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Advertising, Anti-smoking Campaign And Cigarette Consumption In Greece

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Abstract

This article considers mainly the effect of advertising and the anti-smoking campaign on the consumption of cigarettes in Greece. For this purpose, a non monotonic lag distributed model has been selected. The relevant estimates are based on monthly data for the period 1977-99. The results have shown on the one hand that the effect of advertising on cigarette consumption is statistically significant, but it is easing off within a very short time period, and on the other hand that the systematic anti-smoking campaign waged between 1979 and 1981 was effective. On the contrary, the banning advertising and health warning do not seem to affect cigarettes consumption significantly.

Key words:

IPOs, Cigarette consumption, Advertising, Anti-smoking Campaign, Greece.

1. Introduction

Cigarette advertising promotes the idea that smoking is acceptable, desirable and glamorous. As early as the 1940s researchers were forthright about the effects of cigarette advertising. Borden (1942), professor of advertising at Harvard, concluded that advertising was an important factor in determining both the size and speed of consumption... “without advertising cigarette use would probably have grown; with advertising, the increase has been amazing”.

However, the effect of cigarette advertising and cigarette advertising bans on the aggregate cigarette consumption remains an internationally debated issue that calls for further research. Indeed, some research so far (e.g. Bass (1969), Ball and Agarwalda (1969), Schnabel (1972), McGuinness and Cowling (1975, 1980), Bishop and Yoo (1985), Leeftang and Reuijl (1985),

Radfar (1985), Seldon and Doroodian (1989) Andrews and Franke (1991), Langesen and Meads (1991) Franke (1994) conclude that the total advertising effort of cigarette producers has a statistically significant effect on aggregate cigarette consumption, while a large amount of research (e.g. Basman (1955), Telser (1962), Hamilton (1972, 1977), Schmalensee (1972), Metra Consulting Group Limited (1979), Leone and Schultz (1980), Baltagi and Levin (1986), Boddewjn (1986), Johnson (1986, 1988)) has found that the effect of advertising is statistically insignificant. In addition, a certain number of researchers, such as Hamilton (1972), Atkinson and Skegg (1973), Baltagi and Levin (1986), Warner (1989), Seldon and Doroodian (1989), Pekurinen (1991), Franke (1994) have reached the conclusion that the anti-smoking campaign which was waged in some countries contributed to the reduction in cigarette consumption. However, the effects of cigarette advertising bans are controversial [Abernethy and Teel (1986), Boddewyn (1986), Toxic Substances Board (1989)] Moreover, Hamilton (1972, 1977) and Schneider, Klein and Murphy (1981) claim that the anti-smoking messages against health risks from cigarettes are more effective than the bans on cigarette advertising.

Econometric studies have dominated the empirical literature in this debate. The major problems in this kind of research are concerned with the specification and measurement of variables, [(Pollay et. al. (1996)]. Inaccurate measurement or omission of relevant variables can lead to misleading or conflicting conclusions (Godfrey (1986)). In particular, it is extremely difficult for independent researchers to obtain accurate measures of cigarette advertising, advertising bans and other promotional expenditure (Johnston (1980)). On the other hand, there are considerable problems involved in the evaluation of partial and complete to cigarette advertising bans (Godfrey (1986)). Comparisons between countries with different legislative controls on cigarette promotion are difficult to interpret because of the difficulty of holding other important influences on smoking, such as price, disposable income and less tangible factors such as antismoking education and cultural attitudes towards smoking, constant.

During the last decade Greece has had the first position in per capita consumption of cigarettes among the countries of the European Union and the third position in the world behind Cyprus and Cuba. In the case of Greece, Stavrinou (1987) researched the effectiveness of the anti-smoking campaign 1979-1981 on cigarette consumption, using annual data for the period 1960-1982 and applying the Koyck model, while Kioulafas (1987) examined mainly the factors affecting the decision to buy each of the brands of cigarettes on sale at the Greek market.

This paper has made use of the monthly data for the period 1977-1999 and has employed a series of different distributed lag models, with a view to

selecting the most appropriate one. Especially, the purpose of this research is to empirically study the effect of the advertising expenditure, of the anti-smoking campaign between 1979 and 1981 and of the banning advertising and health warnings, that were used after 1987, on the aggregate cigarette consumption in Greece. Another aim is also to find what probability can be claimed to have formed a smoking habit among smokers so as to examine whether there exists a seasonal effect on cigarette consumption. Section 2 contains the models and the data used. Section 3 gives the relevant estimates and describes the results reached. Finally, Section 4 summarizes the concluding remarks of the paper.

2. Models and Data

The linear models used for the empirical analysis have the following general form:

$$S_t = f(S_{t-1}, S_{t-2}, S_{t-3}, A_t, A_{t-1}, AE, W, D_2, D_3, \dots, D_{12})$$

where:

- S_t : Cigarette sales at time t (in millions of pieces).
 A_t : Cigarette advertising expenditure at time t (in millions of drs).
 AE : Dummy-variable corresponding to the anti-smoking campaign (1979-1981).
 W : Dummy-variable corresponding to the banning advertising and health warnings (after 1987).
 D_2, \dots, D_{12} : Seasonality dummy-variables (February-December).

The parameters of the models all follow the well known statistical and economic restrictions (Bass and Clark (1972)). The data used are monthly and cover the period 1977-1999. Also, in the place of cigarette sales, which are not available, what has been used is data of cigarette production and imports, which have been released by the National Tobacco organization. The advertising expenditure figures have been taken from the Nielsen Hellas Company and cover all the companies and advertising media. The figures are deflated with the cigarette retail price index employed by the National Statistical Service of Greece. The year 1982 has been as the basis period.

3. Estimation and Discussion of Results

Table I gives the estimates of the models (1) - (6) with the method of least squares. The necessary restrictions which must exist for the parameters of the models have been verified and violation tests of the basic assumptions of the linear model have been applied. The tests have shown that no such violations exist. Moreover, two stability tests (Brown, Durbin and Evans

(1975)) were applied to the cigarette consumption equations of Table I having the best statistical performance. Table II presents the selection procedure, which leads to the model with the best statistical performance.

Table I. Estimates for Models

	Models (Dependent Variable S_t)					
	(1)	(2)	(3)	(4)	(5)	(6)
S_{t-1}	0.43 (6.455)	0.44 (6.533)	0.278 (3.901)	0.283 (3.980)	0.116 (1.931)	0.121 (1.910)
S_{t-2}	-	-	0.349 (4.902)	0.345 (4.857)	0.227 (3.459)	0.224 (3.425)
S_{t-3}	-	-	-	-	0.488 (7.223)	0.483 (7.168)
A_t	0.001 (1.716)	0.009 (2.275)	0.012 (2.547)	0.008 (1.745)	0.002 (1.740)	0.007 (1.704)
A_{t-1}	-	-0.001 (-1.096)	-	-0.001 (-1.613)	-	-0.008 (-1.464)
AE	-177.32 (-3.735)	-190.702 (-3.984)	-118.943 (-2.510)	-131.846 (-2.756)	-51.213 (-1.987)	-62.663 (-1.942)
W	-42.29 (-1.032)	-25.242 (-0.601)	-40.901 (-1.061)	-25.667 (-0.64)	-44.345 (-1.307)	-32.113 (-0.922)
R^2	0.64	0.65	0.69	0.69	0.79	0.78

Note: (a) The numbers in parentheses are t-values.
 (b) The seasonality dummy variables are not included to save space.

Table II. Testing of Models (1) - (6)

Decision Rule	Statistical test	Conclusion
Accept model (1) against model (2) if the coefficient of the A_{t-1} is equal to zero.	$ t = 1.09 < 2.58$	Reject Model (2) Accept Model (1)
Accept model (1) against model (3) if the coefficient of the S_{t-2} is equal to zero.	$ t = 4.90 > 2.58$	Reject Model (1)
Accept model (3) against model (4) if the coefficient of the A_{t-1} is equal to zero.	$ t = -1.61 < 2.58$	Reject Model (4)
Accept model (3) against model (5) if the coefficient of the S_{t-3} is equal to zero.	$ t = 7.22 > 2.58$	Reject Model (3)
Accept model (5) against model (6) if the coefficient of the A_{t-1} is equal to zero.	$ t = -1.46 < 2.58$	Reject Model (6)

Note: $t=2.58$ is the critical value of the t-statistic for 0.01 level of statistical significance.

The procedure for choosing the best model, among alternative models, is based on predictive testing. The predictive testing led to the rejection of the models (2), (1), (4), (3), (6). According to Table II, the relevant selection procedure has shown model (5) to be the most satisfactory. So, the frequently employed Koyck model has not been shown to be the model to adjust to the initial data, but a more general distributed lag model is the best.

The advertising effort had a positive and statistically significant impact on sales. So, an increase in advertising may result in the consumption of more quantities of cigarettes and, usually, of more expensive qualities of cigarettes, particularly as it comes to the image management practices. By appropriating this image, the Greek society is aiming towards a status and prestige. Conspicuous consumption then is the result of the Greek society, where cigarette consumption is advertised as a cultural commodity, and there is a large group in that society which use the deluxe categories to differentiate some members from others of the same group. And by doing so individuals define themselves by comparing themselves to others; and since they purchase these categories to acquire style, they have only created the "fashion"

and “power” trends (Hirschman et al. (1984), Reid (1985), Stevenson et.al.(1990)). In fact, according to the available data from the Greek market for the year 1995, over 45% of the cigarettes sold belong to the category “very expensive”. Given that during the past few years a program of economic austerity has been followed in Greece, the fact of this preference for expensive cigarettes supports the view presented above, that cigarettes in the category “very expensive” combine a certain “image” of consumer “differentiation” and “power”. This position is also supported by the observed preference for foreign brands (with a market share of 57% in 1994 and 61% in 1995) that continuously strengthen their position vis-à-vis “domestic” brands. Moreover, during the 1994-95 period, imports of cigarettes show an increase 12%. Particularly, in the battle for market share over the same period, Marlboro increases its market share from 19% to 20.6%, Peter Stuyvesant from 9.1% to 10.4%, Camel from 7.2% to 7.8%, Silk Cut from 3% to 3.4% etc. On the other hand, for the same period, the market share of domestic brands declines (i.e. Assos from 9.2% to 7.6%, Karelia from 6.2% to 5.8%, Assos International from 4.9% to 4.4%, GR from 4.1% to 3.5%, Karelia Lights from 3.6% to 3.3% etc.). Finally, it should be noted that in the research by Davou (1992) on “smoking during adolescence in Greece”, although only 17% of the respondent adolescents showed a clear positive position with respect to smoking, 87.3% of the respondents declared that smoking is a “serious” matter, 73% that adolescents smoke to show off, 23.7% that smoking does make one to feel grown-up and 12.8% that with smoking one feels important. As regards the results of other researchers, who used data from the Greek cigarette market, the following points can be made: Stavrinou (1987) reached the conclusion that advertising has a statistically insignificant impact on cigarette sales. The disparity which appears concerning the result is attributed mainly to the different time series of data (especially for annual is observed smoothing), to the different manner of defining the variable regarding advertising (Stavrinou used a dummy variable for advertising) and to the different specificity of the models employed. Kioulafas (1987), on the other hand, after establishing that on the Greek cigarette market only the super deluxe categories embark on “powerful” advertising, found that this advertising effort exerts a positive and statistically significant influence on the respective sales of the cigarettes in question. At this point, we would like to note that a powerful advertising campaign of the luxury cigarette brands after 1985 led to an increase in aggregate advertising expenditures. However, a large part of this expenditure seems to be absorbed by interfirm competition in an effort to increase the particular or individual share of the total demand rather than to increase the total demand itself.

The anti-smoking campaign, which was followed in Greece for a limited time, affects sales negatively at a high level of statistical significance. It

should be noted that the anti-smoking campaign was not limited to the banning of advertisements at the mass media or to the banning of smoking in public offices, but was extended to a systematic information of the public in an effort to “persuade” smokers for the damage that smoking is effecting to their health. Moreover, there was a special effort to sensitive smokers not to impose non-smokers to become “passive” smokers and in particular those who suffer from respiratory or cardiovascular disease, children, pregnant women, etc. Unfortunately, the cost of the anti-smoking campaign is unavailable, so no additional useful conclusion can be reached. Stavrinou (1987) reported similar results with those of this article.

The advertising made in previous months was shown not to have a statistically significant effect on sales. This finding agrees with international experience and points to the need for planning successive advertising efforts before the effects of the previous ones have been dissipated.

For several years now, it was considered sufficient to ban cigarette advertising on television and to include the health warning “Smoking is very harmful to health”, both in cigarette advertising and on the various products of cigarette companies. The introduction in our model of the proper variable has shown that this policy does not affect cigarette consumption significantly, confirming in this way the findings of Hamilton (1972) and Schneider et al. (1981). The results may have some explanations: (a) Massive amounts of cigarette advertising expenditure have been transferred from radio and television into other media. In fact, cigarette advertising during the recent years shows a strong increase and is distributed as follows: magazines 59%, newspapers 11%, outdoor events 30%. (b) Although the cigarette advertising on television may be prohibited seeing others smoking in a television program can work as an advertisement for smoking for many people. Especially, when celebrities smoke in a way they encourage many of their admirers to start smoking (Kannas (1985), Evans (1988), Young et al. (1989)). (c) A high percentage of the Greek public support the view that “information warnings” for the damaging effects of smoking on health are exaggerated. According to a recent research on “Drug use in Greece” (Madianou et al. (1992)), this position is supported by 33.8% of the adolescents (12-17 years old), 42.2% of the age group 18-24, 57.7% of the age group 25-44 and 34.5% of the age group 45-64. Overall, the findings indicate that sufficiently informing the public about the harmful consequences of cigarette smoking on health seems to be a much more effective means of limiting consumption than the restriction of cigarette advertising.

The statistically significant positive effect of the sales of previous months on the current sales at a high level of significance, confirms the habit forming nature of cigarette smoking. In fact, smokers are pharmacologically addicted to nicotine, as nicotine is an alkaloid and can therefore cause addic-

tion similar to drug addiction (Ashton (1983), Charlton (1986)). The research by Madianou et al. (1992) finds that 16.9% of the adolescents (12-17 years old) wants to quit smoking, while the 33.7% of this age group tried to quit smoking for 12 consecutive months but did not succeed. For the next age group (18-24 years old), the percentage of those wishing to quit smoking was 25.6% while 35.7% tried to quit smoking for 12 continuous months. In the next two age groups, 25-44 and 45-64, the figures are even higher. In particular, the percentages for the first age group are 28.5% and 44.8%, respectively, and for the second age group 30.6% and 52.3%, respectively. On the other hand, the smokers develop the smoking habit as a result of their relationships with various sources of environmental influences (print advertising, television programs, smoking parents, friends or celebrities etc.) and the sociocultural system of which they are a part (Nolte et al. (1983), Charlton (1986), Evans (1988), Moschis (1989), Young et al. (1989)). According to the research by Davou (1992), 73.7% of the adolescents smokers declared that the "family" environment is "smoking". In the same research, 27.3% of the adolescents declared that the first cigarette was offered to them by their parents and 22.3% by friends. Finally, it can be argued that cigarette use by certain persons for various personal reasons, results in the habit of smoking. In fact some say that they became smokers because it helps them concentrate or because it helps them overcome a stress situation related to the modern way of life or to the pressing long work (Hirschman et al. (1984), Stefanis and Kokkevi (1986)). In the research by Madianou et al. (1992), the view that smoking helps someone to think "more clearly" is supported by 9% of the adolescents, 18.5% in the age group 18-24, 25% in the age group 25-44 and 25.5% in the age group 45-64. In the same research, the view that smoking helps to overcome a stress situation is accepted by 24.2% (age group 12-17), 47.2% (age group 18-24) and 41.55% (age group 45-64).

Seasonality is present in the data, as evidenced by the statistically significant seasonal dummies, for instance, at our preferred model (model V), nine out of eleven seasonal dummies are significant at the 5% significance level, while an additional dummy is significant at the 10% significance level. Cigarette sales are characterized by seasonality during the summer months and that could possibly be attributed to the considerable increase of smokers, due to the large number of foreign tourists during this period. The monthly data clearly demonstrates an increase in the sales the summer months and an apparent fall in February, probably due to the fewer days of consumption in this month.

4. Concluding Remarks

With a view to studying the effect of an advertising and anti-smoking campaign on the aggregate cigarette consumption in Greece, we have selected the best model among six distributed lag models of sales and advertising. As we have shown, a non monotonic lag distributed model appeared in this case to be more consistent than the frequently employed Koyck model. Despite its limitations, the used regression model, suggests that it may be successfully applied to advertising problems of this kind. Also, further study with additional data within companies may lead to significant managerial benefits.

So far as the controversial subject of the effect of advertising on cigarette sales is concerned, according to the results obtained it can be claimed that cigarette advertising in Greece exerts a significant effect on cigarette sales. Specifically, the data analysis tends to support the hypothesis that cigarette advertising redistributes the market share of different brands and at the same time, wells demand by influencing smokers and nonsmokers. In fact, the research indicates that cigarette advertising of expensive categories is important in promoting and reinforcing smoking. For policy purposes it can be said that the advertising campaigns in Greece use style as one of the visible means of social distinction to draw attention. By having a higher distinction the consumer, especially of the deluxe categories, is handed some of the benefits of higher status, such as “power”. Purchasing power is indeed often seen to be a factor determining one’s social standing. In this context, cigarette consumption can be seen as the consumption cultural commodity due to image management. However, the effects of the advertising expenditure were shown to be easing off within a fairly short time period, and this suggests the need for planning consecutive advertising campaigns by cigarette companies before the effects of previous campaigns have been completed.

On the other hand, for an effective public policy, decision makers need to determine which actions will be effective in reaching desired goals. Our findings suggest that evidence of health hazards, presented systematically to consumers, seems to be very effective in reducing the consumption of cigarettes. Despite the significant effect of the anti-smoking campaign, the results imply that the banning of cigarette advertising on television or putting signs such as “smoking causes health problems”, were not effective on cigarette sales. Furthermore, practice has shown that actions of this sort do not “persuade” smokers, especially the younger ones, that is worth stop smoking. In particular, the research supports that the antismoking programs need to address the psychosocial and environmental influences on smoking behavior as well as improving knowledge. Finally, the outcomes indicate the habit forming nature of cigarette smoking. This finding concurs with the general view

that smoking habit is the result of the nicotine addiction and individual related factors in combination with outside sources of information and the sociocultural system of which the smoker is a member. Concluding, we can say that smoking should be seen as a complex psychopathological phenomenon and as habit with pharmacological addiction and social satisfaction, and, hence, its containment is difficult and demands systematic, integrated efforts and sufficient information on the implications of cigarette smoking. Nevertheless, an anti-smoking campaign was not repeated in Greece. Perhaps this may be caused from the fact that Greece is a tobacco producing country. On the same grounds, a systematic anti-smoking government policy, although it will reduce budget expenditure through the reduction in hospital and health expenditure, may have adverse effects on the economy.

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