On the determination of advertising effectiveness. An empirical study of the German cigarette market
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Summary and conclusions

An important obstacle to the development of advertising theory as a constituent part of marketing theory has been that many of the hypotheses formulated have so far been insufficiently tested. An important reason of this shortcoming is a serious lack of reliable data. This has led to controversial viewpoints about the way in which advertising works. The aim of the present study is to provide a further exploration of the impact of advertising on a number of response measures. For this purpose the cigarette industry has been chosen as an object of investigation, since in this industry advertising may be considered an important decision variable.

The study may be broadly divided into three parts. The first, consisting of chapters 1 and 2 is intended to examine the way in which advertising decisions in different competitive situations have been treated in marketing theory and whether or not advertising may be assumed to cause anti-competitive tendencies. The treatment of firm behaviour with respect to advertising decisions is clearly based on the framework of price theory. Optimal decision rules have been derived for different market structures in both static and dynamic conditions.

In order to test the assumption that advertising may cause anti-competitive tendencies, we have studied the relation between concentration measures and advertising intensity (chapter 2). By applying pooling techniques and generalized least squares methods to cross-sectional data collected by
Telser (1964) and Guth (1977), we have obtained stronger relations than Telser, who found support for the hypothesis that advertising intensity and concentration are virtually independent. With respect to the German cigarette industry we studied concentration over time. It could be concluded that concentration of both firm market shares and firm advertising shares diminished during the period 1960-75.

In part 2, which comprises chapters 3 and 4, the influence of advertising on primary demand for cigarettes has been investigated. By employing annual, bimonthly and monthly observations we have studied the consequences of temporal aggregation. Independent of the level of aggregation advertising was found to have a statistically significant impact on industry sales. This contradicts the findings of the well-known study of Lambin (1976), which lends support to the assumption of reciprocal cancellation of brand advertising in saturated markets.

Another aim of this part has been to examine whether or not there exists time dependency with regard to the estimated advertising elasticities. Testing for time dependency was carried out in two ways. First by comparing the periods 1961-65 and 1971-75 and further by performing a moving regression analysis within the period 1971-75. Both analyses reveal that the influence of advertising on industry sales clearly diminished over time. During the last subperiods of the years 1971-75 the advertising elasticity did not even differ significantly from zero. Whether or not there is a relation between this diminishing influence and publications on the harmful aspects of smoking could not be detected. The dummy variable, intended to measure this effect, was not significant at the five per cent level.

The last part of the study relates to the impact of advertising on brand and firm market shares. In chapter 5 we examine the effects of pooling and aggregation. With respect to
entity aggregation it appears that, if at all, disaggregated data should be used to study the effects of marketing decision variables on a response measure. The effects of advertising expenditure, for example, may be neutralized when firm market shares are employed instead of brand market shares. On the other hand it should be recognized that the coefficients obtained for brand market shares are often inaccurate, which could undermine managerial judgments based on these estimates.

The researcher appears to find himself between Scylla and Charybdis where on the one side disaggregated data may give imprecise results, and on the other entity aggregation leads to biased results.

Chapters 6 and 7 refer to logically consistent market share models, i.e. models which have a structure which constrains estimated market shares to total one and in specific cases (attraction models) to values greater than zero. In chapter 6 we derive the conditions which should be imposed on the model specification to guarantee the automatic satisfaction of the sum-constraint. These conditions are compared with the conditions which have been formulated by Naert and Bultez (1973) and McGuire and Weiss (1976). Further, it has been investigated whether or not in models which are logically consistent when estimated by OLS, consistency is preserved when generalized least squares methods are applied.

In chapter 7, finally, we test a hypothesis formulated by Naert and Weverbergh (1981) which states that attraction models and models with parameter restrictions have a greater predictive power than the more classic market share specifications. Employing data of the cigarette market, we found no support for this hypothesis. Neither the attraction models nor the models with parameter restrictions performed substantially better than the other model specifications considered.