

Economic Growth and Advertising Expenditures in Different Media in Different Countries

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Newspaper advertising expenditures depend more strongly on economic development than advertising spent in other media. Gross domestic product (GDP), therefore, predicts ad spending better in countries where newspapers are an important advertising medium. GDP also predicts ad spending better in countries where a larger proportion of GDP is spent on advertising. Intermedia competition, on the other hand, has little impact. In conclusion, the authors propose to distinguish three advertising cultures where ad spending follows economic development in different ways.

This paper explores the relationships between economic growth and advertising expenditures for different media in 21 industrialized countries. Generally speaking, economic growth goes hand in hand with rising advertising expenditures. Advertising expenditures are a measure for aggregate advertising demand, and

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microeconomic theory predicts that demand in an economy increases when income increases. Companies that want to have their share of the growing economic pie, for example, use advertising to attract new customers and growing demand for personnel boosts recruitment advertising. Chang and Chan-Olmsted (2005) accordingly found a positive relationship between GDP and advertising expenditures in 70 markets between 1991 and 2001.

Less is known about the impact of the economy on advertising in different media and countries. Available studies nevertheless suggest that the impact of economic development on advertising expenditures varies considerably across countries, media, and time (Chang & Chan-Olmsted, 2005; Picard, 2001a; Shaver & Shaver, 2005). Studies show in particular that print media in a limited number of countries (in Europe and the United States, Picard, 2001a; and in Asia, Shaver & Shaver) suffer more *during economic recessions* than electronic media. It is however not known whether this is a general pattern that occurs in most if not all industrialized countries; nor whether print media are better able than electronic media to profit again from economic *uptakes* and make up for their (larger) losses during economic declines. These variations in the impact of economic development on advertising expenditures are important to study, because even small variations bring considerable financial consequences for media organizations (Lacy & Noh, 1997), and thus for their opportunities to realize important commercial and public-interest objectives.

This paper aims to improve our knowledge of these variations by extending previous studies in two ways. First, it investigates cross-country and cross-media variations in the relationship between economic development and advertising expenditures for a relatively large sample of industrialized countries and for a relatively long period of time that includes not only economic declines but also economic upturns. Second, the paper explores whether cross-country variations in the impact of economic growth on advertising expenditures can be attributed to cross-media variations in this relationship and to underlying national economic characteristics.

The sample includes 21 industrialized countries for which necessary data were available. The years studied are 1987–2000. Results are relevant to scholars and practitioners who predict and plan advertising in different media and for those who are interested in the impact of the economy on media conduct and performance.

ADVERTISING FOLLOWS THE ECONOMY

There is ample evidence that advertising expenditures correlate with macroeconomic growth. Jones (1985) reports a close but not perfect fit between Gross

National Product (GNP) and advertising between 1961 and 1983.¹ Callahan (1986, p. 219) concludes that “GNP moves closely with advertising expenditures.” Swerdlow and Blessios (1993) also found a strong relationship between advertising expenditures and general economic activity. Ostheimer (1980) shows that magazine advertising expenditures in particular decline during recessions. Shaver and Shaver (2005) found that advertising expenditures and GDP are statistically linked in six out of eight examined countries in the late 1990s. Only Picard (2001a) shows that, during recessions, estimates of GDP and advertising expenditures in constant currency correlate weakly in six out of nine countries.

The causality underlying the relationship between economic growth and advertising expenditures has been subject to some debate. Research reveals that the economy affects advertising expenditures; the influence of advertising on the economy on the other hand is probably minimal (Ashley, Granger, & Schmalensee, 1980; Schmalensee, 1972). Schmalensee (p. 48), for example, concludes that “changes in advertising lag behind changes in sales” (see also Roark & Stone, 1994). Callahan (1986) likewise argues that advertising does not change the level of consumption expenditures; only the distribution of consumption expenditures across brands and products is affected.²

The explanation of the impact of economic growth on advertising expenditures is that many firms have a policy of “fixing dollar advertising as a percentage of dollar sales” (Schmalensee, 1972, p. 42; see also Yneu Yang, 1964). San Augustine and Foley (1975) studied large advertisers and concluded that percentage of expected sales, percentage of past years sales, and “what we can afford” were the most mentioned criteria for setting the budget. Hooley and Lynch (1985) likewise found that British advertisers base their spending mostly on microeconomic criteria (“what we can afford” and “percentage of expected sales”). This prevailing advertising-budgeting practice explains to a considerable extent the relationship between the state of the economy and advertising expenditures. Additional explanations why advertising expenditures drop in particular

¹Economic growth and decline are currently measured as changes in Gross Domestic Product (GDP). GDP equals the market value of all goods and services produced within the territory of a national economy. Around 1990, GDP replaced GNP—Gross National Product—as the main economic indicator for economic growth. GNP equals the market value of all goods and services produced by a country’s citizens and companies, whether they live or operate at home or abroad. The distinction between products produced within a country (GDP) and products produced “by” a country (GNP) gained relevance with globalization. For our study, GDP is the best indicator, because we study advertising expenditures within a national economy rather than expenditures by (or to) a country’s companies and citizens.

²A generation before, Borden (1942) already found in an extensive study at Harvard Business School that “advertising tends to speed up favorable trends of demands” (p. 90) but cannot halt or reverse declining trends and cannot be considered “a cause of cyclical fluctuations” (p. 98).

during recessions are that advertising expenditures are “deemed postponable” (Ostheimer, 1980, p. 16) and that advertising budgets can be quickly amended, unlike costs for staff, production, housing, or equipment (Galea, 1994).

The general conclusion that companies tend to reduce their advertising budgets in times of recession needs some qualification. Some companies actually raise the amount of advertising in times of recession. Consoli (2002), Galea (1994), Ligthart (1981), and Kamber (2002) show that this strategy of anti-cyclical advertising is successfully adopted in different industries. Nevertheless, available evidence suggests that most companies reduce advertising during recessions and raise their budgets again when the economy is recovering (Andras & Srinivasan, 2003; Blank, 1962; Borden, 1942; Shaver & Shaver, 2005). This aligns with the microeconomic principle that aggregate advertising demand in an economy depends on that economy’s income, as measured by GDP.

Principle of Relative Constancy

The close relationship between advertising expenditures and the economy led McCombs to formulate the Principle of Relative Constancy (PRC): “This principle asserts that the pattern of economic support for mass communication is approximately constant relative to the general economy. It holds that mass communication products [...] receive a fixed, constant share of the economic pie, a relatively fixed proportion of all expenditures” (McCombs & Eyal, 1980, p. 157).

Since McCombs’s (1972) original statement of the principle, the idea that a constant proportion of disposable income or gross economic revenues is spent on media, has gained some support but also considerable criticism. Dimmick (1997) criticizes the principle both on empirical grounds and because it lacks a firm theoretical basis. Demers (1994) concludes that the principle does not hold when longer time series are studied. Instead, he argues, the share of national income devoted to advertising has increased, primarily because society has become more complex. Lacy and Noh (1997) likewise argue that consumer spending on mass media has increased, due to the introduction of new media like the VCR and cable TV. As for the relative constancy of advertising expenditures, these authors conclude that empirical evidence is relatively weak (see also Glascock, 1993). Practitioners refer to unique events (e.g., wars, cigarette advertising bans, elections) that have negative or positive effects on advertising expenditures above and beyond macroeconomic development (Cardona, 2003; Coen, in Ostheimer, 1980; Dipasquale & Fine, 2002; Groves, 2004). Chang and Chan-Olmsted (2005) conclude that the Principle of Relative Constancy holds only in 7 out of 70 investigated countries. Advertising budgets therefore follow the economy, but not so perfectly as to justify the claim that advertising expenditures make up a fixed proportion of economic revenues.

Cross-Media Differences

Whether or not advertising revenues closely follow economic development is not only of interest to scholars. Even small changes in the ratio of advertising expenditures to economic revenues can mean billions of dollars difference in advertising budgets and thus have considerable impact on media organizations (Lacy & Noh, 1997). Moreover—and this is equally important for media organizations—even when advertising budgets are more or less constant, this does not mean that different media can equally depend on a constant share of these budgets. On the contrary, print media (newspapers and magazines) and outdoor advertising are more strongly affected by economic downturns than television, radio, and cinema advertising (Picard, 2001a; Shaver & Shaver, 2005).

Newspapers are in particular affected by economic downturns because newspapers rely considerably on retail and classified advertising (Picard & Rimmer, 1999); types of advertising that are relatively susceptible to the state of the economy (Picard, 2001b, 2002). Magazines suffer relatively strongly from recessions because magazines offer primarily access to niche audiences; a strong point when the economy is doing well but limiting their ad revenue sources when the economy is in decline (Linnett, 2002). Television in contrast is used by major companies to advertise their key brands to the population at large; a type of advertising that arguably is less recession-sensitive. Along similar lines, Bush (2002) found that local newspaper advertising in the United States is more price-sensitive than local radio and television advertising. Yneu Yang (1964) additionally reminds us that, at least in the 1960s, newspaper advertising was more flexible than other types of advertising, causing companies to cut back on newspaper advertising first. Groves (2004) adds that recently newspaper advertising does not profit as much as other types of advertising from economic recovery, contributing to a long-term declining advertising market share of newspapers.

Intermedia Competition

One reason for the long-term decline of newspapers as advertising medium proposed by some studies is the growth of Internet advertising (Linnett, 2002; Saksena & Hollifield, 2002). There is growing evidence that the Internet is starting to substitute at least some media for some functions for some types of users (De Waal, Schoenbach, & Lauf, 2005; Waldfogel, 2002). However, in terms of advertising, the Internet is still more of a future than a current competitor of other media (Silk, Klein, & Berndt, 2001). This is especially the case in the years under investigation in this study (1987–2000).

Leaving the potential future impact of Internet advertising aside, available research suggests that intermedia competition on the advertising market is lim-

ited (Bush, 2002; Ekelund, Ford, & Jackson, 1999; Silk, Klein, & Berndt, 2002), at least in the shorter term.³ Different media have different advertising characteristics and advertisers consider effects at least as much as costs when selecting advertising media (Lacy & Martin, 2004; Maxwell & Wanta, 2001; Reid & King, 2000, 2005). Most advertising media consequently occupy considerably different niches on the advertising market, effectively claiming different resources (Dimmick & Rothenbuhler, 1984; Dimmick, Patterson, & Albarran, 1992). Shaver and Lacy (1999, p. 729) accordingly conclude that “intermedia advertising is monopolistically competitive, with some media being better at some types of advertising than others.”

The degree to which advertising media are substitutes depends on the objective match between relevant media characteristics (e.g., demographics) and advertisers’ objectives and is mediated by advertisers’ subjective preferences and knowledge (Smith, 1995). Levels of substitutability therefore differ between advertising markets (e.g., between local and national advertising markets; see Reid & King, 2000; Reid, King, Martin, & Soh, 2005) and arguably also between countries and across time. Intermedia substitution on the advertising markets in different countries therefore will not only be limited but also variable and cannot adequately explain why some media are more seriously affected by economic downturns than others.

Cross-Country Differences

Advertising spending does not only vary in time (Demers, 1994) but also across countries. Banks (1986) studied total advertising expenditures in the 1970s in 43 countries, including 24 less-developed nations, and found that the proportion of GNP spent on advertising depends both on economic and social development as well as on the relative economic importance of wholesale and retail trade and services industries. This finding aligns with Dimmick’s (1997) proposition that urbanization and industrialization may explain increasing advertising levels in earlier periods. It also fits Leff and Farley’s (1980) argument that advertising expenditures are relatively low in developing countries because these countries’ economies depend to a large extent on the production and exportation of primary products—products that generally are not much advertised. Andras and

³According to long-term research carried out by the Social and Cultural Planning Office of the Netherlands, media are substitutes for consumers in the longer term, when users gradually adapt to the market entry of new media, but not in the shorter term, when users make habitual choices between available media (Huysmans, De Haan, & Van den Broek, 2004). The same may hold for advertisers. However, these longer term changes—recently motivated by the emergence of the Internet—fall outside the scope of this paper that focuses on year-to-year changes in advertising expenditures in the period until 2000.

Srinivasan (2003) further specify that consumer goods industries advertise more in relation to annual sales than producer goods industries. Lee (2002) adds that the money spend on advertising also depends on consumer preferences, advertising competence (also Jones, 1985), and—in different ways for consumer and producer goods industries—on industry concentration (also Doyle, 2002). The structure and composition of the economy therefore is an important factor explaining differences in the proportion of advertising expenditures to the size of the economy across countries (and time). Basically, some industries and economic sectors use advertising more intensely than others (also “2000 Advertising-to-sales ratio’s,” 2000).⁴

A second type of variation in advertising spending across countries concerns the distribution of advertising expenditures across different media. Macleod (2004) reports that television was the most important advertising medium in the United States, Japan, France, and Italy in 2003, whereas newspapers were the most important in the United Kingdom, Germany, and Canada. Magazines came third in most countries but were exceptionally small in advertising terms in Canada, and almost as important as newspapers in France. The reasons for these variations are in themselves varied. They include idiosyncratic and historical differences in legislation, marketing traditions, and entrepreneurial habits (Banks, 1986; see also Demers, 1994) as well as differences in industrial structure. Consumer goods industries, for example, not only advertise more but also in different media (i.e., TV, radio and outdoor) than producer goods industries (that advertise in trade and business magazines and newspapers; Linnett, 2002). Local retailers tend to use newspapers, specialty magazines, and radio, while consumer goods manufacturers, large service providers, and multilocal retailers use television, general interest magazines, and radio (Picard, 2001a). These and other differences result in cross-country variations in the distribution of advertising expenditures across media.

A third and final difference between countries concerns the strength of the relationship between GDP and advertising expenditures. Both Picard (2001a) and Shaver and Shaver (2005) show that GDP and advertising expenditure are strongly related during recessions in some countries at some times, but not in other countries or at other times. Thus, Picard (2001a) found a strong relationship between GDP and advertising expenditures in the recession in the early 1990s in, *inter alia*, Germany and Finland, but not in Japan. Shaver and Shaver, in contrast, found a strong relationship for the recession at the end of the 1990s in Japan, but

⁴Some of the scholars cited in this paper also mention other noneconomic factors that influence the level of advertising expenditure, such as economic freedom (Chang & Chan-Olmsted, 2005), regulation (Shaver & Shaver, 2005), “structural pluralism,” and changes in technology (Demers, 1994).

not in Germany.⁵ Picard (2001a) refers to cross-country variations in economic structure, in the industry segments that are particularly affected by recessions, in national policies, and in the extent of economic fluctuation as factors that may explain these cross-country variations in the relationship between GDP and advertising expenditures. Other explanations for cross-country differences have already been proposed above. They will be investigated in our empirical study.

HYPOTHESES

Previous studies clearly show that advertising expenditures are a function of economic growth, measured by GDP—i.e., $Adspend = f(GDP)$. This paper investigates variables that moderate this relationship. We focus on macroeconomic variables that influence advertising intensity—defined as the proportion of GDP spent on advertising, or $adspend/GDP$ —and we focus on advertising-related variables that influence the responsiveness of advertising expenditures to changes in GDP—i.e., how well GDP predicts advertising expenditures.

Advertising intensity depends, amongst others, on the macroeconomic structure and export orientation of an economy (e.g., Picard, 2001a). Primary products and exported products carry little advertising in the country of origin, whereas manufacturing products, (retail) trade and services carry a lot of advertising (Banks, 1986; Leff & Farley, 1980). For similar reasons, we expect advertising intensity to be higher in richer economies where relatively more manufactured goods and services are consumed. Third, studies suggest that advertising intensity increases in time, especially in the longer term, when society becomes more complex and new advertising media become available (Demers, 1994; Dimmick, 1997). We hypothesize:

H1: Advertising intensity (a) increases in time and is higher in countries where (b) the primary sector is less important, (c) the secondary and tertiary sectors are more important, (d) a smaller share of production is exported, and (e) per capita GDP is higher.

Similar variables may influence the proportion of GDP spent on advertising in individual media, and thus the distribution of advertising expenditures across media, but there is little knowledge about these relationships. The literature suggests that TV advertising is growing more rapidly than newspaper advertising (Groves, 2004), and that intermedia competition has a limited, if any, effect on the proportion of GDP spent on different media (Bush, 2002; Ekelund et al., 1999; Silk et al., 2002). Besides, experiences in Europe suggest that newspapers

⁵Finland is not included in Shaver and Shaver (2005).

are a more important advertising medium in richer countries (Gustafsson & Weibull, 1997). We investigate:

H2: Advertising intensity of a single medium (a) is not influenced by the advertising intensity of other media and varies (b) in time as well as with (c) per capita GDP.

The distribution of advertising expenditures across media is important because we expect different media to be distinctively affected by macroeconomic development. Following Linnett (2002), Picard (2001a), and Shaver and Shaver (2005), we hypothesize:

H3: The responsiveness of advertising expenditures to changes in GDP is higher for print media (newspapers, magazines) and outdoor advertising than for electronic media (television, radio, and cinema).

H3 implies that, on a country-by-country basis, advertising expenditures are more responsive to changes in GDP when newspapers—as the largest advertising medium—account for a larger share of total advertising expenditure. Another factor that possibly influences cross-country differences in the responsiveness of advertising expenditures to GDP is the advertising intensity of an economy (Banks, 1986). The underlying reasoning is that, regardless of circumstances, a minimum amount of advertising is needed to attract customers.⁶ Accordingly, companies that advertise more can reduce advertising more strongly during recessions:

H4: The responsiveness of advertising expenditures to changes in GDP is higher in countries where (a) newspapers have a larger share in total advertising expenditures, and (b) advertising intensity is higher.

METHOD

We use economic data and data on advertising expenditure for developed, western economies to test the hypotheses. Our dataset includes 21 countries, all long-time member states of the Organization for Economic Cooperation and Development (OECD): Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Japan, the Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, United Kingdom, and

⁶Banks (1986) tests and rejects a similar hypothesis. However, his study concerns a much more heterogeneous sample of countries, which makes it much less likely that there is a common minimum level of necessary advertising expenditures.

the United States.⁷ All data are derived from the 46th CD-ROM edition of the *UN Statistical Yearbook* and the World Advertising Research Center's (WARC) *World Advertising Trends 2002*.

For all countries, we have advertising and GDP data for 14 years, from 1987 until and including 2000. These years encompass a period of economic decline in the early 1990s and the subsequent uptake in economic growth in the second half of the 1990s (Picard, 2001a; Shaver & Shaver, 2005). Advertising data include expenditures in six different media, namely newspapers, magazines, TV, radio, cinema, and outdoor, but not Internet advertising.⁸ Because online advertising was still limited in the period under investigation (Silk et al., 2001), this omission does not threaten the validity of our study. Time series on the contribution of different sectors to GDP, thirdly, start in 1987 and end between 1995 and 1999, depending on the country.⁹

Variables

Independent variables are per capita GDP, the contribution of different sectors to GDP, the relative importance of exports, the share of newspapers in total advertising expenditures, and time. Per capita GDP is measured in constant US Dollars (USD) to enable comparisons across countries and time. It is estimated by dividing per capita GDP in constant (1995) national currency by the USD exchange rate for the appropriate country and year. This is the best approximation that we can give on the basis of the available data.

The contribution of the primary, secondary, and tertiary sectors to GDP is based on the share of different "kinds of activities" in value added, provided by the *UN Statistical Yearbook*. The categories "agriculture, hunting, forestry &

⁷The OECD nowadays has 30 member states. Missing from our data set are three long-time members (Iceland, Luxembourg, and Turkey) and six recent members (Czech Republic, Hungary, Korea, Mexico, Poland, and the Slovak Republic). These countries are excluded due to a lack of (comparable) advertising data. Besides, most of these countries can hardly be qualified as developed economies for the entire period of investigation (1987–2000). The lack of data is but one sign of that.

⁸For some countries, some advertising expenditures data are missing. These concern relatively minor advertising expenditures categories that on average make up less than 1% of total advertising expenditures across all countries. In particular, we miss data on cinema advertising expenditures for Canada, Greece, Japan, and the United States (all years), Italy (all years but 2000, when cinema adspend accounted for .6%), and Portugal (all years but 1996–2000, when cinema adspend accounted for .4%).

⁹We miss data on the composition of GDP for Switzerland for all years, for Portugal for all years but 1994 and 1995, and for Ireland for the years 1987–1989. In addition, we miss estimates of the share of mining in Ireland, and the share of mining in Belgium for 1987–1994. This still leaves 208 out of a total of 294 cases (country-year combinations) to test hypothesis H1. This is a suitable basis to draw conclusions. Since we do have data on Switzerland and Portugal to test hypotheses H2–H4, which are more central to our argument, we decided to keep these countries in our sample.

fishing” and “mining & quarrying” are used as approximation of the primary sector. “Manufacturing,” “construction,” and “electricity, gas & water” represent the secondary sector. “Transport, storage & communication,” and “wholesale & retail trade, restaurants & hotels” are used as approximation of the tertiary sector. We likewise use an estimate of exports as percentage of GDP (provided by the same source) to assess the relative importance of exports. Time is defined as the year under investigation, recoded so that 1987 = 1 and 2000 = 14.

Dependent variables are advertising intensity (overall and per medium) and the responsiveness of advertising to changes in GDP (overall and per medium). To estimate these latter variables, we use measurements of GDP, total advertising expenditures, and advertising expenditures per medium in constant (1995) national currency. Constant currencies are used to enable comparisons across time. To enable comparisons across countries, we use indices (1995 = 100) where appropriate.

Advertising intensity is defined as advertising expenditures divided by GDP. The responsiveness of advertising expenditures indicates how closely advertising expenditures follow GDP. An intuitive measure would be the standardized regression coefficient (Beta) between advertising expenditures and GDP indices, which would indicate how well GDP predicts advertising expenditures. An alternative measure would be the standardized regression coefficient (Beta) between annual grow rates for advertising expenditures and GDP.¹⁰ This is a more stringent measure of responsiveness, indicating how well advertising expenditures follow annual changes in GDP. Yet, regression coefficients can only be estimated for countries (or media), and we need estimates that vary per country and year to test hypothesis H4. We therefore use the prediction errors (residuals) as inverse indicators for responsiveness. Using both approaches mentioned above, we define long-term prediction errors as the absolutized unstandardized residuals that remain when regressing advertising expenditure on GDP indices. Short-term prediction errors are likewise defined as the absolutized unstandardized residuals that remain when we regress advertising expenditure on GDP growth rates.

Procedure

Regressions are used to estimate prediction errors and to test all hypotheses except H3, which is tested with ANOVA. Tests were run to see whether the data fit all assumptions of regression analysis. Reflecting the variety in economic structure and advertising behavior across the sampled countries, we found 84 outliers (defined as a value that lays more than three standard deviations away

¹⁰Grow rates are defined as the value for year Y minus the value for $Y - 1$, divided by the value for $Y - 1$.

from the mean). The considerable importance of mining in Norway, for example, implies that almost all scores for the share of mining in GDP for Norway are outliers. Outliers are reassigned the value of three standard deviations from the mean, to retain the cases but to reduce the impact of extreme values on the regression results. In three cases (the radio adspend index and the TV and radio adspend grow rates) visual inspection showed extreme outliers (more than seven standard deviations away from the mean), reflecting that advertising spending on these media in a few countries started to grow from a very small base. Since these extreme outliers bias the mean and standard deviation, we run the reassignment procedure once more in these cases, after reassigning the value of three standard deviations from the mean to the outliers discovered in the first run.

Serial correlation is another potential problem, even though we compare more countries than years. We use the Durbin-Watson statistic to test for serial correlation, both for individual country time series (where serial correlation is to be expected) and for the complete dataset. When tests indicate that serial correlation is a problem,¹¹ the Prais-Winstone autoregression technique is applied to deal with this problem. The Prais-Winstone technique is a commonly used method to transform data to remove serial correlation.

Visual inspection (using Normal P-P plots) showed that most variables tend towards a normal distribution.¹² Plots of the standardized-residuals to standardized-predicted values show a random distribution, suggesting that the assumption of linearity is appropriate. Normal P-P plots of standardized residual showed only minor evidence of heteroskedasticity, and collinearity statistics show no multicollinearity problem (Variance Inflation Factors [VIF] < 5). The ratios of cases to independent variables is 1:21 for H1, 1:28 for H2 and much larger

¹¹The Durbin-Watson (DW) statistic for individual country time series suggests that serial correlation is a problem ($DW < d_L$) or cannot be ruled out ($DW < d_U$) in regressions testing H1 and H2 and estimating long-term prediction errors (using 5% significance points in Savin & White, 1977). Serial correlation is not a problem in the estimation of short-term prediction errors ($DW > d_U$ for most countries), basically because we regress growth rates. DW statistics for the entire cross-sectional time series database are more difficult to interpret (since we cannot apply the fixed effect model discussed in Bhargava, Franzini, & Narendranathan, 1982), but overall align with the test for individual country time series. The DW statistics for regressions that test H1 and H2 and estimate long-term prediction errors, including all cases, are much lower ($.241 < DW < .528$) than the regressions estimating short-term prediction errors ($1.000 < DW < 1.800$). We therefore apply the Prais-Watson (PW) technique to regressions testing H1 and H2 and estimating long-term but not short-term prediction errors. The regressions testing H4, finally, suggest again no serial correlation problem, which makes sense since the dependent variables (prediction errors) are already tested for serial correlation.

¹²Exceptions are the share of mining in GDP, the growth indices for TV and radio adspend, and long- and short-term prediction errors for total advertising expenditure, even after correction for outliers.

for H3 and H4. Overall, the data allow at least an exploratory analysis of the discussed relationships.

RESULTS

The selected countries differ considerably in economic and advertising terms. The average proportion of GDP spent on advertising, for example, varies between 0.5% in Italy and 1.3% in New Zealand, and the advertising market share of newspapers varies between 68% in Sweden and 19% in Greece.

An overview of advertising characteristics per country is presented in Table 1. For presentational purposes, this table already organizes countries in three groups that follow from the test of hypothesis 4 and that are presented at the end of

TABLE 1
Advertising Characteristics Means Per Country: 1987–2000

	<i>Advertising intensity</i>	<i>Share of media in advertising expenditures (%)</i>					
		<i>Newspapers</i>	<i>Magazines</i>	<i>TV</i>	<i>Radio</i>	<i>Cinema</i>	<i>Outdoor</i>
Country Group 1. High advertising intensity and low newspaper share							
New Zealand	1.33	42	9	35	13	0.5	1
Australia	1.22	42	9	34	9	0.6	5
United Kingdom	1.20	42	18	32	3	0.6	4
United States	1.31	39	12	36	11		1
Country Group 2. Medium advertising intensity and high newspaper share							
Sweden	0.77	68	13	13	2	0.6	4
Norway	0.74	67	14	13	3	0.9	2
Denmark	0.81	65	16	15	2	0.7	2
Finland	0.86	63	14	17	3	0.1	3
Ireland	0.88	60	4	23	7	0.6	5
Switzerland	0.99	57	18	9	2	1.0	12
Netherlands	0.86	53	22	17	4	0.4	3
Germany	0.92	51	22	19	4	1.0	4
Country Group 3. Low advertising intensity and low newspaper share							
Austria	0.77	45	17	22	10	0.5	6
Canada	0.80	44	10	30	13		3
Spain	0.77	33	19	33	10	0.8	5
Japan	0.80	31	9	41	5		14
Belgium	0.65	27	28	29	6	1.2	9
France	0.71	26	25	29	7	0.6	12
Italy	0.50	22	21	52	2	0.8	3
Portugal	0.71	21	19	46	7	0.5	7
Greece	0.65	19	22	51	5		4
All countries	0.87	44	16	28	6	0.7	5

this section. The first group of countries spends a relatively high proportion of GDP on advertising. Newspapers are the most important advertising medium in the second group of countries, attracting more than half of all advertising expenditures. Advertising intensity in these countries is moderate. In the third group, both advertising intensity and the advertising market share of newspapers are low. Television is the most important advertising medium, and magazines and outdoor advertising are relatively important, too.

Differences in economic development between countries are considerable. The selected countries experienced on average 2.6 recession years in the period under investigation,¹³ primarily in the early 1990s (1990–1994) and for some countries also in the late 1990s. However, whereas Denmark, Ireland, and the Netherlands experienced only one recession year, Greece, in contrast, went through eight recession years. In the entire period under investigation, Greece's economy contracted 1.5% a year (in real terms), whereas the Irish economy grew 13.9% a year (also in real terms).

Advertising expenditures followed changes in GDP moderately to weakly, depending on the indicator chosen. The Pearson correlation between advertising expenditures and GDP indices across all countries equals .59 ($p < .001$). Following Guilford's guidelines (in Picard, 2001a), this means that GDP moderately explains the variance of total advertising expenditures. The correlation between growth rates is weaker ($r = .38$; $p < .001$), showing that GDP growth rates predict advertising expenditure growth rates to a small extent.

The most conspicuous time trend is that TV's share on the advertising market is increasing in 17 out of 21 countries, with an average increase of 0.56% per country per year. Newspapers and magazines, on the other hand, lose market share in 16 and 12 countries, or 0.44% and 0.15%, respectively, per year across all investigated countries.

Economic Structure and Advertising Intensity

The most important sector in most sample countries is manufacturing. Manufacturing accounts, on average, for 20% of GDP. It is followed in importance by wholesale and retail trade, and hotels and restaurants (15% of GDP; and the most important sector in Australia and Greece), transportation, storage, and communication (7%), and construction (6%).¹⁴ Agriculture, hunting, forestry, and fishing are relatively important in Greece; mining and quarrying is actually

¹³Recession years are defined as (calendar) years with a negative growth rate in GDP; that is, years in which GDP (in real terms) was smaller than in the previous year.

¹⁴The category of other activities (financial intermediation; real estate, renting and business services; and a range of governmental/public, social, health, community and personal activities, and services), not included in our study, accounts for approximately 43% of GDP.

TABLE 2
Determinants of Advertising Intensity
(Beta Weights)

	<i>Advertising intensity</i>	
Time	.342	**
Primary sector		
Agriculture etc.	-.066	
Mining	.163	
Secondary sector		
Manufacturing	.284	*
Construction	.031	
Electricity etc.	-.271	**
Tertiary sector		
Transport etc.	-.043	
Trade etc.	-.347	**
Share of Exports in GDP	-.357	**
GDP per capita	-.288	**

Note. Prais-Winsten (GLS) estimation is used.
 $n = 208$. Adj. $R^2 = .230$. Rho = .912. ** $p < .001$. * $p < .01$.

the largest sector in Norway. Gross exports value 32% of GDP on average, reaching a high of 71% in Belgium and a low of 10% in Japan and the United States. Per capita GDP varies between 9.4 thousand USD for Portugal and 36.6 thousand USD for Switzerland.

Hypothesis H1 predicts that these economic differences, in combination with time-related effects, influence the advertising intensity of the economy. Results confirm H1 only partly (see Table 2). Advertising intensity is higher in countries where manufacturing is more important, and where exports are less important. Advertising intensity also increases in time. The sizes of the primary and tertiary sectors, on the other hand, do not have the anticipated effects on advertising expenditures. Besides, advertising intensity is negatively related to per capita GDP and decreases with the size of the electricity sector.

Advertising Expenditures per Medium

Hypothesis H2 predicts in a similar way as H1 that advertising intensity per medium varies with per capita GDP and time but is not influenced by the advertising intensity of other media. Results (in Table 3) confirm and specify this hypothesis. They show, as already mentioned above, that in the years under

TABLE 3
Determinants of Advertising Intensity Per Medium (Beta Weights)

	<i>Newspapers</i>	<i>Magazines</i>	<i>TV</i>	<i>Radio</i>	<i>Cinema</i>	<i>Outdoors</i>
Time	-.193 ^o	-.146 ^o	.351**	-.033	.060	.137
GDP per capita	.329**	-.131	-.316**	-.134 ^o	.245**	.035
Advertising intensities per medium						
Newspapers		.020	-.044	.073	-.022	-.054
Magazines	.004		.208**	-.410**	.455**	.095
TV	-.136	.408**		.625**	-.070	-.113
Radio	.138	-.599**	.487**		.305**	.149
Cinema	-.007	.454**	-.025	.207**		.374**
Outdoors	-.072	.074	-.031	.080	.293**	
Adj. <i>R</i> ²	.143	.375	.661	.568	.372	.197
Rho	.845	.908	.812	.881	.904	.904

Note. Prais-Winsten (GLS) method is used.
n = 195. ***p* < .001. **p* < .01. ^o*p* < .05.

investigation the proportion of GDP spent on print advertising (in newspapers and magazines) is declining, whereas an increasing proportion of GDP is spent on TV advertising. Newspapers and cinema draw more advertising expenditures in richer countries (where per capita GDP is higher) and TV (and to some extent also radio) attract more advertising in poorer countries. Substitutability between media, thirdly, is limited, as predicted. When a larger proportion of GDP is spent on magazines, the proportion of GDP spent on radio decreases, and vice versa. This suggests that magazines and radio are to some extent substitutes. In all other cases, however, growth in the advertising intensity of one medium is not accompanied by decline and sometimes even by growth in the advertising intensities of other media, which suggests that there is no substitution. Overall, hypothesis H2 is confirmed.

Advertising Responsiveness per Medium

Analysis of the relationship between advertising expenditures in different media and GDP shows that newspaper advertising responds relatively closely to economic change, whereas TV, radio, and cinema respond relatively weakly (see Table 4). The average long-term prediction error for newspapers is 6 index points; the short-term prediction error equals 6 percentage points. These are sizeable prediction errors—e.g., an advertising expenditure index of 89 is predicted where an index of 95 is measured, or an advertising growth rate

TABLE 4
Means for Advertising Responsiveness
to GDP Per Medium

	<i>Prediction Errors</i>	
	<i>Long-term</i>	<i>Short-term</i>
Newspapers	6.0	6.3 ^a
Magazines	8.1 ^{c,d}	8.1 ^c
Outdoor	9.5 ^{b,d,f}	7.4 ^{a,c}
TV	9.6 ^{a,c,e,f}	11.0 ^{d,e}
Radio	11.2 ^{b,e,g}	10.6 ^{d,f}
Cinema	12.6 ^{a,g}	11.6 ^{e,f}

Note. Paired samples *t*-tests show that means differ significantly at $p < .01$ unless indicated otherwise:

^{a-b}Indicated pairs differ significant at $p < .05$.

^{c-f}Indicated pairs do not differ significantly.

n varies between 184 and 294 per pair.

of 7% is predicted where a growth rate of 1% is measured.¹⁵ Yet, prediction errors for other media are larger. These findings confirm H3. Print media and outdoor advertising are more responsive to economic change than advertising in electronic media.

To gain further insight into the relationships between advertising expenditures in different media and macroeconomic development, we additionally estimate average growth rates for advertising expenditures (in constant currency) for recession and growth years (see Table 5). Results show that advertising expenditures in newspapers, magazines, cinema, and outdoor decrease 2% to 3% per year during recessions. Advertising expenditures for TV and radio, on the other hand, do not differ significantly between recession and growth years. Expenditures on TV grow even more rapidly in recession years than advertising expenditures for all other media in growth years. Also advertising expenditures for radio grow during recession years.

Explaining Cross-Country Differences in Advertising Responsiveness

Hypothesis H4 predicts that the responsiveness of advertising expenditures to GDP depends on the relative importance of newspaper advertising and on the

¹⁵The underlying regressions show that the GDP index explains around 40% of variance in the adspend index for newspapers (Adjusted R^2 for the indices is .406; for the growth rates .383).

TABLE 5
Means for Growth Rates for Advertising Expenditures Per
Medium, in Recession, Growth, and All Years

	(a)	<i>Recession</i>	<i>Growth</i>	<i>All</i>
Newspapers	**	-.03	.05	.04
Magazines	**	-.02	.05	.04
TV		.11	.11	.11
Radio	*	.02	.10	.08
Cinema	*	-.02	.09	.07
Outdoors	**	-.03	.08	.06
Total	**	.00	.06	.05

Note. (a) Symbols indicate whether means differ significantly between recession and growth years: ** $p < .001$; * $p < .01$.

n varies between 157 and 213 for growth years, and 34 and 55 for recession years.

advertising intensity of the economy. Results presented in Table 6 support the hypothesis. Both the share of newspapers and advertising intensity have a separate but similar negative effect on prediction errors. This implies that advertising expenditures are better predicted, and thus respond more closely to changes in GDP, when newspapers are a more important advertising medium, and when a larger proportion of GDP is spent on advertising. The size of the regression beta weights, however, is low, which means that a large part of variance in prediction errors is not explained (Adjusted R^2 for indices is .082; for growth rates .055).

TABLE 6
Determinants of Advertising Responsiveness
(Beta Weights)

	<i>Prediction errors</i>	
	<i>Long-term</i>	<i>Short-term</i>
Share of newspapers in adspend	-.138 ^o	-.133 ^o
Advertising intensity	-.225**	-.163*
n	294	273
Adj. R^2	.082	.045
DW-statistic	1.406	1.421

Note. OLS estimation is used.
** $p < .001$. * $p < .01$. ^o $p < .05$.

TABLE 7
Advertising Characteristics Means Per Group of Countries

	Advertising intensity	Share of media in advertising expenditures (%)						Prediction errors	
		Newspapers	Magazines	TV	Radio	Cinema	Outdoors	Long-term	Short-term
Country Group 1. High advertising intensity and low newspaper share									
average	1.26 ^a	41 ^a	12 ^a	34 ^b	9 ^a	0.6 ^c	3 ^d	3.5 ^d	3.6 ^d
Country Group 2. Medium advertising intensity and high newspaper share									
average	0.86 ^a	61 ^a	15 ^a	16 ^b	4 ^a	0.7	4 ^d	4.5 ^d	4.0 ^d
Country Group 3. Low advertising intensity and low newspaper share									
average	0.71 ^a	30 ^a	19 ^a	37 ^b	7 ^a	0.8 ^c	7 ^d	7.5 ^d	6.0 ^d
All countries	0.87	44	16	28	6	0.7	5	5.6	4.8

^aGroup means differ significantly at $p < .01$ across all three groups.

^bMean of Group 2 differs significantly at $p < .01$ from other group means.

^cMeans of Groups 1 and 3 differ significantly at $p < .01$.

^dMean of Group 3 differs significantly at $p < .01$ from other group means.

n varies between 117 and 126 for Group 1, 50 and 56 for Group 2, and 104 and 112 for Group 3; except for the share of cinema where $n = 59$ (Group 1), 42 (Group 2), and 108 (Group 3).

The analysis nevertheless confirms that the advertising market share of newspapers and advertising intensity are important characteristics that influence the relationship between GDP and advertising expenditures. We use cluster analysis to divide the selected countries accordingly into three groups. These are the groups already presented in Table 1. T -tests show that these groups have significantly different mean scores on all advertising variables (see Table 7). In particular we find, in line with hypothesis H4, that advertising is less responsive to economic change in countries in the third group (with low advertising intensity and a relatively low market share for newspapers) than in countries in the other two groups.

DISCUSSION AND CONCLUSIONS

This paper explores the relationships between economic growth and advertising expenditures for different media in 21 industrialized countries. It shows, like previous studies, that advertising expenditures tend to increase with the economy. This general relationship, however, masks a more complex pattern of interactions between advertising and economic growth.

When summarizing and discussing our findings, some limitations of the present study need to be kept in mind. The present study includes 21 countries and 14 years. The selected countries include practically all advanced, Western economies that are member of the OECD. The selected years on the other hand are limited to the late twentieth century. They encompass both recession and growth years but still represent a relatively short period of time. As our study

argues that the relationship between advertising expenditures and GDP is influenced by a range of other factors, including unique events and other variables that change in time, the selected years cannot be considered representative for other periods. A final drawback in terms of years studied is that we only have annual data. More detailed data (on a quarterly basis) would provide more insight in the actual responsiveness of advertising expenditures to macroeconomic change; especially because economic growth and decline does not occur neatly according to calendar years.

Advertising Expenditures Respond to GDP

The relationship between advertising expenditures and GDP observed in this and other studies reflects, first of all, a natural tendency for advertising expenditures to be larger in larger economies. This is a well-established fact, discussed and confirmed by many studies. The fact that advertising expenditures are related to the size of an economy, however, does not mean that a fixed proportion of GDP is spent on advertising. Confirming the argument presented in the literature review and the findings of Chang and Chan-Olmsted (2005), our results show that the principle of relative constancy does not hold for advertising revenues. Instead, advertising intensity varies considerably across time and countries (ranging between 0.5 in Italy and 1.3 in the United States and New Zealand).

The structural composition of the economy is argued to be one factor that codetermines how large a percentage of GDP is spent on advertising expenditures (e.g., Picard, 2001a). In our study, the relative size of manufacturing has the predicted positive effect on advertising intensity, whereas the relative importance of exports has the predicted negative effect. The size of the “electricity, gas & water” sector also affects advertising intensity negatively, which makes sense since electricity, gas, and water are weakly advertised. Predictions that agriculture reduces and that trade and services industries increase advertising intensity could not be confirmed. This contradicts earlier findings of Banks (1986). One possible explanation is that different trade and services industries have different impacts on advertising. The “kinds of activities” used as independent variables in this study are too broadly defined categories to capture these varying impacts. Finally, results show that advertising intensity is negatively affected by per capita GDP, once we take the different sizes of different sectors into account. This finding suggests that the composition of consumption rather than the level of consumption increases advertising intensity in industrialized countries.

Overall, these findings align with the arguments and findings of Banks (1986), Demers (1994), and Dimmick (1997) that advertising intensities of economies increase in time, with social and economic development and with a long-term shift from agriculture to (manufacturing and) services. Yet they also show that for

a better understanding of annual variations within and between relatively similar industrialized countries, a more detailed analysis of economic structure and related advertising practices is necessary, along the lines suggested by Andras and Srinivasan (2003) and Lee (2002).

Advertising Expenditures in Different Media

The results of this study also confirm that advertising expenditures in newspapers (and magazines and outdoor advertising) respond relatively strongly to macroeconomic development, not only in periods of decline (as Picard, 2001a and Shaver & Shaver, 2005, have shown) but also in longer periods that cover both periods of decline and growth. Likewise, our study confirms that radio and television (and cinema) advertising expenditures are relatively immune to economic change. Advertising expenditures in these media tend to grow, regardless of whether the economy is growing or contracting. This obviously results in a growing gap between newspaper- and television-advertising revenues, to mention the two most important advertising media. This was already suggested by Groves (2004). Moreover, we found, as predicted, that intermedia competition does not explain the diverging growth trends of advertising media. This confirms the findings of Shaver and Lacy (1999) and Huysmans, De Haan, and Van den Broek (2004) that media are not substitutes on the shorter term.

In sum, these studies and our findings show that newspapers, magazines, and outdoor advertising respond differently to economic change than advertising in TV, radio, and cinemas. Explanations why these media respond differently to economic change, however, still need further elaboration.

Responsiveness to Economic Change

The observed variations in the responsiveness of media-specific advertising expenditures to changes in GDP make that advertising expenditures in countries where newspapers have a larger share in total advertising expenditures respond more strongly to economic changes than countries where newspapers are less important as advertising medium. Another factor influencing the responsiveness of advertising to GDP is the advertising intensity. These differences offer part of the explanation why different studies may show different results for individual media or countries.

The cluster analysis presented at the end of the results section suggests in particular that it might be fruitful to distinguish between different “advertising cultures,” analogously to and partly overlapping with different newspaper cultures that are identified in Europe (Gustafsson & Weibull, 1997) and different media systems that are identified by Hallin and Mancini (2004). These tentative advertising cultures include an Anglo-Saxon culture where advertising

is an important marketing instrument; a Nordic/West-European culture where newspapers are important media, also for advertisers; and a South-European culture (including Japan and Canada, as odd cases) where both newspapers and advertising are less important.

Questions for Further Research

Four questions for future research follow from our study. One obvious question concerns the reasons why different media respond differently to macroeconomic change. The basic reason suggested in the literature is that different media are used for different advertising purposes by different industries. During recessions, some industries are more seriously affected than others, and some types of advertising are less needed or deemed less critical than others. More research on these possible explanations is necessary to understand the underlying mechanisms that relate advertising expenditures to the economy.

A second question for future research concerns in particular anticyclic advertising practices. The reviewed literature suggests that anticyclic advertising tends to be recommended but not adopted. An analysis of reasons why anticyclic advertising is recommended but not adopted (in different industries) promises to be an informative case study that elucidates and illustrates the complex interactions between macroeconomic development and advertising behavior.

Thirdly, more research is necessary on the impact of longer term media substitution on advertising spending in different media, and in particular on the impact of Internet advertising. After the first hype and the following crash, the Internet has now entered a second phase of more mature growth. This calls for research to what extent Internet advertising is substituting or complementing advertising in other media, and whether and how growing use of Internet advertising in the last decade-and-a half influences the relationship between economic growth and advertising.

Finally, future research should further investigate the short- and long-term variations observed in this study—in advertising intensity, in advertising responsiveness to GDP, and in the distribution of advertising expenditures across media—and their underlying causes, to further explore the idea that different groups of countries have different advertising cultures.

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