On the determination of advertising effectiveness. An emperical study of the German cigarette market

Reuijl, Jan Christoffel

Publication date:
1982

.werpen.

.ng Cumulative Advertising

Journal of Marketing

: (1977), Logically
'urther Clarification.
istitute for Advanced
:lgium.

itorial Differences in
Variables. Journal of
55.
Econometrics. New York,

od of Estimating
d Tests for Aggregation
istical Association, 57,

Market Structure and
f Empirical Findings on
nd Competition. In
J.C. Siebrand, A.S. de
ling for Government and
Dr. P.J. Verdoorn.
iences Division, 311-351.

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 view-
points 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 competi-
tive 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 (1971), 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 adver-
tising 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 signi-
ficantly 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 adver-
tising on brand and firm market shares. In chapter 5 we
examine the effects of pooling and aggregation. With respect to

entity aggregation
data should be used
variables on a resp
expenditure, for ex
shares are employed
other hand it shoul
obtained for brand
could undermine man
The researcher appe
Charybdis where on
imprecise results,
to biased results.

Chapters 6 and 7
models, i.e. models
estimated market sha
(attraction models)
we derive the condit
specification to gua
sum-constraint. Thes
ditions which have b
and McGuire and Weis
whether or not in mo
estimated by OLS, co
least squares method

In chapter 7, fin
Naert and Weverbergh
and models with para
tive power than the
Employing data of th
for this hypothesis.
models with paramete
better than the othe

216

tained stronger

for the hypothesis

ion are virtually

igarette industry

ld be concluded that

and firm advertising

75.

and 4, the influence

:ettes has been

ly and monthly

ces of temporal

ggregation adver-

significant impact

ndings of the well-

support to the

rand advertising in

amine whether or

rd to the estimated

dependency was

g the periods 1961-65

ving regression

nalyses reveal that

ales clearly

eriods of the years

even differ signi-

a relation between

s on the harmful

The dummy variable,

ignificant at the

e impact of adver-

chapter 5 we

ion. 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 con-
ditions 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 predic-
tive 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.