific Databank

Appendix C
Key Players in the Pharmaceutical Industry*

Company	Brand/s
Johnson & Johnson Phils, Inc.	Band-Aid Brand Protection Line
Procter & Gamble Phils, Inc.	Vicks Inhaler/ Formula 44, Vicks Omnibus
Abbott Laboratories Phils., Inc.	Cecon, Vi-Daylin Multivitamins Abbott Calci Chewable Calcium Supplement
Bristol-Myers Squibb Phils., Inc.	Squibb Vitamin-E, Tempra Forte, Tempra Syrup
Wyeth Philippines Inc.	Clusivol Capsule Adult Vitamins Clusivol Syrup Children's Vitamins, Stresstabs Centrum, Simeco, Fibrosine
Pfizer Inc.	Combantrin, Bonamine, Bengay Visine, Terra-Cortil, Trosyd, Tyzine Nasal Spray Quantrel, Benadryl, Ponstan 250, Sinutab Benadryl Anti-Allergy, Mylanta Original
Glaxowellcome Phils., Inc.	Calpol, Zantac 75 Antacid, Mincee Jellies
United Laboratories Inc.	Alaxan Pain Reliever, Decolgen, Tuseran Forte, Solmux Myracof, Medicol, Dolfenal, Neo-Aspilets, Nutroplex Revocin, Kremil-S, Biogesic, Myra 300-E Vitamins, Ceelin Disudrin, Growee Syrup, Femina, Alaxan FR
Boehringer Ingelheim Phils., Inc.	Pharmaton, Dulcolax, Kiddi Pharmaton, Bisolvon Forte
United American Pharma Inc.	Enervon-C, Enervon-C Plus, Neozep Tablets United American Tiki-tiki Plus, Allerin Cough Syrup Neozep Syrup, Tiki-tiki Star Syrup
Novartis Phils.	Orofar-L, Lamisil Antifungal Cream
Philhealth Food Center Inc.	Calciumade
Janssen Pharmaceuticals	Imodium, Nizoral Cream, Antiox
Warner-Lambert Phils. Inc.	Ponstan 250
Zuellig Pharma Corp.	Strepsils
Roche Phils., Inc.	Rogin-E, Berocca, Calci-Aid, Calci-Aid Syrup
Metro Drug Inc.	Hirudoid
Schering- Plough Corp.	Drapolene Crème
Telstar Manufacturing Corp.	Rhea Superscent Oil
Pascual Laboratories Inc.	Glutaphos, Poten-Cee Adult Vitamins Amargozin, Poten-Cee Children's Vitamins
Bayer Phils. Inc.	Canesten Cream, Bayer Aspirin Flintstone Multivitamins, Canesten Omnibus
Westmont Pharmaceuticals Inc.	Hydrite
Int'l Pharmaceuticals Inc.	Omega Pain Killer, Efficascent Oil, Vaporin
Diamond Laboratories	Korgivit-E Adult Vitamins, Bomvital Syrup
Philusa Corp.	Mediplast Plastic Strip, Koolfever, Cluvimin Mentopas Medicated Plaster, Rhea Povidone Iodine
Getz Bros. Phils., Inc.	Salonpas Plaster
DKT Phils., Inc.	Trust Quality Condoms, Frenzy Condoms

Company	Brand/s
Whitehall Pharmaceuticals Phils.	Advil, Incremin, Robitussin, Caltrate Plus, Loviscol Stresstabs, Dimetapp, Loviscol for Kids
Biomedis Inc.	Diatabs Tablets, Diatabs Capsule
Reproductive Health	Reproductive Health
MTV Foreign Commercials	Paracetamol/Analgesic/Lozenges/Cough Drops Cough and Colds Preparations
OSAKA Health Clinic	Gyolic Natural Garlic
Ener-aid Multivitamins	Ener-Aid Multivitamins
Medical Center Trading Corp.	Bio Sign HCG
Sanofi-Synthelaboratories	Gardan
GlaxoSmithKline	Calpol Syrup, Eye Mo, Dequadin, Calpol Junior
Salicylic Acid	Salicylic Acid
Rey Herrera	Glo-Herbal Food Supplement
United Home	United Home Ascorbic Acid, United Home Calactate United Home Ferrous Sulfate
ABS GEN Herbs Int'l Corp.	Charantia Ampalaya Food Supplement, ABS Power Herbs
GNC Live Well	Livo Plus
Circulan	Circulan
Composite Enterprises Corp.	Ricola Herb Lozenges
Boots Co.	Strepsils, Streptus, Strepcof
Uniherb	Arthro Herbal Supplement
Gano Excel Phils., Inc.	Ganoderma
Euro Health Care Inc.	Restolax
Kidoo	Kidoo
General Nutrition Centers Inc.	GNC
Netterumanii	Netterumanii
MY-Marvel Taheebo	MY-Marvel Taheebo Omnibus
MG Prime Pharmaceuticals Inc.	Medgivit Syrup
Goldshine Pharmaceuticals	Jimm's Corporate
Herbal Power Food Supplement	Herbal Power Food Supplement
Lactobacillus PAFI Techno Resources Corp	Lactovitale Probiotic Supplement
PCO-Plus Food Supplement	PCO-Plus Food Supplement
La Croesus Pharma Inc.	Bevon-C Tablet
Marishi Premium Health Products	Marishi Premium Health Products
Spring Vine Herbal	Spring Vine Herbal
Herbs and Nature Corp.	Liveraide Silymarin Capsule
Ascorvita	Ascorvita
Nutramax	Nutramax
Winner TV Shopping Corp.	Karen Bust Cream

Source: AGB Philippines Inc

Appendix D
Key Players in Home Care Industry: Laundry Soaps

Company	Brand/s
Unilever Phils., Inc.	Surf Detergents, Breeze Detergents, Wheel
Procter and Gamble Phils., Inc.	Tide Detergents, Mr. Clean Detergents Perla Laundry Soaps, Ariel Powder Detergents Tide Bar Ultra, With Bleach, Tide Mega Bar Tide Bar Ultra with Bleach Nature Fresh
Lamoiyan Corp.	Dash Liquid Laundry Detergent
ACS Manufacturing Corp.	Pride Detergent Bar, Pride Detergent Powder
DSS Productmakers Inc.	Blu Detergent Omnibus, Blu Powder Detergent
Pagoda Phils.	Family Detergent Bar
Henkel Phils., Inc.	Liquid Persil Laundry Detergent
MMG (Mateo Management Group)	Power Ultra Detergent Powder
Magiclean Corp.	Lins Detergent Powder
Wellmade Manufacturing Corp.	Speed Detergent Bar Kalamansi Speed Macho Detergent Bar
White Wash	White Wash Detergent Bar
Wings Activeguard Detergent Powder	Wings Activeguard Detergent Powder
Strike Detergent Bar	Strike Detergent Bar

*Source: AGB Philippines Inc

Appendix E
Consumer Goods Industry Overview

Industry	Actual # of Firms in the Industry	# of Sample Firms
Beverage	52	12
Pharmaceuticals	63	10
Home Care Products	13	5

Appendix F
The Sample Data

Industry		Sales	Advertising Expenditure	Actual Ratio of Advertising to Sales
1999	Beverage	145,860,901	1,276,055,518	8.75
	Pharmaceuticals	33,386,499	1,240,855,780	37.17
	Home care Products	29,724,934	918,807,888	30.91
2000	Beverage	176,377,990	1,697,001,826	7.96
	Pharmaceuticals	37,880,049	2,010,973,576	36.03
	Home care Products	153,369	1,022,152,907	28.78
2001	Beverage	1,313,867	2,077,674,022	9.75
	Pharmaceuticals	228,352	2,577,369,199	39.29
	Home care Products	1,654,383	1,138,007,607	29.60