

The effectiveness of marketing tools in a consumer goods market in Italy during the Great Recession (2010-2015)

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1. Introduction

During the Great Recession of 2008-2015, household consumption decreased in all EU countries (Streeck, 2016; Tooze, 2018). In Italy, for instance, at constant 2015 prices, the value of private national consumption decreased by 4.6% (Istat, 2021). It must be borne in mind that the considered period is very diverse. The Great Recession 2008-2015, as is well known, is W-shaped, with a first lower turning point in 2009 (financial crisis that spread from the USA to all high-income countries) and a second lower turning point in 2013 (sovereign debt crisis in EU countries). Therefore, this cyclical profile sees, within the considered period, the alternation of depressive and moderately expansive phases.

Faced with this situation, undertakings active in the markets for consumer goods with a high purchase intensity mostly reacted by means of strategies based on price reductions and promotions; conversely, most enterprises reduced their promotional advertising investments (Freo et al., 2020). Companies' marketing strategies in times of economic recession have been the subject of in-depth studies (Deleersnyder et al., 2009; Van Heerde et al., 2013). Most of the evidence presented in the literature confirms that the adopted marketing strategies vary throughout the different phases of the economic cycle (Lamey et al., 2012; Van Heerde et al., 2013). In the wake of recession, households reduce consumer spending, for instance by switching from national brands to private labels brands; at the same time, companies react by changing the marketing mix, reducing regular prices, making greater use of promotions, and cutting advertising investments. Van Heerde et al. (2013) shows that price elasticity increases during the downward phases of the economic cycle, whereas advertising elasticity increases during the expansionary phases. Besides, other studies find that increasing or maintaining advertising investments has a positive impact on brand performance during recessions (Deleersnyder et al., 2009; Kashmiri and Mahajan, 2014).

The subject of our analysis is the Italian market of tea-based beverages in the period 2010-2015, of which the marketing tools' effectiveness and the competitive structure are examined, in order to ascertain the intensity and extent of price-based strategies compared to those that leverage advertising investments.

Based on the literature, we expect the price elasticity of each brand to be greater than the elasticity to advertising. Since we are dealing with a stationary market, we employ a market share model, making use of the methodology described by Cooper and Nakanishi (1988). This approach allows us not only to measure the impact of marketing mix on each brand's market share but also to identify the competitive structure.

2. Data and preliminary analyses

The present study analyses the competitive situation and the effectiveness of price maneuvers and advertising investments in terms of increasing market shares.

We make use of monthly observations obtained by aggregating IRI Infoscan weekly surveys concerning Italian hypermarkets and supermarkets in the period from November 2010 to October 2015. For each brand, the sales in value and volume, the price per liter, the possible presence of price promotions, and the weighted distribution are known. The advertising carried out by each brand, sourced from Nielsen, is expressed in terms of Gross Rating Points referring to all mass

communication channels.

The brands on the market are numerous and heterogeneous. Price differences are considerable between one brand and another, ranging from 0.56 to 1.65 euros per liter. In order not to saturate the information capacity of the model in relation to the available data, requiring the estimation of an excessive number of parameters, we separately consider five different brands, so that they adequately represent the heterogeneity of competitors on the market, both in terms of price and market share. Altogether, such five brands cover about three quarters of the category's volume sales.

Since tea-based beverages are characterized by a low emotional involvement, the differentiation between brands is mostly based on tangible attributes and the product's price is seen as a mirror of its intrinsic quality. This is also reflected in the ratio of market share to share of voice, which is high for lower-priced brands with a higher market share. The choice of the product is made directly at the point of sale and is based on habits and routines. The process of purchasing tea-based beverages, a "luxury" good, follows the do-learn-feel scheme, whereby consumers know and are able to evaluate the product only after making the purchase; additional purchases may only happen after they learn about the product's actual quality and feel satisfied. Therefore, for products of this kind, the advertising investment is primarily aimed at ensuring that consumers recognize the product and are induced to carry out an initial test; then, only after repeated purchases, the goal turns into strengthening users' loyalty.

As could be expected, the advertising investments made by the different brands during the analyzed period show a very marked variability, in relation to the different time intervals in which the companies carried out their advertising campaigns. Before proceeding to the estimation of the attraction model, we verify that the five brands' market shares do not present unit roots (stochastic non-stationarity), by performing a Dickey-Fuller test augmented by means of seasonal dummies and deterministic trend (Table 1) on the log-centered market shares.

Table 1 – Dickey-Fuller unit root test.

Brand	Test	p-value
Ferrero	-3.88	0.019
San Benedetto	-4.76	0.002
Nestlé	-3.90	0.018
PepsiCo	-3.70	0.030
Coca-Cola	-4.95	0.001

Note: The null hypothesis is the presence of unit root.

The trend of volume sales has a purely seasonal pattern. The total volume of sales in the category is not markedly affected by the economic crisis. We remark the existence of a consumer segment, not insignificant in its size, which buys the category even in the winter months. Category-level advertising investments follow the seasonal pattern: each year, they begin in the spring months, reach their peak at the beginning of the summer, and then gradually decrease until almost zero in winter.

The average price of the five considered brands increases over the period. Every year, the price decreases in the spring-summer months, due to more frequent price promotions, and increases in autumn and winter, with the average maximum price of € 1.06 recorded in November 2014. In general, prices are gradually increasing: in the considered period, the price went from € 0.89 to € 0.99 per liter, with an increase of more than 11%, against an increase in the general level of consumer prices in the same period of 7.5% and, for the general category of non-alcoholic beverages, of 8% (Istat, 2021). Overall, the fairly modest decrease in volume sales is therefore offset by the increase in unit prices. These characteristics make, in our opinion, the study of this category particularly interesting and peculiar.

3. Attraction model estimation

For the estimation, the method of ordinary least squares individually applied to each equation was used in the first place; this procedure is equivalent to the Zellner estimator when the same regressors appear in each equation of the system (Cooper and Nakanishi, 1988). Prices and advertising investments of each brand were employed as independent variables in each equation, in addition to the weighted distribution, while the dependent variables are the log-centered market shares. Both the MCI and MNL models (Cooper and Nakanishi, 1988) are theoretically plausible; therefore, it is necessary to resort to empirical criteria for their selection. We opted for the use of the MNL model, as advertising investments are absent for many brands and in different periods (flight strategy).

We proceeded as follows: a) formal seasonality test; b) estimation of the complete MNL model by means of the OLS method after performing the data log-centering; c) analysis of the presence of residual autocorrelation; d) estimation of the final model through the Zellner's SUR method (Cooper and Nakanishi, 1988).

For what concerns seasonality, we performed a formal test through an OLS regression on seasonal dummies, not reported for the sake of brevity. In the equations for each brand, according to the previous results, the seasonal dummies and the deterministic trend are included.

The choice between the use of either a static or a dynamic model was solved by performing a Durbin-Watson autocorrelation test (Table 2) on the residuals from the OLS estimates, the results of which led us to prefer a dynamic formulation of the error correction type, as in three equations out of five we come to reject the hypothesis that residuals are white noise (at a 1% significance level).

Table 2 – Durbin-Watson autocorrelation test.

Brand	Test	p-value
Ferrero	1.93	0.072
San Benedetto	1.35	9.356e-005
Nestlé	1.67	0.007
PepsiCo	1.23	1.182e-005
Coca-Cola	1.75	0.015

The presence of seasonality in market shares is confirmed by the OLS estimates. From brand to brand, the seasonality pattern presents different shapes and the deterministic trend shows different slopes.

The presence of non-significant coefficients in the OLS estimates led us to estimate the system of equations through the SUR method by setting the values of the barely significant parameters to zero. The equations also include the seasonal dummies, the deterministic trend, and each brand's log-centered market share delayed by one lag, in order to consider the dynamic aspect highlighted by the Durbin-Watson test. The results are shown in Table 3. The R² coefficient weighted for the entire system is equal to 0.947.

The parameters concerning the influence of a brand's price on its market share present a negative sign, while those relating to competitors' prices are generally positive. Most coefficients regarding advertising investments are not significant, while the distribution confirms itself as an important marketing tool.

To verify the appropriateness of the restrictions imposed on the parameters of the set of equations, we made use of the F test (not reported for the sake of brevity), which confirms that we can rely on the restricted model.

Table 3 – Coefficients of the full-effects MNL model estimated through the SUR method.

Brands/Variables	Ferrero	San Benedetto	Nestlé	PepsiCo	Coca-Cola
Constant	2.1515***	6.9337***	-0.6655	0.9299***	-9.3094
Price – Ferrero	-0.1323*	-4.6418	0.3431**	-0.2959*	-
Price – San Benedetto	-	2.1982***	0.9738***	-	0.8641***
Price – Nestlé	0.7355***	0.6966***	-2.9534***	1.2991***	-
Price – PepsiCo	1.0016***	0.8764***	-2.1558	-1.9880***	-
Price – Coca-Cola	-	0.3737***	0.6692***	0.7689***	-1.6465***
Group – Ferrero	-	-	-	-3.4374	-
Group – San Benedetto	-1.954e-05*	8.6315	-	-	-
Group – Nestlé	2.2499**	-	-	-	-
Group – PepsiCo	-	3.3450	-	-	-8.9940e-0**
Group – Coca-Cola	-	-0.0002***	-	0.0003**	-
Distrib. – Ferrero	-	-0.0512**	-9.6300e-13	7.4800e-13	0.0615**
Distrib. – San Benedetto	-0.0296***	-	-	1.6750	0.0245**
Distrib. – Nestlé	0.0116***	-0.0103***	0.0127***	-	-0.0164***
Distrib. – PepsiCo	-	0.0024*	-0.0021	-	-
Distrib. – Coca-Cola	-0.0082***	-0.0050***	-	-0.0102***	0.0247***
Time	-	0.0073***	-0.0023	-0.0135***	0.0093**
Spring	-	0.0699***	-0.0191	-	-
Summer	-	0.0646***	0.0965***	-0.1005***	-0.0709
Autumn	-	0.0457***	-0.0084**	0.0253	-
MS(-1)	0.1932***	0.0606	0.0685	0.1039***	0.0959*
R2corr	0.96	0.97	0.93	0.89	0.86

Notes: p -value < 0.01 = ***; p -value < 0.05 = **; p -value < 0.10 = *.

4. Elasticity of shares with respect to marketing tools and basic market shares

The estimated parameters of the restricted model allow us to determine the cross-elasticity coefficients, according to the following formula (Cooper and Nakanishi, 1988):

$$\varepsilon_{S_i : X_{kj}} = (\beta_{kij}^* - \sum_{h=1}^m S_h \beta_{khj}^*) X_{kjt}$$

where $\varepsilon_{S_i : X_{kj}}$ is the elasticity of the market share of brand i with respect to the k marketing tool of brand j ; β_{khj}^* are the estimated coefficients; and S_h are the average market shares.

Examined by rows, the elasticity matrices provide information on the effects of marketing variables (own and competitors') on the share of a brand, while by columns they indicate the effects produced by a specific brand's marketing tool on its own share and on that of competitors; in essence, they provide useful information on the competitive situation in the examined market. In the following tables, we present the elasticities of market shares to the various brands' prices, advertising investments and weighted distribution.

Table 4 – Elasticity to prices (authors' elaboration, Italy, Nov. 2010 – Oct. 2015).

Market share/Price	Ferrero	San Benedetto	Nestlé	PepsiCo	Coca-Cola
Ferrero	-0.1947	0.4587	0.3930	0.3401	-0.1719
San Benedetto	0.0228	-1.2112	0.3673	0.2402	0.1132
Nestlé	0.5869	1.1985	-2.0424	-0.4578	0.3387
PepsiCo	-0.4637	0.4587	0.7650	-2.0414	0.4147
Coca-Cola	0.0228	1.1151	-0.0926	-0.4578	-1.4280

By observing the elasticities to the average prices in the whole period (Table 4), it is immediately clear that those relating to each brand's own price are all negative. Therefore, a price increase manifests itself in a more or less sharp decrease in a brand's own market share. Moreover, a modest proportion of cross-price elasticities shows a different sign than expected.

Observing the table by columns, we find the elasticities of market shares with respect to the price of the examined brand: it is easy to notice that they differ much, both from one brand to another (which shows that price variations have effects of varying strength depending on the brand) and within the same column. Indeed, this is a clear sign of the existence of strong competitive asymmetries in the analyzed market.

Let us now examine the elasticities by brand, which present some noteworthy characteristics. Most of the values in the matrix are below one. Higher values mean more price competition between brands. Analyzing the values by rows, it emerges that Ferrero, the highest-priced brand, is characterized by a low direct elasticity in absolute value and is relatively isolated from the price maneuvers of other brands, thus confirming its role as the market leader.

Moving on to the column relating to San Benedetto, which is the most important follower, we can see that its price has a relevant impact on the other medium- and low-priced brands.

Briefly, the examination of the cross-price elasticity matrix, while confirming the importance of competitive asymmetries, underlines that the two main brands are rather isolated from each other as regards the effect of prices on market shares.

Table 5 – Elasticity to advertising investments (authors' elaboration, Italy, Nov. 2010 – Oct. 2015).

Market share/Investments	Ferrero	San Benedetto	Nestlé	PepsiCo	Coca-Cola
Ferrero	0.0001	-0.0046	0.0020	-0.0002	0.0010
San Benedetto	0.0001	0.0039	-0.0012	0.0004	-0.0025
Nestlé	0.0001	0.0013	-0.0012	-0.0002	0.0010
PepsiCo	-0.0022	0.0013	-0.0012	-0.0002	0.0051
Coca-Cola	0.0001	0.0013	-0.0012	-0.0017	0.0010

The coefficients regarding the elasticity of market shares to advertising investments (Table 5) are all close to zero. Therefore, such investments almost never seem to produce any noteworthy variation in either own or competitors' market shares. This is very much in tune with the coefficients relating to advertising investments resulting from the MNL models estimated through the SUR method, which were mostly non-significant.

Table 6 – Elasticity to the weighted distribution (authors' elaboration, Italy, Nov. 2010 – Oct. 2015).

Market share/Distribution	Ferrero	San Benedetto	Nestlé	PepsiCo	Coca-Cola
Ferrero	1.5898	-1.7760	0.7840	-0.0347	-0.2390
San Benedetto	-3.4685	0.9508	-1.0237	0.1233	-0.0107
Nestlé	1.5898	0.9508	0.8755	-0.1741	0.2913
PepsiCo	1.5898	0.9508	-0.1717	-0.0347	-0.3233
Coca-Cola	7.6600	3.2117	-1.5196	-0.0347	1.7784

Moving on to Table 6, we can notice that most direct elasticities are positive, while cross elasticities (which should be negative) often show different signs than expected.

An overall evaluation of the effectiveness of each brand's marketing strategy can be carried out by comparing the basic and average market shares for the whole period.

Table 7 – Average and basic market shares (authors' elaboration, Italy, Nov. 2010 – Oct. 2015).

Brand	Average market share	Basic market share
Ferrero	0.3805	0.0083
San Benedetto	0.3603	0.9888
Nestlé	0.1593	0.0005
PepsiCo	0.0615	0.0024
Coca-Cola	0.0384	8.7291e-08

The basic market share defines the share that each brand would have if all brands had the same coefficients concerning marketing tools' effectiveness and if the intensity of their use were the same for each brand. In brief, it represents the intrinsic attractiveness of each brand.

Basic market shares are very different from the average shares observed in the considered period (Table 7). Ferrero, the brand that invests in advertising the most, manages to obtain a much higher average market share than its basic market share, while a significant erosion of the basic share can be pointed out for San Benedetto.

5. Conclusive remarks

From the combined analysis of the effect on market shares of price, advertising investments and weighted distribution, it can be seen that the availability of the brands within a point of sale also plays a relevant role in influencing own and competitors' market shares.

Price competition does not seem to have considerable direct effects (cross elasticities lower than one). With this in mind, advertising investments, despite not having a major direct effect on market shares, are intended to increase brand awareness in consumers' minds, stimulating its recognition at the time of purchase, while price is the variable that ultimately determines the decision to buy the item. Therefore, the key elements in determining market shares in the examined category are the elasticity to price – especially the direct one – and to the weighted distribution, which is in line with the characteristics of this category of products (i.e., high purchase frequency and weak emotional involvement).

In conclusion, it should be remarked that the analyzed category recorded an excellent performance in the considered period. It is self-evident that our results ought to be expanded by considering a wider range of categories, in order to be able to draw more general conclusions.

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