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THE MACROECONOMIC RELATIONS OF ADVERTISING EXPENDITURE: AN ANALYSIS OF CENTRAL AND EASTERN EUROPEAN COUNTRIES

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Abstract. This paper gives an overview of the macroeconomic relations of advertising expenditure. The paper critically reviews studies about how aggregate advertising expenditure is related to aggregate consumption, economic growth and economic cycles. The cause-and-effect relation between aggregate advertising expenditure and aggregate consumption is not clear. However, a change in advertising expenditure can serve as an indicator at the macro level. Further, the aggregate advertising expenditure of thirteen Central and Eastern European countries (CEECs) is analysed between 2006 and 2011, emphasizing the effect of the economic crisis that started in 2008. According to the findings, an unambiguous relationship between aggregate advertising expenditure and macroeconomic factors cannot be confirmed. However, investigating four CEECs in the longer term, almost all relations are significant.

JEL Classification: E21, E32, M37

Keywords: advertising expenditure, advertising investment, consumption, economic growth, Central and Eastern European countries

1. Introduction

Scrutinizing the financial aspects of advertising has come to the fore increasingly since the middle of the 1990s. It has become important at corporate, market and macroeconomic levels as a result of the increasing uncertainty of the economic environment, with competition becoming more vigorous in markets, increasing advertising 'noise' and the significant expansion of advertising investment. The financial relations of advertising have been researched for a longer time and are at an advanced stage from the corporate, industrial and market aspects than from the viewpoint of macroeconomics. This can be explained basically, on the one hand, by the fact that advertising is a corporate activity towards the market. On the other hand, its macroeconomic analysis has become relevant due to the increasing of advertising

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expenditure to a considerable level[1] (Chang and Chan-Olmsted, 2005; Nayaradou, 2006). Further, there are differences in countries' advertising investment due to their various economic advanced state, economic structure and social features (Deleersnyder et al., 2009; van der Wurff et al., 2008).

At the micro level the first determinant and still current issues are the effect of advertising on profitability (Comanor and Wilson, 1967, 1974; Schmalensee, 1972) and the optimal level of advertising expenditure in respect of various target market characteristics, the competitive environment and market structures (Chiplin and Sturgess, 1981; Dorfman and Steiner, 1954; Saleh and Mualla, 2001; Simon, 1970). Most companies have regarded advertising expenditure as a long-term cost, treating it as investment[2] (Robinson, 1986; White and Miles, 1996), as established by its multi-period income-generating ability through its intertemporal effects (Dickson, 1994 as cited in White and Miles, 1996: 45; Schultz, 1990), spread as competition is becoming more vigorous in many markets, with the increasing importance of intangible assets in competitiveness. Thus, the role of advertising is relevant in terms of the future performance and possible growth of companies or even their risk reduction (McAlister et al., 2007; Srivastava et al., 1998). Related to these, the return of advertising investments (ROI) is a critical point that is scrutinized by many researchers (Ambler and Roberts, 2008; Danaher and Rust, 1994; Powell, 2008; Schultz and Walters, 1997; Taylor, 2010; Young and Aitken, 2007). However, applying and analysing advertising ROI requires a different approach from that taken for capital investment, especially because advertising investment is carried out more frequently, the risk is usually greater and because there are numerous decision alternatives related to the possible combinations of advertising investment. Further, calculating advertising ROI also involves many difficulties (Lenskold, 2003; Powell, 2002). Regarding the research on advertising expenditure at the micro level, the most pressing issues are the effect of advertising expenditure on shareholder value (Heiens et al., 2007; Osinga et al., 2011; Srivastava et al., 1998) and on the market value of the company (Joshi and Hanssens, 2010), both of which are complex research fields.

The short literature review above identifies the corporate, market and industrial level relations and the varied research alternatives on advertising expenditure. However, this makes research and analysis from the macroeconomic aspect difficult, as verified by the relatively limited amount of literature on this professional field. At macro level investigations (O'Donovan et al., 2000; Molinari and Turino, 2009; Rehme and Weisser, 2007; van der Wurff et al., 2008) are focused on the assumed bi-directional relation between advertising expenditure and macroeconomic factors. Studying this field is essential since the level of advertising investment is significant in developed countries and increases considerably in developing regions. The main issue is how aggregate advertising expenditure, aggregate consumption and economic growth are related to each other. Thus, this paper investigates the macroeconomic relations of advertising expenditure. On the other hand, Taylor (2012), editor of the International Journal of Advertising, emphasizes in his editorial that there is little knowledge about *the advertising of emerging economies* and that more research is

[1] The total advertising expenditure is about one percent of GDP or more yearly in many countries (Nayaradou, 2006).

[2] Due to this the concepts of advertising expenditure and advertising investment are used as synonyms in the following.

needed. Connecting these, my paper is expanded with an analysis regarding the advertising expenditure of Central and Eastern European countries (CEECs) from the macroeconomic aspect. According to the aforementioned, in the literature review section the theories and the research findings about the relationship between advertising expenditure, aggregate consumption and economic growth are pointed out. The factors that influence advertising expenditure at the macro level are also summarized. In the following section, the advertising expenditure of CEECs is analyzed from the macroeconomic aspect.

2. Macroeconomic relations of advertising expenditure

Relationship between aggregate advertising expenditure, aggregate consumption and economic growth

One of the main issues related to advertising expenditure from the macroeconomic aspect is the relationship that exists between aggregate advertising expenditure, aggregate consumption and economic growth. Another relevant topic is how aggregate advertising expenditure is linked with economic cycles. There is no agreement in these crucial areas.

Molinari and Turino (2009) point out that aggregate advertising expenditure[3] affects aggregate consumption. Further, they emphasize that if consumers cover their additional consumption generated by advertisements from their savings, advertising contributes to consumption growth and, on the other hand, to investment decrease. In consequence of this, the net effect of advertising on demand is not obvious. Molinari and Turino (2009) claim that if consumers purchase more expensive goods as a result of advertising, real consumption can decrease through expanding advertising. However, they do not determine in which cases this substitution occurs. It can be assumed that it is valid only for certain product categories and consumer segments. By contrast, O'Donovan et al. (2000), studying New Zealand's advertising expenditure between 1984 and 1995, conclude that advertising does not influence aggregate consumption in the long run; more likely, consumption induces advertising. According to their findings, advertising expenditure has great positive elasticity related to aggregate consumption. Ashley et al. (1980), based on their empirical survey findings regarding U.S. data for the period 1956–1975, emphasize that the aggregate consumption level forecasts the value of aggregate advertising expenditure properly, that is, consumption has an effect on advertising. However, they do not reject the hypothesis that advertising does not induce consumption. Jung and Seldon (1995) argue a bi-directional relationship between aggregate advertising expenditure and aggregate consumption by analyzing U.S. data from 1947 to 1988; that is, not only does advertising influence consumption but consumption also has an effect on advertising. Cowling et al. (2011), adopting also Galbraithian (1958) thoughts, theorize that in modern capitalist economies individuals are continuously dissatisfied with their current consumption as a consequence of the high advertising expenditure level, that

[3] According to Molinari and Turino (2009), aggregate advertising expenditure is the total amount of spending by domestic and foreign companies on advertising in a certain country.

they want to satisfy their emerging desires immediately. In this way they spend more and more of their current income to satisfy their current consumption needs. However, this causes a decrease of the savings rate.

The effect of advertising expenditure on economic growth cannot be explained either by Solow's (1956) neoclassical growth model or by the logic of Molinari and Turino (2009) and Cowling et al. (2011), mentioned above. In the theory of endogenous economic growth, promotion already has a certain role, but advertising expenditure is not a relevant factor.

One early overall survey was conducted by Koch (1971), analysing 55 manufacturing industries between 1958 and 1963. He could not verify either that advertising is conducive to economic growth or that advertising hinders economic growth. Subsequent researches led to various findings. Rehme and Weisser (2007), based on analysing German data between 1950 and 2000, argue that advertising does not Granger-cause economic growth but Granger-causes consumption, and further, that consumption Granger-causes economic growth. As transitivity is not valid for Granger causality, it cannot be claimed that advertising contributes to economic growth through consumption. A bi-directional approach is applied by van der Wurff et al. (2008), who come to the conclusion by analysing 21 developed countries between 1987 and 2000 that the effect of advertising on economic growth is not significant, and rather that it is the value of GDP that influences the level of advertising expenditure. Kopf et al.'s (2011) research findings, covering 63 countries, do not confirm that advertising expenditure contributes to economic growth. However, they find that if the advertising investment rate[4] increases, the growth rate of GDP rises initially, then begins to decrease. In contrast with the aforementioned, Nayaradou (2006) establishes the effect of advertising on economic growth both theoretically and empirically. He explains this connection based on four relevant mechanisms: advertising contributes to the increase of consumption, it accelerates the diffusion of innovation, it makes competition more vigorous and the operation of the advertising industry stimulates the growth of economy. Further, he proves that there is a strong positive correlation between the advertising investment rate and economic growth.

According to the literature review above, there is no agreement related to the interdependence between aggregate advertising expenditure, aggregate consumption and economic growth. A positive correlation between aggregate advertising expenditure and aggregate consumption is proved by more surveys; however, *the cause-and-effect relation is not clear*. Furthermore, most of the researches do not verify that advertising contributes to economic growth.

The connection of aggregate advertising expenditure and economic cycles is essentially determined by how the macroeconomic factors influence the advertising investment of the companies in aggregate in a certain country or region. Companies react to crisis situations and recession in various ways in regard to modifying their advertising expenditure. During a crisis there is no best advertising investment strategy, and it depends on more factors, such as the financial situation, market share and features of supply that are the most practical for a company (Lilien and Srinivasan, 2010). There are arguments and counter-arguments for both increasing and

[4] Advertising investment rate is the ratio of aggregate advertising expenditure to GDP (Nayaradou, 2006).

decreasing advertising expenditure during a recession. Thus, optimal advertising spending should be lower if it is determined as a percentage of sales and sales decreases due to recession. However, if a firm is in a stable financial position and it can increase its advertising expenditure in this way, it can realize a higher market share during a recession. Another argument for decreasing advertising spending is that allocating resources to R&D and product development could be more profitable in the long run (Tellis and Tellis, 2009).

Although the relationship between aggregate advertising expenditure, aggregate consumption and economic growth is not clear, *a change in advertising expenditure can serve as an indicator at the macro level*. Fridriksson and Zoega (2012) find that the quantity of advertising can be regarded as a trendsetting indicator of economic cycles, since its change goes before the change in the level of investment. Similarly, Picard (2001) comes to the conclusion that the level of advertising expenditure changes before the entire economy. Van der Wurff et al. (2008), based on their above-mentioned findings, find the contrary relation to the former.

More researches prove the pro-cyclicality of advertising expenditure (Molinari and Turino, 2009; O'Donovan et al., 2000) and that its volatility is greater than the volatility of GDP and consumption (Deleersnyder et al., 2009; Molinari and Turino, 2009; Picard, 2001). Deleersnyder et al. (2009) point out that the change in advertising expenditure is less cyclic in those countries that can be characterized by a long-term orientation and a high power distance, and it is more cyclic where uncertainty avoidance is high[5]. Esteban-Bravo et al. (2012) analyse the aggregate advertising expenditure of the United States between 1935 and 2007, and prove its anti-cyclicality, which, taking the characteristics of the United States into consideration, confirms Deleersnyder et al.'s (2009) conclusion. According to Picard's (2001) findings, the relative decrease in advertising expenditure is greatest when GDP declines only slightly. However, the reduction of advertising expenditure slows down as the decrease of GDP becomes greater and greater.

Recession influences advertising in different mediums in various degrees. It has a powerful effect on newspaper and magazine advertising, but radio and television advertising is less sensitive to crisis (van der Wurff et al., 2008). The advertising expenditure data by medium of ZenithOptimedia (2010, 2012) also reflect the varied sensitivity of mediums to crisis, but at the same time they implicitly include the competition among mediums and the trend for more and more online ads instead of newspaper and magazine ads. Silk et al. (2002) find the substitute and complementary relationships between various mediums to be weak, while van der Wurff et al. (2008) emphasize that the substitutability among various mediums is changing across time and countries. Furthermore, they claim that the competition among mediums has a limited effect, if any, on the advertising investment rate.

Factors influencing aggregate advertising expenditure

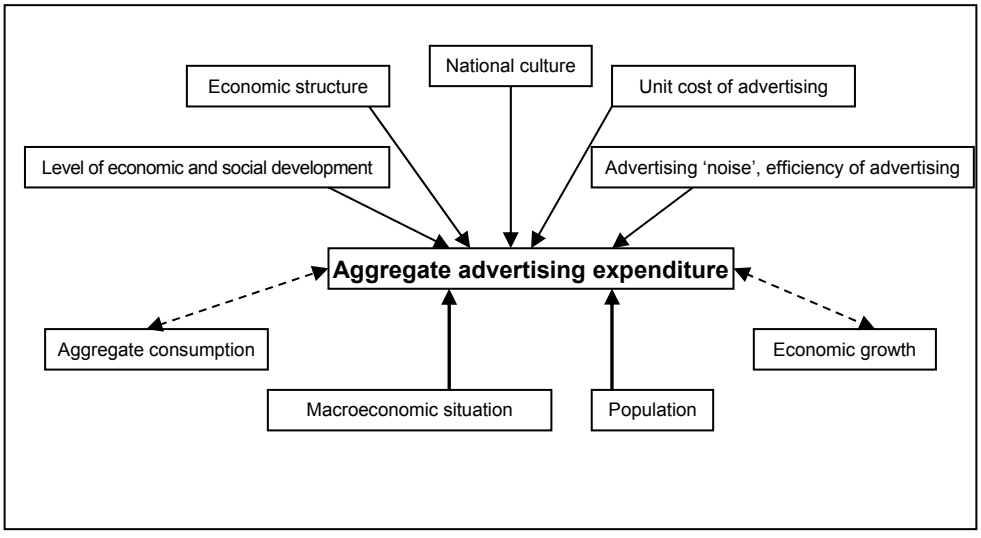
The level of aggregate advertising expenditure and the advertising investment rate, which is regarded as a relevant index, are determined by the economic and social development and the macroeconomic situation of a given country but numerous other factors also affect them. In more developed countries the level of advertising

[5] These are according to Hofstedeian dimensions.

investment is usually higher, on the one hand, because of the developed markets, the vigorous competition and the wider variety of goods and brands, and on the other hand, due to consumers having greater purchasing power and greater expectations of goods and services. (However, in more developed countries the growth of advertising expenditure is less than in developing and emerging countries, which results from the restricted expansion.)

Leff and Farley (1980) explain the relatively low level of advertising expenditure in developing countries by claiming that their economies are based on the production and export of primary goods, that is, on goods that are usually advertised less as a result of their character. Banks (1986), analysing the advertising expenditure of 43 countries between 1968 and 1979, finds that the relative economic importance of the retail, wholesale and service sectors also influences the proportion of GNP that is spent on advertising by a country. Van der Wurff et al. (2008) emphasize that the economic structure has a powerful effect on the level of aggregate advertising expenditure and the advertising investment rate, and that there are certain industries such as tourism in which advertising expenditure is high. Related to this, it is important that the relative level of advertising expenditure is relatively stable across time in various industries; that is, in those industries in which the level of advertising investment was relatively high in the 1950s, it is also currently high, and this is valid independently of the world region and country (Pepall et al., 2008). Furthermore, national culture also influences significantly the differences among countries in respect of aggregate advertising expenditure (Deleersnyder et al., 2009; Kovács, 2010). The level, the change and the differences between countries of aggregate advertising expenditure are also affected, for instance, by the unit cost level of advertising in various mediums, the degree of advertising 'noise' and the efficiency of advertising. Figure 1 summarizes the main factors influencing the level of aggregate advertising expenditure.

Figure 1. Factors influencing aggregate advertising expenditure



Arens (2006) mentions the concept of per capita advertising spending, however, the literature of the field does not underline that the level of aggregate advertising expenditure is also influenced substantially by the population of a country, that is, the number of potential consumers. In spite of that companies establish the volume of their supply and the level of their advertising investment according to the number of potential consumers. Consequently, *aggregate advertising expenditure per capita*, which expresses the level of total advertising investment per capita in a given country in a given year, can be a useful index in certain analyses and surveys. A higher value can indicate more vigorous competition, greater economic and social welfare or even also greater advertising 'noise'.

3. Analysis of the advertising expenditure of Central and Eastern European countries

The role, features and importance of advertising changed as a consequence of the transformation in CEECs to the market economy. This occurred and developed further in various ways in the countries of the region, as is also reflected in the level and change of aggregate advertising expenditure. The growth of advertising expenditure in Central and Eastern Europe is greater than the world average. Before the crisis, the advertising expenditure in the region increased by 18.6 percent in 2006 and by 22.4 percent in 2007 compared to the previous year, while a 5.6 and 5.7 percent increase occurred in the more developed Western Europe and there was a 7.3 and 6.9 percent rise worldwide (ZenithOptimedia, 2008). Apart from the Middle East & North Africa, Central and Eastern Europe reacted the most sensitively to the crisis in respect of advertising expenditure with a 17.9 percent decrease in 2009. However, the advertising market boomed quickly and a moderate expansion began from 2010 (ZenithOptimedia, 2011).

Research goals and questions

The purpose of examining the aggregate advertising expenditure of CEECs is, on the one hand, to explore the relationship between aggregate advertising expenditure and macroeconomic factors. On the other hand, to analyze the level and change of advertising expenditure and the advertising investment rate, emphasizing the effect of the crisis and the differences and similarities among CEECs. In this way, it is analyzed whether there are significant relationships between aggregate advertising expenditure and macroeconomic factors (consumer expenditure, GDP, savings ratio[6], disposable income[7]) in the case of the studied countries in short and long run. Further, which CEECs make up a cluster in terms of the level and change of their aggregate advertising expenditure. The application of aggregate advertising expenditure per capita is also presented.

[6] Savings ratio is taken into consideration since some scholars (e.g. Cowling et al., 2011; Molinari and Turino, 2009) denote a possible relation between advertising and consumers' savings.

[7] This factor is studied as it is often believed that the advertising expenditure is higher in the countries where the society is more affluent.

Research methods

In the international macroeconomic analysis of advertising expenditure, countries that are at similar levels of economic and social development and where advertising as a competitive asset has a very similar same role and importance can be investigated together and can consequently be compared with each other. Taking these and the level of GDP per capita into consideration, 15 of the CEECs are included in the survey: Bulgaria, Croatia, Cyprus, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Romania, Russia, Slovakia, Slovenia and Turkey.

For the calculation and the analysis, I determined the annual advertising expenditure of the countries according to the data (in national currency, nominal value) from the Euromonitor by summarizing the available values related to the various mediums (European Marketing Data and Statistics 2013, 2012: 26–32). It is important to emphasize that the alternatives for the investigation of advertising expenditure are restricted, partly because the data are in each country's national currency, with only the last year's (2011) data available also in US dollars, and partly because the earliest and the latest data series can be connected only for certain countries and factors. Hence, the advertising expenditure of the abovementioned countries is analyzed between 2006 and 2011. Furthermore, as data are not available for Cyprus and Malta, they are out of the scrutiny. In the cases of the Czech Republic, Hungary, Poland and Slovenia, longer time series can be studied. Thus, these four countries are also analyzed between 1985 and 2011.

In addition to advertising expenditure, the following variables are taken into the analysis: GDP, GDP per capita, consumer expenditure, disposable income, savings ratio, population. As the advertising expenditure data are given in national currency, the analysis of its relationships with GDP, consumer expenditure and disposable income applies their values in national currency in the same Euromonitor source (European Marketing Data and Statistics 2013, 2012: 110–1, 176–7, 297). (The only one exception is a calculation related to 2011, in the case of which the applied variables are in US dollars; see later.) The Euromonitor (European Marketing Data and Statistics 2013, 2012: 299, 350–1) data are used also in respect of the savings ratio and population. GDP per capita (in US dollars) is needed for the calculation in the interest of comparing companies, where International Monetary Fund (2013) data are applied.

In addition to the investigation of CEECs' advertising expenditure, a correlation analysis is also conducted related to macroeconomic factors. Furthermore, I try to explore by cluster analysis which countries are similar in respect of advertising expenditure. Excel and SPSS were applied in this analysis.

Research findings

First, it is worth reviewing how the level of advertising expenditure of CEECs changed in the studied period (Figure 2). Before the crisis in 2007 the level of advertising expenditure increased by 18.26 percent on average compared with the previous year in the 13 countries studied; that is, the expansion of advertising investment was significant. However, the differences between countries were relatively large, as also indicated by the standard deviation of 8.45 percent. The smallest rise occurred in the Czech Republic (6.37 percent), Slovakia (6.56 percent) and Hungary (6.65 percent), while the most dynamic one was in Estonia (33.28 percent). Figure 2

demonstrates well that the CEECs reacted to the crisis that started in 2008 sensitively and very differently in respect of advertising expenditure (the standard deviation was 22.6 percent in 2009). In 2009 only Croatia and Slovenia increased their advertising expenditure compared with the previous year. This can be attributed to the fact that tourism has a determining role in the economy of these two countries and to sustain tourism revenue advertising investments are presumably considered necessary. Croatia, from its curve, can be characterized by a kind of anti-cyclical advertising investment behaviour which suggests its long-term orientation, according to Deleersnyder et al. (2009). In contrast with Croatia, the other countries cut their advertising considerably. The level of advertising expenditure decreased the most, by 45.64 percent, in Hungary in 2009. However, the largest expansion in advertising spend occurred also in Hungary in 2010. It can be seen from Figure 2 that the advertising market in the region grew steadily in a relatively short time after the crisis developed, as expansion of advertising investment occurred again in most of the studied countries in 2010. Furthermore, the advertising expenditure increased by 13.35 percent on average in 2011. The standard deviation declined considerably at the same time.

Figure 2. Yearly percentage change in advertising expenditure of CEECs between 2006 and 2011
Own calculation based on the data from the Euromonitor

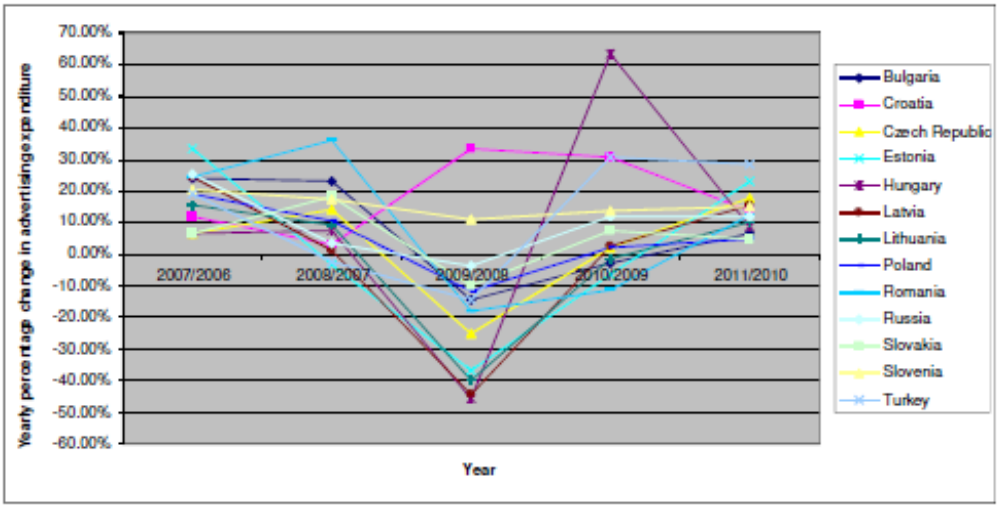


Figure 3 expresses the change in the advertising investment rate between 2006 and 2011. The advertising investment rate is under 1 percent permanently in nine of the countries, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Russia and Turkey, where its value diminished to a small extent throughout the crisis. The advertising investment rate is 1.5 percent in Bulgaria and a relatively high 2.5 percent in Slovakia. Like the former group of countries, the advertising investment rate of Bulgaria and Slovakia also declined when the crisis began. However, there was a significant increase in Slovenia and especially in Croatia from

2008. The advertising investment rate rose from 1.42 percent in 2008 to 2.13 percent in 2011 in Slovenia and from 1.63 percent to 3.33 percent in Croatia in the same period. This means not only that these two countries expanded their advertising investment during the crisis (Figure 2) but that the advertising also increased considerably its importance in the economy.

Figure 3. Advertising investment rate in CEECs between 2006 and 2011
Own calculation based on the data from the Euromonitor

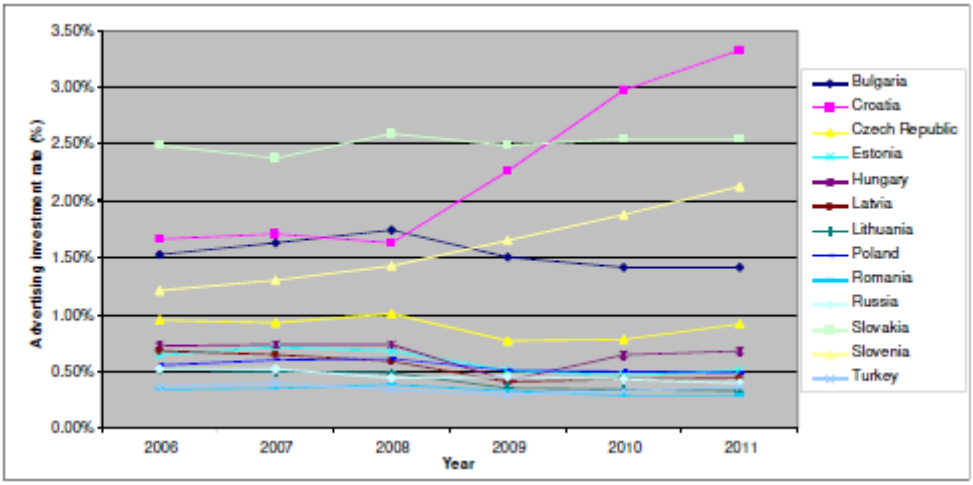


Table 1 summarizes the results of correlation analysis, and the cells show the Pearson correlation coefficient values regarding relationships between advertising expenditure and macroeconomic factors. The relationship between advertising expenditure and consumer expenditure is significant in six countries, all of which denote a strong positive relation. It is worth noting, connected with the former, on the one hand, that the advertising investment rates of these countries are very different from each other. On the other hand, the two factors correlate with each other in Slovenia but not in Croatia where advertising investment expanding during the crisis. However, as the cause and effect relationship between the two variables is not clear, it cannot be determined that it was the increase of consumer expenditure that induced the rise in Slovenian advertising expenditure or that the increased advertising during the crisis was effective. The relationship between advertising expenditure and GDP is significant only in Russia, Slovakia and Turkey, but this is a strong positive one. The correlation between advertising expenditure and the savings ratio is significant in five countries; while the result of the analysis indicates a strong negative relationship in the Czech Republic, Lithuania and Slovenia, that is the savings ratio is lower at a higher advertising expenditure level, there is a strong positive relationship in Romania and Turkey, where the savings ratio is higher at a higher advertising expenditure level. These various findings and the lack of correlation in other countries can presumably be attributed to the fact that the savings ratio is also affected by many factors that have a much greater influence than advertising (e.g. the change of real income level) and that can cancel out the power of advertising. Consequently, the assumed negative

relationship between the two variables cannot be established directly by correlation analysis. Finally, significant correlation between advertising expenditure and disposable income can be revealed in the case of five countries, Bulgaria, Russia, Slovakia, Slovenia and Turkey, where the correlation coefficient values denote a strong positive relationship. In the case of these countries, the correlation between advertising expenditure and consumer expenditure is also significant, which can be mainly explained by the fact that there is a strong positive relationship between consumer expenditure and disposable income according to the findings of the correlation analysis in these countries.

Table 1. Correlation between advertising expenditure and macroeconomic factors in CEECs
Own calculation based on the data from the Euromonitor

Country	Consumer expenditure	GDP	Savings ratio	Disposable income
Bulgaria	0.931**	0.783	-0.274	0.879*
Croatia	0.499	0.452	-0.030	0.543
Czech Republic	0.092	0.300	-0.951**	-0.012
Estonia	0.916*	0.697	-0.667	0.159
Hungary	0.175	0.266	-0.267	0.169
Latvia	0.572	0.562	-0.603	0.345
Lithuania	0.348	0.416	-0.902*	0.063
Poland	0.590	0.612	-0.757	0.564
Romania	0.710	0.670	0.836*	0.804
Russia	0.945**	0.969**	0.364	0.939**
Slovakia	0.928**	0.967**	0.683	0.909*
Slovenia	0.926**	0.672	-0.963**	0.885*
Turkey	0.877*	0.886*	0.883*	0.882*

* Correlation at 5 percent significance level.
** Correlation at 1 percent significance level.

Correlation analysis between advertising expenditure and the macroeconomic variables was also carried out for each year. The results are shown in Table 2, where the cells include the Pearson correlation coefficient values regarding the relationship of the yearly change of advertising expenditure and macroeconomic variables. A significant relation between the change of advertising expenditure and the change of consumer expenditure, GDP and disposable income is verified only for 2007, the year before the crisis. The relationship is insignificant for the years of the crisis, presumably because advertising expenditure is highly volatile and responds to economic changes sensitively (Figure 2 reflects this partly). There is a significant relationship between the change of advertising expenditure and savings ratio only in 2009, and this is a negative intermediate correlation. It denotes that as the crisis became more serious the decreasing advertising investment in most of the studied countries entailed an increase in the savings ratio.

Table 2. Yearly correlation between the change of advertising expenditure and macroeconomic factors
Own calculation based on the data from the Euromonitor

Year	Change of consumer expenditure	Change of GDP	Change of savings ratio	Change of disposable income
2007/2006	0.688**	0.689**	0.264	0.794**
2008/2007	0.327	0.431	0.166	0.392
2009/2008	0.508	0.472	-0.587*	0.395
2010/2009	0.189	0.172	0.163	0.253
2011/2010	0.366	0.326	-0.355	0.351

* Correlation at 5 percent significance level.
** Correlation at 1 percent significance level.

Completing the above, some relations of advertising expenditure are investigated also over a longer period, from 1985 to 2011, in the group comprising the Czech Republic, Hungary, Poland and Slovenia. Figure 4 shows the change in the advertising investment rate in this period. Initially, the advertising investment rate was high in Slovenia probably because it became an independent state at that time and, related to this, communication directed at consumers was necessary and relevant in many respects. From 1995 to 2008, the advertising investment rate increased moderately in all of the four countries, then after the crisis began it rose considerably in Slovenia while it fell slightly in the other countries.

Figure 4. Advertising investment rate between 1985 and 2011
Own calculation based on the data from the Euromonitor

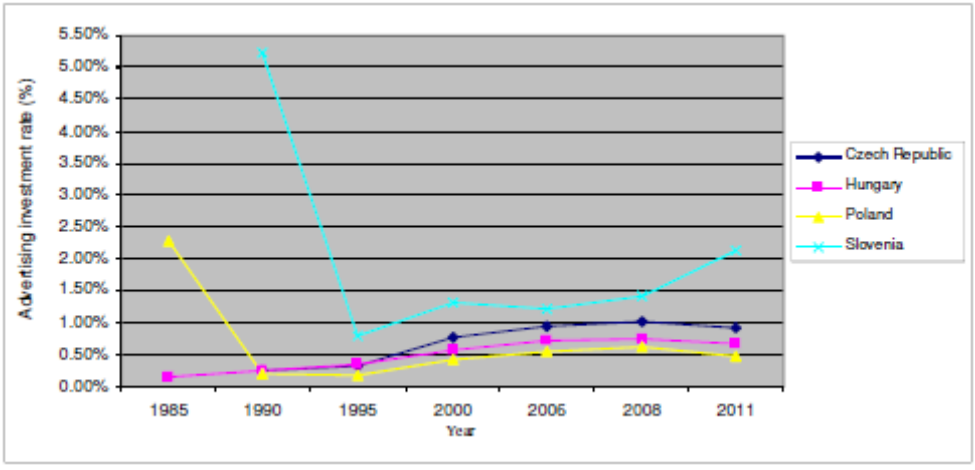


Table 3 summarizes the results of the correlation analysis related to the four studied countries between 1985 and 2011, with the cells showing the Pearson correlation coefficient values regarding the relationships between advertising

expenditure and macroeconomic factors. It can be established that advertising expenditure has a strong positive connection with consumer expenditure, GDP and disposable income in all four countries in the period. It is important that in the analysis related to a shorter period, described above, the advertising expenditure of the Czech Republic, Hungary and Poland does not correlate with any of the three mentioned macroeconomic factors. From this, it can be concluded that in the short run, and especially when an economic crisis or boom occurs, advertising expenditure often does not correlate with macroeconomic factors owing to their sensitivity to economic and social changes and high volatility. Related to this, it is interesting that advertising expenditure and the savings ratio correlate in the short run in the Czech Republic and Slovenia, but in the long run in Hungary and Poland.

Table 3. Correlation between advertising expenditure and macroeconomic factors between 1985 and 2011
Own calculation based on the data from the Euromonitor

Country	Consumer expenditure	GDP	Savings ratio	Disposable income
Czech Republic	0.980**	0.988**	-0.439	0.974**
Hungary	0.993**	0.995**	-0.937**	0.993**
Poland	0.973**	0.977**	-0.956**	0.967**
Slovenia	0.935**	0.915*	0.091	0.925**

* Correlation at 5 percent significance level.
** Correlation at 1 percent significance level.

Cluster analysis is done for the thirteen CEECs to explore which countries are similar to each other and can be considered as members of the same group in terms of the level and change of advertising expenditure. As forming clusters is intended specifically in terms of advertising expenditure, the advertising investment rate expressing the economic importance of advertising and the change of advertising expenditure are taken as variables into the analysis that is implemented by the single linkage method. Cluster analysis is carried out for the years 2007, 2009 and 2011, so before, during and recovering from the crisis separately. The findings for the various years are compared.

Figure 5a shows the position of the countries as a function of the advertising investment rate and the change of advertising expenditure and the clusters according to the findings in 2007. In forming the clusters the change of advertising expenditure has a more relevant role than the other factor since its variability is much higher. One cluster that can be characterized by a slight advertising expenditure increase includes the Czech Republic, Hungary and Slovakia. Another cluster consists of countries (Poland, Slovenia and Turkey) with an increase of about 20 percent in advertising expenditure but the cluster can be expanded by adding Lithuania, which has a moderate advertising rise. The third cluster contains Bulgaria, Latvia, Romania and Russia, which achieve an advertising expenditure expansion to about 25 percent. Two countries, Croatia and Estonia, remain outside the clusters. Other clusters are formed according to the findings for 2009 (Figure 5b). Estonia, Hungary, Latvia and Lithuania

make up a cluster that can be characterized by a significant decrease of about 40 percent in advertising expenditure because of the crisis and because the advertising investment rate is relatively low, about 0.5 percent, at the same time. The other cluster consists of countries where the decline in advertising expenditure is much less than in the previous cluster. However, the standard deviation of the advertising investment rate is much greater in this cluster. Slovenia and Croatia are outliers in 2009 as they achieve significant advertising investment expansion along with a relatively high advertising investment rate. In 2011, Hungary, Lithuania, Romania and Russia make up the cluster in which the countries are the most similar to each other in terms of advertising expenditure at the macro level (Figure 5c). They can be characterized by about 10 percent increase in advertising expenditure and a low advertising investment rate of about 0.5 percent. (They can be considered a larger cluster with Bulgaria, Poland and Slovakia.) The other cluster that can be described by significant advertising investment expansion includes Croatia, Latvia and Slovenia, and additionally the Czech Republic. Estonia and Turkey respond with a considerable advertising expenditure increase to economic recovery, compared with other countries, and they are therefore outliers. However, their advertising investment rates can be considered low at the same time.

Figure 5a. Results of cluster analysis in 2007
Own calculation based on the data from the Euromonitor

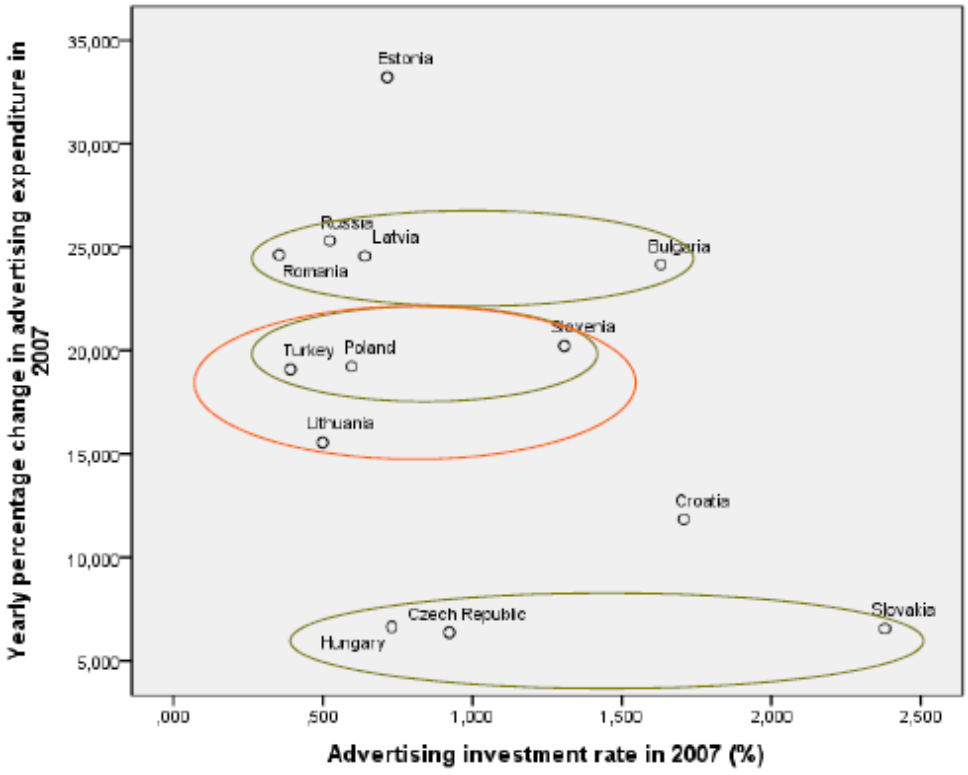


Figure 5b. Results of cluster analysis in 2009
Own calculation based on the data from the Euromonitor

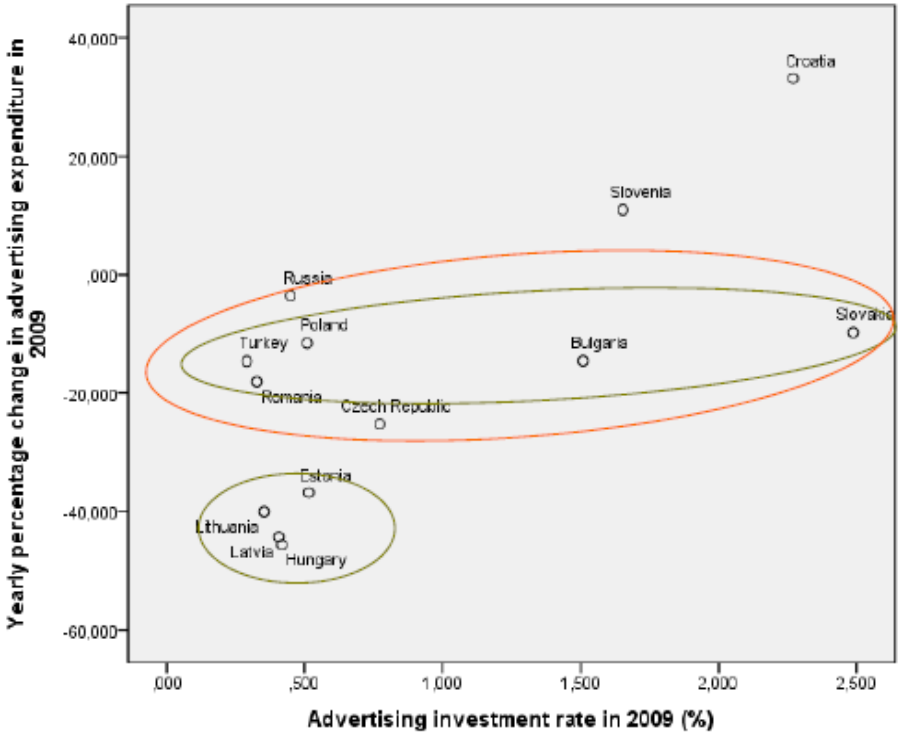
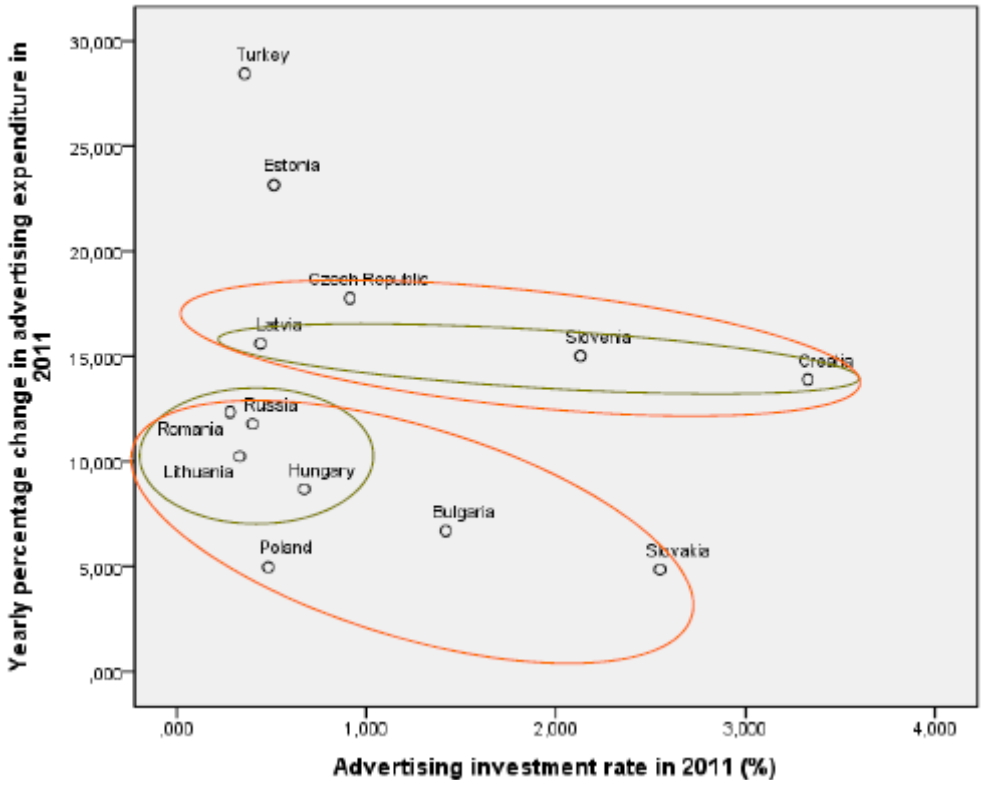


Figure 5c. Results of cluster analysis in 2011
Own calculation based on the data from the Euromonitor

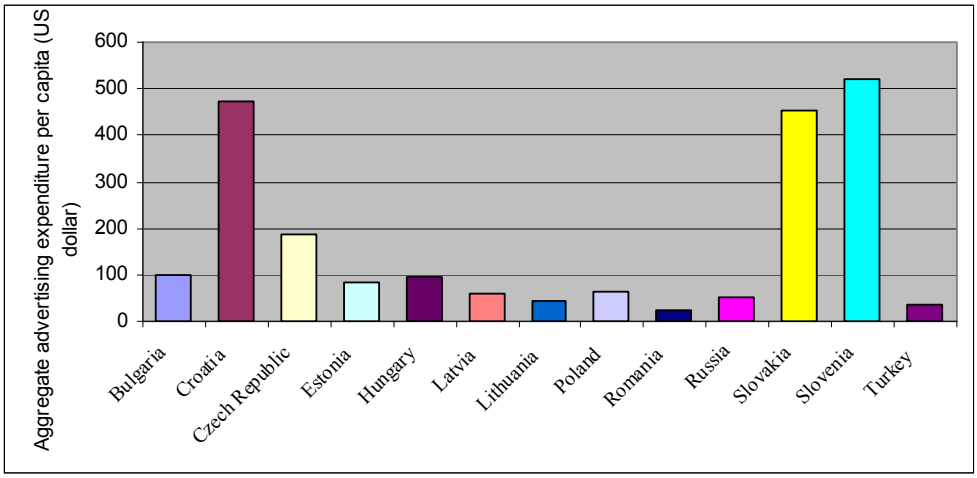


The conclusion drawn from the findings of cluster analysis is that the studied *CEECs respond extremely differently to the macroeconomic changes in terms of advertising expenditure*. *No group of CEECs can be determined which forms a cluster permanently.* The composition of the clusters identified for the given years varies. A relatively close co-movement can be noticed only in the case of Romania and Russia. The lack of permanent clusters can be attributed to the fact that determining and modifying advertising expenditure at a corporate level does not often occur on the grounds of consistent and considered strategic decisions in these relatively new market economies, and consequently advertising expenditure is very volatile. Additionally, the role of advertising in market competition is not yet stable.

In the last part of the analysis *aggregate advertising expenditure per capita* as an useful index is applied. Because the advertising expenditure of the studied CEECs is available in the same currency (US dollars) only in 2011, the investigation is limited to that year. By calculating the aggregate advertising expenditure per capita, the CEECs become easily comparable in terms of their level of advertising investment (Figure 6). The aggregate advertising expenditure per capita is the highest in Slovenia ($521.14), Croatia ($471.91) and Slovakia ($453.1). These countries are significantly ahead of the others, as they spend much more money on advertising than the other

ten countries. The value of the index can be considered relatively high also in the Czech Republic ($187.28). However, the level of advertising investment does not even reach $100 per capita in the other countries.

Figure 6. Aggregate advertising expenditure per capita in CEECs in 2011
Own calculation based on the data from the Euromonitor



The findings of the correlation calculation for aggregate advertising expenditure per capita and macroeconomic factors are shown in Table 4. Aggregate advertising expenditure per capita has a strong positive relationship with consumer expenditure and a medium positive relationship with GDP and disposable income. Its relationship is not significant with the savings ratio. It is worth comparing these findings with the last row of Table 2, which does not show any significant relationship between the changes of the factors. However, in the present case, aggregate advertising expenditure per capita can be considered a well applicable static index for exploring the presumed relations with macroeconomic factors. Finally, it is relevant that there is a strong positive correlation between aggregate advertising expenditure per capita and the advertising investment rate; that is, in those countries where the advertising investment rate is higher, the aggregate advertising expenditure per capita is also higher.

Table 4. Correlation between aggregate advertising expenditure per capita and macroeconomic factors
Own calculation based on the data from the Euromonitor

	Consumer expenditure per capita	GDP per capita	Savings ratio	Disposable income per capita	Advertising investment rate
2011	0.761**	0.638*	0.305	0.680*	0.928**

* Correlation at 5 percent significance level.
** Correlation at 1 percent significance level.

4. Conclusions

Investigating advertising expenditure from the macroeconomic aspect became relevant owing to its dynamic increase, achieving a considerable amount. Both the microeconomic background of this research field and the various theories and research findings that can be found in the literature indicate its complexity. The relationship between aggregate advertising expenditure and aggregate consumption is proved by many researchers (Jung and Seldon, 1995; Molinari and Turino, 2009), but the cause-and-effect relationship is not clear. Most of the investigations (Kopf et al., 2011; Rehme and Weisser, 2007) do not verify the effect of advertising on economic growth. The change of aggregate advertising expenditure is pro-cyclical in general (Molinari and Turino, 2009; O'Donovan et al., 2000), but in the case of certain cultural features such as long-term orientation it is characteristically anti-cyclical (Esteban-Bravo et al., 2012). Further, it is important that its volatility usually exceeds the volatility of GDP and consumption (Deleersnyder et al., 2009; Molinari and Turino, 2009; Picard, 2001). The amount of aggregate advertising expenditure is mainly determined by the level of economic and social development and the economic structure, but the national culture, the unit cost of advertising and the advertising 'noise' also affect it considerably. The number of potential consumers in a given country has also an effect on it (Arens, 2006), and therefore applying aggregate advertising expenditure per capita as an index is suggested in this professional field.

According to the findings of the analysis of thirteen CEECs, the level of aggregate advertising expenditure responds to macroeconomic changes sensitively. However, there are significant differences among the countries. In the countries (Croatia and Slovenia) where tourism is a determining industry of the economy, advertising investment expanded further, in spite of the crisis that started in 2008. In these countries, the advertising investment rate is relatively high, whereas it is permanently lower than 1 percent in most of the studied countries. All this suggests the importance of advertising in the tourism industry. An unambiguous relationship between advertising expenditure and macroeconomic factors cannot be proved. However, in some countries the correlation between advertising expenditure and one or more macroeconomic factors is significant. Investigating four countries in the longer term, almost all relations are significant; that is, relations are better verified in the long term. From the cross-section analysis, no significant relations can be demonstrated regarding the course of the crisis, probably because *in the CEECs advertising expenditure is very volatile mainly due to its sensitivity to economic changes*. The CEECs do not form clusters permanently in terms of the level and change of aggregate advertising expenditure. It can be attributed to the fact that they react to macroeconomic changes variously regarding the level of advertising investment. Finally, aggregate advertising expenditure per capita can be a highly appropriate index for time series analysis and comparing countries.

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