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Chloe Michel[a], Michelle Sovinsky[b,c] , Eugenio Proto[d,f] , and Andrew J. Oswald[e,f]

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[a] *University of Zurich, Switzerland.*
[b] *University of Mannheim, Germany.*
[c] *Centre for Economic Policy Research, London, UK.*
[d] *University of Bristol, UK.*
[e] *University of Warwick, and CAGE research centre, UK.*
[f] *IZA Institute for the Study of Labor, Bonn, Germany.*

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Abstract

Advertising is ubiquitous in modern life. Yet might it be harmful to the happiness of nations? This paper blends longitudinal data on advertising with large-scale surveys on citizens' well-being. The analysis uses information on approximately 1 million randomly sampled European citizens across 27 nations over 3 decades. We show that increases in national advertising expenditure are followed by significant declines in levels of life satisfaction. This finding is robust to adjustments for a range of potential confounders -- including the personal and economic characteristics of individuals, country fixed-effects, year dummies, and business-cycle influences. Further research remains desirable. Nevertheless, our empirical results are some of the first to be consistent with the hypothesis that, perhaps by fostering unending desires, high levels of advertising may depress societal well-being.

Keywords: adverts, status, life satisfaction, Easterlin Paradox, positive affect

1. Introduction

In a classic article, Richard Easterlin (1974) documented some of the first evidence for the striking idea that society does not seem to become happier as it grows richer. He suggested that one mechanism at work might be an intrinsic tendency of human beings to compare themselves with their neighbors. Easterlin's thesis drew, in part, on Thorstein Veblen's (1899, 1904) arguments about people's desires for conspicuous consumption. If humans have 'relativistic' preferences, so that they constantly look over their shoulders before deciding how contented they feel, then as those individuals consume more and more goods they might fail to become happier because they see others around them also consuming more and more. The pleasure of my new car might be nullified by the fact that Ms Jones, in the parking spot next to mine, has also just bought one.

As Thorstein Veblen anticipated, there is today a global industrial sector -- known as the advertising industry -- that is devoted to the unceasing encouragement of consumption. Advertising plays a prominent role in all countries of which we are knowledgeable. Might that industry, by fostering discontent with what people already own, be harmful to human happiness, perhaps because of the relativistic kinds of utility functions alluded to by scholars such as Richard Easterlin?

It is not known for certain how much advertising the typical citizen witnesses. However, one modern study, Speers et al. (2011), concluded for the United States that on prime-time television the brand names of food, beverages and restaurants appeared approximately 35,000 times in one year. Coca Cola products, for example, were seen 198 times by the average child and 269 times by the average adolescent. These influences appear to be gradually strengthening through time. Other research, by Cowling and Poolsombat (2007), documented a 4-fold increase in real advertising per-capita in the US over 5 decades.

Links between advertising and human well-being are imperfectly understood. Effects

might operate along two broad channels. First, one way to conceive of advertising is as *a force for good*. Advertising informs. It may therefore promote human welfare by allowing people to make better choices about the right products for them. Second, an alternative way to conceive of advertising is as *a force that creates dissatisfaction* and stimulates potentially infeasible desires. If correct, that would imply that advertising might reduce net human welfare by unduly raising the consumption aspirations of human beings. Since Veblen, many writers have worried about the possibility of, and in some cases found small-scale evidence for, negative effects of advertising upon people's well-being (see e.g. Richins 1995, Easterlin and Crimmins 1991, Bagwell and Bernheim 1996, Sirgy et al. 1998, Dittmar et al. 2014, Frey et al. 2007, and Harris et al. 2009). A moderately large literature exists, primarily on the likely detrimental effects upon children (Andreyeva et al. 2011, Borzekowski and Robinson 2001, Buijzen and Valkenburg 2003a, Opree et al. 2013, and Buijzen and Valkenburg 2003b), although the most recent work, by Opree et al. (2016), produced mixed results. More broadly, Clark (2018) reviews recent evidence consistent with important 'comparison effects' in adult humans, and Mujcic and Oswald (2018) document longitudinal evidence consistent with negative wellbeing consequences from envy.

At the national level, it is not known which of the two forces -- one beneficial and one detrimental -- is dominant. There are apparently no cross-country econometric studies on representative samples of adults. The now-large modern literature on the social science of well-being, described in sources such as Easterlin (2003), Oswald (1997), Layard (2005) and Clark (2018), has so far paid little attention to the role of advertising. A number of national variables have been shown to influence well-being in country fixed-effects equations (in particular, the generosity of the welfare state and various macroeconomic variables such as unemployment, in sources such as DiTella et al. 2001, DiTella et al. 2003,

and Radcliff 2013).

In this study we examine -- and provide evidence of -- links between national advertising and national well-being. Using longitudinal information on countries (built up from pooled cross-sectional surveys), this study finds that rises and falls in advertising are followed, a small number of years later, by falls and rises in national life-satisfaction. The results thus reveal an inverse connection between advertising levels and the later well-being levels of nations.

To perform the statistical analysis, we take a sample of slightly over 900,000 randomly sampled European citizens, who report information on their life-satisfaction levels and on many other aspects of themselves and their lives. The data are from repeated surveys, collected annually, for 27 countries from 1980 to 2011. For each nation, and each year, total advertising expenditure levels are also gathered (details are given later in the appendix on Data and Methods). We then match one set of data with the other. To adjust in the analysis for possible confounding factors, we use regression analysis, and estimate fixed-effects equations in which the unobservable characteristics of nations can be held constant. Although strict causal interpretations are not possible, none of the paper's results depend on elementary cross-sectional regression equations.

2. Results

Fig. 1 illustrates the study's key idea. The figure divides the data into tertiles and then plots the (uncorrected) relationship between the change in advertising and the change in life satisfaction. The three vertical bars separate the data into countries that over our period of study had particularly large increases in advertising expenditure, moderate increases, and small increases. Figure 1 demonstrates that the greater is the rise in advertising within a nation, the smaller is any later improvement in life satisfaction.

Regression equations in Table 1 provide evidence of a more formal kind. They

demonstrate the same type of pattern as in Figure 1. The variable "Adv Expenditure" measures the level of advertising expenditure in that particular country in that particular year.

In column 1 of Table 1, the now-standard statistical specification for national happiness equations (as in DiTella et al, 2001, for example) fits the data in the conventional way. A variable for the person's age enters with the quadratic form that is commonly found in the well-being literature; being married and highly educated are both associated with greater satisfaction with life; being unemployed is associated with low levels of life satisfaction; the unemployment rate in the country enters negatively. Interestingly, the coefficient on GDP is positive but, consistent with Easterlin's famous 'paradox', statistically weak.

Columns 2 to 9 of Table 1 reveal a correlation between life-satisfaction scores in the current period with past advertising levels. Table 1 shows what happens when advertising variables are included within the regression equation, where columns 4 and 7 give the base results without advertising included. In each case, the advertising variables enter negatively, with small standard errors (this is after adjustment for potential biases from clustering). In column 2, for example, the coefficient on the logarithm of advertising expenditure is -0.069 with a standard error of 0.028. This variable is for advertising lagged one period. In column 3, the coefficient on the stock of advertising (measured as the sum of advertising expenditures over three previous years, again in logarithms) is -0.097 with a standard error of 0.036.

There is a natural potential criticism of the regression equations in the second and third columns of Table 1. It is that an advertising variable might in some way be erroneously standing in for earlier business-cycle movements. The later columns of Table 1 probe that possibility. In each case, however, the study's key result appears to be robust. The most

general specifications are in columns 8 and 9 of Table 1, but even with three GDP per-capita terms included (that is, current GDP and two variables for lagged GDP in each of the two prior years) the advertising variables continue to be negative, statistically significantly different from zero, and of similar size to that in earlier columns. Hence the advertising variables seem not to be creating a spurious association that is attributable merely to the state of the business cycle in any particular year or country.

One noticeable feature of Table 1 is that the estimated GDP coefficients tend to become somewhat larger after the inclusion of the advertising variables (for example, in column 2 compared to column 1). This is consistent with the hypothesis that, although rises in GDP may *ceteris paribus* be beneficial, the benefits of economic growth are somewhat offset by a rise in advertising expenditure. Following the tradition in much of the literature on the economics of advertising (Bain 1956, Bagwell 2001), Table 1 also checks a specification that uses a variable for the 'stock of advertising'. This is designed to capture the idea that commercial organizations spend money on advertising to build up a lasting brand in the minds of their consumers.

The results reported here allow for the following covariates: age, whether unemployed, whether married, whether male, size of family, level of education, the unemployment rate in the country, and GDP-per-capita in the country (for a detailed specification of these variables, see the SI). Throughout the paper's tables, variables for country dummies and year dummies are included. Unlike previous longitudinal studies of national well-being, the data set has the advantage that it makes it possible to incorporate measures of advertising expenditure for each country and year.

It may take time for advertising to have its effects upon human beings. Table 2 therefore explores a range of lag lengths. The approximate robustness of the original result is evident: rises in advertising are precursors to declines in well-being. The size of the

predictive power of advertising on later life-satisfaction depends on the time lag between the two variables. Longer lags, as in the right-hand columns of Table 2, are associated with more-negative estimates.

In these tables the estimated advertising effect-size is substantial. For column 3 of Table 1, for example, the coefficient on the stock of advertising is -0.097. Because this variable is in logarithms, the percentage change of life satisfaction with respect to the percentage change in (the stock of) advertising is approximately -0.03 (this calculation uses the fact that the mean of life satisfaction is 2.98, which has to be used to divide the number -0.097), and -0.03 can thus be thought of approximately as the long-run elasticity of national well-being with respect to advertising spending. This implies, given the assumed cardinalization, that a hypothetical doubling of advertising expenditure would result in a 3 percent drop in life satisfaction. Around the mean of 2.98, therefore, that 3 percent figure would translate into a fall of 0.09 life satisfaction points when measured on the one to four scale used in the Eurobarometer Surveys. That is not minor in size. It is approximately one half the absolute size of the marriage effect on life satisfaction, or approximately one quarter of the absolute size of the effect of being unemployed (the coefficient on marriage is 0.17 and that on unemployment is -0.38).

As background, Table S1 in the Supplementary Information summarizes the levels of advertising expenditure for the different nations. On average, countries spend just under 1% of GDP in this way. Table S2 in Supplementary Information presents results for fixed-effects models in which the kind of advertising expenditure is disaggregated into five different categories (newspapers, magazines, TV, radio, cinema). It is the first two kinds that exhibit large and significant negatives. Tables S3 and S4 show that, dividing the data period into two halves for the non-transition countries, the coefficient on advertising is fairly stable across time. This is a check on robustness. Importantly, all twelve of the coefficients,

across the two tables, are negative. In Table S3 the advertising coefficient is approximately -0.06, and in Table S4 it averages to a similar size (though is somewhat smaller for lagged advertising and bigger for the stock of advertising). Standard errors, of course, are inevitably larger than for the full sample of thirty years taken as a whole; the appropriate test is instead for stability in coefficient sizes.

We also check, in the spirit of a Granger-causality test, for possible reverse linkages. Encouragingly, Table S5 reveals no evidence that lagged values of life satisfaction have predictive power in an advertising equation.

3. Conclusions

This study explores a potentially important question in social science: how is the well-being of a nation affected by large-scale advertising? We believe this is the first empirical study of its kind.

Our results are consistent with societal concerns raised more than a century ago by authors such as Thorstein Veblen (1904) and Joan Robinson (1933); they are consistent with arguments discussed by Easterlin (1974, 2003) and in Layard (1980); they may also be consistent with ideas about the deleterious consequences of materialism (Sirgy et al. 2012, Burroughs and Rindfleisch 2002, Speck and Roy 2008, and Snyder and Debono 1985). Rises and falls in advertising expenditure in Europe's nations have been found here to be followed by -- respectively -- falls and rises in life-satisfaction levels.

Although much remains to be discovered about genuinely causal mechanisms, there is evidence of an inverse longitudinal relationship between national advertising and national dissatisfaction. The estimated effect-size here seems substantial and not merely statistically well-determined. These issues demand further scrutiny.

Appendix on Data and Methods

For this paper, data are taken from three different sources: the Eurobarometer Survey, Zenith-Optimedia, and the World Bank. The Eurobarometer survey, which began in 1972, is a set of public opinion surveys conducted on behalf of the European Commission. Each spring and autumn, face-to-face interviews are conducted for a new sample of residents of European Union (EU) Member States (around 1000 per country). The questions that respondents are asked are varied and include items intended to assess life satisfaction, to elicit opinions about the state of politics in Europe, to gain insight into perceptions of political institutions, etc. The data recorded in the Eurobarometer are used by the European Commission to monitor the evolution of public opinion and ultimately to aid in decision making.

For this study, data are gathered from individuals from 27 countries over the years 1980 to 2011. Specifically, data are available on the following transition European countries: Bulgaria, Czech Republic, Estonia, Croatia, Hungary, Latvia, Lithuania, Poland, Romania, Slovenia, Slovakia, and Turkey, and on the following non-transition countries: Austria, Belgium, Germany, Denmark, Spain, Finland, France, UK, Greece, Ireland, Italy, Netherlands, Norway, Portugal, and Sweden. The survey contains information on individual demographics, such as age, gender, education, marital status, employment status, and household size, as well as life satisfaction indicators. In particular, the survey asks "On the whole, are you very satisfied, fairly satisfied, not very satisfied or not at all satisfied with the life you lead?" Answers to this question are available for every year except 1996.

Annual country total advertising expenditure data are available from Zenith-Optimedia, which is a global media services company. They publish a quarterly report (the "Advertising Expenditure Forecasts") that covers advertising from a large number of markets around the world. This record contains the total amount spent on advertising in the

country historically as well as forecasts for the future. Here historical data are used from 1980 to 2011, as reported in the issue "Advertising Expenditure Forecasts of December 2013." Further details are available in Austin A, Barnard J, Hutcheon N, Advertising Expenditure Forecasts. *Zenith-Optimedia*, December 2013.

Macroeconomic indicators are taken from the World Bank. In particular, data are available by country for the years 1980 to 2011 on GDP, GDP per capita, and the national unemployment rate. These are published in World Development Indicators. Information is combined from all three data sources for the same 27 countries and time periods (1980-2011). The final sample-size for the current study consists of a little over 900,000 observations on randomly sampled European citizens.

The data are used to estimate coefficients from linear regression models, where robust clustered standard errors are computed to account for the fact that the errors may be correlated within countries. Life satisfaction scores are regressed on a variety of control variables as detailed below. Specifically, the main equation that is estimated is

$$LS_{ijt} = \alpha + \beta AdvExp_{jt} + \Phi Demo_{ijt} + \Gamma Macro_{jt} + \nu_j + \eta_t + \epsilon_{ijt},$$

where *i* denotes an individual, *j* a country, and *t* a year. The variable LS_{ijt} is reported life satisfaction, $AdvExp_{jt}$ represents advertising expenditures (measured, in turn, as the lag of natural logarithm of total advertising expenditure and as the sum of three previous lags of natural logarithm of total advertising expenditures), the vector $Demo_{ijt}$ contains individual demographic characteristics (age, education, gender, etc.), and $Macro_{jt}$ is a vector of macroeconomic variables that may impact life satisfaction, such as the lag of GDP per capita and the unemployment rate. To control for common country and year attributes, the statistical analysis allows for country (ν_j) and time (η_t) fixed effects. The ϵ_{ijt} term captures an individual, country, year specific error. A number of different specifications are estimated as robustness checks.

Acknowledgments

Information on how to obtain the Eurobarometer data is available on the European Commission website http://ec.europa.eu/public_opinion/index_en.htm.

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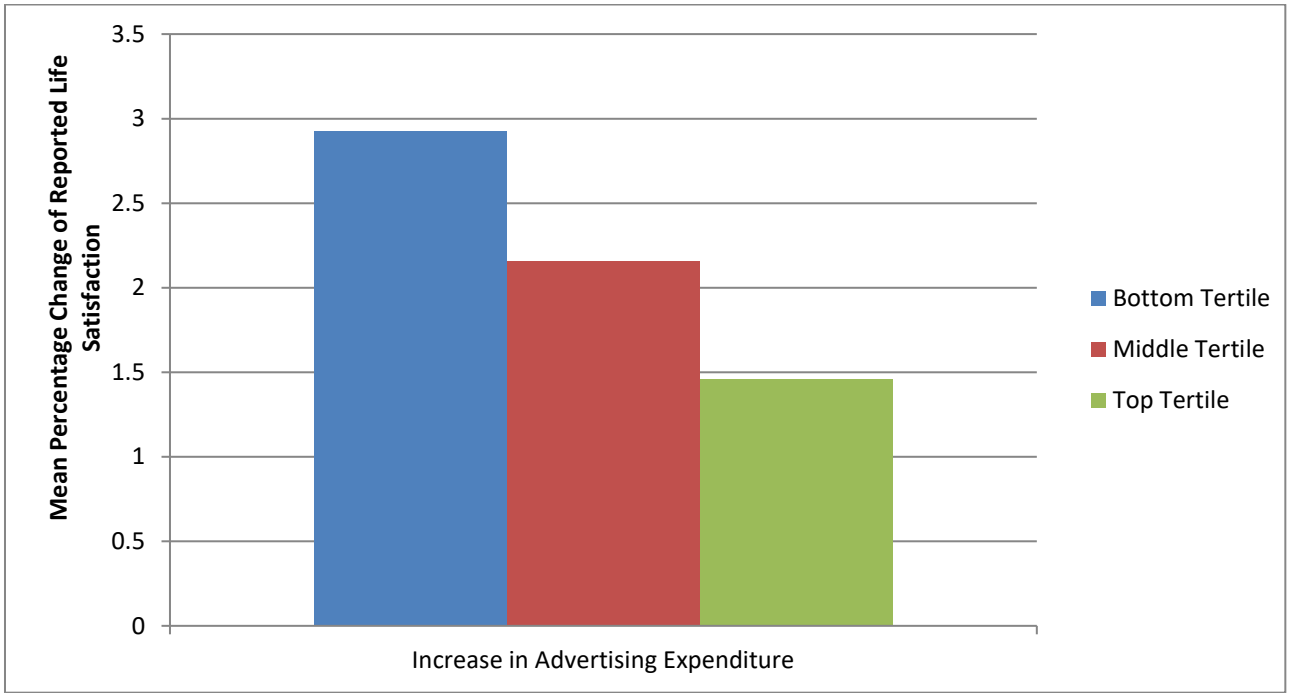
Fig 1. An illustration of the inverse longitudinal relationship between changes in advertising and changes in the life satisfaction of countries. This is based on a sample of approximately 1 million individuals over the years 1980 to 2011 (or for shorter periods where full data are not available for a particular country).



Below are the details about the three groups:

Bottom Tertile
Mean Change: 2.925241
Countries: Czech Republic, Germany after 1989, Estonia, Finland, Lithuania, Hungary, Latvia, Poland, Romania, Slovakia

Middle Tertile
Mean Change: 2.154662
Countries: Bulgaria, Western Germany (before 1989), Denmark, UK, Sweden, Slovenia, Netherlands, Turkey, Spain

Top Tertile
Mean Change: 1.457801
Countries: Austria, Belgium, France, Greece, Croatia, Ireland, Italy, Norway, Portugal

Table 1: Life-Satisfaction Equations for 27 Countries from Year 1980 to Year 2011, Ordinary Least Squares (OLS) with Fixed Effects (FE). [GDP Dynamics Included.]

Explanatory Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Demographics									
Age	-0.022***	-0.022***	-0.022***	-0.022***	-0.022***	-0.022***	-0.022***	-0.022***	-0.022***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Age squared	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Unemployed	-0.382***	-0.385***	-0.385***	-0.385***	-0.385***	-0.385***	-0.386***	-0.386***	-0.385***
	(0.027)	(0.027)	(0.025)	(0.027)	(0.027)	(0.025)	(0.027)	(0.027)	(0.025)
Married	0.170***	0.170***	0.171***	0.170***	0.170***	0.171***	0.170***	0.170***	0.172***
	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)
Male	-0.017**	-0.018**	-0.017**	-0.017**	-0.018**	-0.017**	-0.017**	-0.017**	-0.017**
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
Size of the Household	0.005	0.005	0.005	0.005	0.005	0.005	0.005*	0.005	0.005
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
Age when Completed Education									
Up to 14	-0.227***	-0.227***	-0.229***	-0.227***	-0.227***	-0.229***	-0.226***	-0.226***	-0.229***
	(0.022)	(0.022)	(0.022)	(0.022)	(0.022)	(0.022)	(0.022)	(0.022)	(0.022)
Between 15 and 19	-0.156***	-0.156***	-0.157***	-0.157***	-0.156***	-0.157***	-0.155***	-0.155***	-0.157***
	(0.019)	(0.019)	(0.019)	(0.019)	(0.019)	(0.019)	(0.019)	(0.019)	(0.019)
Older than 20	-0.030**	-0.030**	-0.030**	-0.029**	-0.030**	-0.030**	-0.028**	-0.028**	-0.030**
	(0.013)	(0.013)	(0.013)	(0.013)	(0.013)	(0.013)	(0.013)	(0.013)	(0.013)
Macroeconomic Variables									
Unemployment Rate in the Country	-0.010**	-0.008*	-0.006	-0.010**	-0.008*	-0.006	-0.009*	-0.006	-0.005
	(0.004)	(0.004)	(0.005)	(0.005)	(0.004)	(0.005)	(0.005)	(0.005)	(0.005)
Log GDP per capita	0.134	0.234*	0.297**	0.398*	0.415*	0.517**	0.432**	0.388*	0.454**
	(0.105)	(0.121)	(0.138)	(0.216)	(0.231)	(0.228)	(0.178)	(0.190)	(0.191)
Log 1st Lag GDP per Capita				-0.278	-0.182	-0.229	-0.087	0.313	0.209
				(0.184)	(0.198)	(0.203)	(0.200)	(0.208)	(0.186)
Log 2nd Lag GDP per Capita							-0.225	-0.431*	-0.360*
							(0.218)	(0.213)	(0.209)
First Lag of Adv Expenditure									
Log Total Adv Expenditure		-0.069**			-0.066**			-0.085**	
		(0.028)			(0.028)			(0.036)	
Stock of Adv Expenditure (1st to 3rd lags)									
Sum of Log Adv Expenditure			-0.097**			-0.092**			-0.094**
			(0.036)			(0.036)			(0.037)
Country FE	yes	yes	yes	yes	yes	yes	yes	yes	yes
Year FE	yes	yes	yes	yes	yes	yes	yes	yes	yes
Constant	2.177*	1.608	1.286	2.327**	1.628	1.372	2.384**	1.422	1.232
	(1.066)	(1.142)	(1.249)	(1.094)	(1.126)	(1.224)	(1.150)	(1.242)	(1.227)
Observations	760,252	742,497	683,551	742,497	742,497	683,551	717,441	717,441	683,551
R-squared	0.214	0.213	0.215	0.213	0.213	0.215	0.213	0.214	0.216

Significance *** p<0.01, ** p<0.05, * p<0.1. Clustered (by country) robust standard errors in parentheses. Number of clusters: 27. All regressions include year and country dummies (base line country is Austria). Dependent variable: reported life satisfaction. The exact question is: *"On the whole, are you very satisfied, fairly satisfied, not very satisfied or not at all satisfied with the life you lead"*. The overall mean of the dependent variable is 2.98. Natural logarithm of GDP per capita and lagged advertising expenditures is used. Advertising expenditures are in constant 2005 million USD and GDP per capita in constant 2005 USD.

Table 2: Life-Satisfaction Equations for 27 Countries from Year 1980 to Year 2011, OLS with Fixed Effects. [Long Lags Included.]

Explanatory Variables	(1)	(2)	(3)	(4)
Demographics				
Age	-0.022***	-0.022***	-0.022***	-0.022***
	(0.001)	(0.001)	(0.001)	(0.001)
Age squared	0.000***	0.000***	0.000***	0.000***
	(0.000)	(0.000)	(0.000)	(0.000)
Unemployed	-0.382***	-0.385***	-0.386***	-0.385***
	(0.027)	(0.027)	(0.027)	(0.025)
Married	0.170***	0.170***	0.170***	0.171***
	(0.008)	(0.008)	(0.008)	(0.008)
Male	-0.017**	-0.018**	-0.017**	-0.017**
	(0.007)	(0.007)	(0.007)	(0.007)
Size of the Household	0.005	0.005	0.005	0.005
	(0.003)	(0.003)	(0.003)	(0.003)
Age when Completed Education				
Up to 14	-0.227***	-0.227***	-0.226***	-0.229***
	(0.022)	(0.022)	(0.022)	(0.022)
Between 15 and 19	-0.156***	-0.156***	-0.155***	-0.157***
	(0.019)	(0.019)	(0.019)	(0.019)
Older than 20	-0.030**	-0.030**	-0.028**	-0.030**
	(0.013)	(0.013)	(0.013)	(0.013)
Macroeconomic Variables				
Log GDP per Capita	0.213*	0.234*	0.264**	0.296**
	(0.115)	(0.121)	(0.127)	(0.132)
Unemployment Rate in the Country	-0.009**	-0.008*	-0.006	-0.005
	(0.004)	(0.004)	(0.004)	(0.005)
Log of Adv Expenditure (Natural Logarithm)				
Log Total Adv Expenditure	-0.051*			
	(0.029)			
Log 1st Lag Total Adv Expenditure		-0.069**		
		(0.028)		
Log 2nd Lag Total Adv Expenditure			-0.085***	
			(0.029)	
Log 3rd Lag Total Adv Expenditure				-0.094***
				(0.031)
Country FE	yes	yes	yes	yes
Year FE	yes	yes	yes	yes
Constant	1.738	1.638	1.485	1.195
	(1.095)	(1.138)	(1.201)	(1.226)
Observations	760,252	742,497	717,441	683,551
R-squared	0.214	0.213	0.214	0.215

Significance *** p<0.01, ** p<0.05, * p<0.1. Clustered (by country) robust standard errors in parentheses. Number of clusters: 27. All regressions include year and country dummies (base line country is Austria). Dependent variable: reported life satisfaction. The exact question is: *"On the whole, are you very satisfied, fairly satisfied, not very satisfied or not at all satisfied with the life you lead"* . The overall mean of the dependent variable is 2.98. Natural logarithm of GDP per capita and lagged advertising expenditures is used. Advertising expenditures are in constant 2005 million USD and GDP per capita in constant 2005 USD.

Supplementary Information (SI)

Tables S1: Advertising Expenditure by Country: As Percent of GDP and Per-Capita

Country	Adv Exp as % of GDP	Adv Exp per Capita	Country	Adv Exp as % of GDP	Adv Exp per Capita
AUSTRIA	0.822	297.682	IRELAND	0.374	126.301
BELGIUM	0.59	191.633	ITALY	0.426	120.146
BULGARIA	1.425	63.014	LITHUANIA	0.446	38.557
CZECH REPUBLIC	0.549	79.078	LATVIA	0.496	38.553
GERMANY AFTER 1989	0.852	277.089	NETHERLANDS	0.737	257.164
DENMARK	0.804	331.678	NORWAY	0.454	226.266
ESTONIA	0.037	4.025	POLAND	0.585	53.95
SPAIN	0.828	178.838	PORTUGAL	0.473	80.912
FINLAND	0.75	253.4	ROMANIA	0.119	6.617
FRANCE	0.591	177.633	SWEDEN	0.677	260.986
UK	0.911	288.355	SLOVENIA	0.006	1.194
GREECE	0.802	147.355	SLOVAKIA	0.849	114.504
CROATIA	2.087	224.648	TURKEY	0.314	23.551
HUNGARY	0.746	83.254	**Total**	**0.683**	**194.429**

Table S2: Life-Satisfaction Equation for 27 Countries from Year 1980 to Year 2011, OLS. [Disaggregated Measures.]

Explanatory Variables	(1)	(2)	(3)	(4)
Demographics				
Age	-0.022***	-0.022***	-0.021***	-0.021***
	(0.001)	(0.001)	(0.001)	(0.001)
Age squared	0.000***	0.000***	0.000***	0.000***
	(0.000)	(0.000)	(0.000)	(0.000)
Unemployed	-0.387***	-0.385***	-0.382***	-0.381***
	(0.025)	(0.025)	(0.024)	(0.024)
Married	0.171***	0.171***	0.178***	0.178***
	(0.008)	(0.008)	(0.008)	(0.008)
Male	-0.017**	-0.017**	-0.017**	-0.017**
	(0.007)	(0.007)	(0.007)	(0.007)
Size of the Household	0.005	0.005	0.005*	0.005*
	(0.003)	(0.003)	(0.003)	(0.003)
Age when Completed Education				
Up to 14	-0.229***	-0.229***	-0.228***	-0.228***
	(0.022)	(0.022)	(0.024)	(0.024)
Between 15 and 19	-0.157***	-0.157***	-0.159***	-0.159***
	(0.020)	(0.019)	(0.022)	(0.022)
Older than 20	-0.030**	-0.030**	-0.035**	-0.034**
	(0.013)	(0.013)	(0.015)	(0.014)
Macroeconomic Variables				
Log GDP per Capita	0.413***	0.297**	0.409***	0.408*
	(0.080)	(0.138)	(0.123)	(0.210)
Country in Transition	0.389**	0.233	0.212	0.214
	(0.148)	(0.219)	(0.250)	(0.361)
Unemployment Rate in the Country		-0.006		-0.000
		(0.005)		(0.005)
Stock of Adv Expenditure (1st to 3rd lags)				
Sum of Log Total Adv Expenditure	-0.118***	-0.097**		
	(0.031)	(0.036)		
Sum of Log Newspaper Adv Expenditure			-0.080**	-0.079**
			(0.033)	(0.035)
Sum of Log Magazines Adv Expenditure			-0.053*	-0.053*
			(0.029)	(0.030)
Sum of Log TV Adv Expenditure			0.051	0.050
			(0.033)	(0.035)
Sum of Log Radio Adv Expenditure			0.003	0.003
			(0.020)	(0.019)
Sum of Log Cinema Adv Expenditure			0.000	0.000
			(0.023)	(0.024)
Country FE	yes	yes	yes	Yes
Year FE	yes	yes	yes	yes
Constant	0.240	1.286	-0.051	-0.043
	(0.717)	(1.249)	(1.180)	(2.005)
Observations	686,139	683,551	572,226	569,638
R-squared	0.215	0.215	0.207	0.208

Significance *** p<0.01, ** p<0.05, * p<0.1. Clustered (by country) robust standard errors in parentheses. Number of clusters: 27. All regressions include year and country dummies (base line country is Austria). Dependent variable: reported life satisfaction. The exact question is: *"On the whole, are you very satisfied, fairly satisfied, not very satisfied or not at all satisfied with the life you lead".* The overall mean of the dependent variable is 2.98. Natural logarithm of GDP per capita and lagged advertising expenditures is used. Advertising expenditures are in constant 2005 million USD and GDP per capita in constant 2005 USD.

Table S3: Life-Satisfaction Equations for 12 Non-Transition Countries from Year 1980 to Year 1995, OLS. [First Half of Sample Period.]

Explanatory Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Demographics									
Age	-0.021***	-0.021***	-0.021***	-0.021***	-0.021***	-0.021***	-0.021***	-0.021***	-0.021***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Age squared	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Unemployed	-0.400***	-0.402***	-0.393***	-0.402***	-0.402***	-0.393***	-0.401***	-0.401***	-0.393***
	(0.042)	(0.042)	(0.042)	(0.042)	(0.042)	(0.042)	(0.042)	(0.042)	(0.042)
Married	0.159***	0.160***	0.161***	0.160***	0.160***	0.161***	0.159***	0.159***	0.161***
	(0.012)	(0.012)	(0.011)	(0.012)	(0.012)	(0.011)	(0.012)	(0.011)	(0.012)
Male	-0.026**	-0.026**	-0.024*	-0.026**	-0.026**	-0.024*	-0.025**	-0.025**	-0.024*
	(0.010)	(0.010)	(0.011)	(0.010)	(0.010)	(0.011)	(0.011)	(0.011)	(0.011)
Size of the Household	0.001	0.001	0.001	0.001	0.001	0.001	0.002	0.002	0.001
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.004)	(0.003)
Age when Completed Education									
Up to 14	-0.190***	-0.190***	-0.199***	-0.191***	-0.191***	-0.199***	-0.191***	-0.191***	-0.199***
	(0.031)	(0.030)	(0.029)	(0.030)	(0.030)	(0.029)	(0.030)	(0.030)	(0.029)
Between 15 and 19	-0.114***	-0.115***	-0.122***	-0.116***	-0.115***	-0.122***	-0.116***	-0.116***	-0.123***
	(0.025)	(0.024)	(0.025)	(0.024)	(0.024)	(0.026)	(0.025)	(0.025)	(0.025)
Older than 20	-0.026*	-0.027*	-0.029*	-0.026*	-0.027*	-0.029*	-0.025*	-0.026*	-0.029*
	(0.014)	(0.013)	(0.013)	(0.014)	(0.013)	(0.014)	(0.014)	(0.013)	(0.014)
Macroeconomic Variables									
Unemployment Rate in the Country	-0.005	-0.005	-0.004	-0.005	-0.005	-0.005	-0.005	-0.005	-0.004
	(0.006)	(0.007)	(0.006)	(0.006)	(0.007)	(0.006)	(0.006)	(0.007)	(0.006)
Log GDP per Capita	0.770***	0.745***	0.946***	1.096**	1.001**	1.112*	1.159**	0.972*	0.899*
	(0.226)	(0.205)	(0.282)	(0.368)	(0.437)	(0.554)	(0.416)	(0.446)	(0.455)
Log 1st Lag GDP per Capita				-0.423	-0.281	-0.189	-0.131	0.194	0.475
				(0.497)	(0.536)	(0.667)	(0.537)	(0.590)	(0.508)
Log 2nd Lag GDP per Capita							-0.298	-0.433*	-0.495**
							(0.184)	(0.201)	(0.169)
First Lag of Adv Expenditure									
Log Total Adv Expenditure		-0.072			-0.067			-0.086	
		(0.043)			(0.049)			(0.066)	
Stock of Adv Expenditure (1st to 3rd Lags)									
Sum of Log Adv Expenditure			-0.059			-0.055			-0.058
			(0.076)			(0.084)			(0.088)
Country FE	yes	yes	yes	yes	yes	yes	yes	yes	yes
Year FE	yes	yes	yes	yes	yes	yes	yes	yes	yes
Constant	-4.248*	-3.534*	-5.531*	-3.267	-3.317	-5.319	-3.787	-3.263	-4.861
	(2.288)	(1.967)	(2.687)	(2.890)	(2.272)	(3.071)	(3.460)	(2.618)	(3.374)
Observations	304,355	298,544	263,153	298,544	298,544	263,153	285,268	285,268	263,153
R-squared	0.163	0.162	0.165	0.162	0.162	0.165	0.163	0.163	0.165

Significance *** p<0.01, ** p<0.05, * p<0.1. Clustered (by country) robust standard errors in parentheses. Number of clusters: 12. All regressions include year and country dummies (base line country is Belgium). Dependent variable: reported life satisfaction. The exact question is: *"On the whole, are you very satisfied, fairly satisfied, not very satisfied or not at all satisfied with the life you lead"*. The overall mean of the dependent variable is 3.04. Natural logarithm of GDP per capita and lagged advertising expenditures is used. Advertising expenditures are in constant 2005 million USD and GDP per capita in constant 2005 USD.

Table S4: Life-Satisfaction Equations for 14 Non-Transition Countries from Year 1996 to Year 2011, OLS. [Second Half of Sample Period.]

Explanatory Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Demographics									
Age	-0.019***	-0.019***	-0.019***	-0.019***	-0.019***	-0.019***	-0.019***	-0.019***	-0.019***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Age squared	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Unemployed	-0.391***	-0.391***	-0.391***	-0.391***	-0.391***	-0.391***	-0.391***	-0.391***	-0.391***
	(0.041)	(0.041)	(0.041)	(0.041)	(0.041)	(0.041)	(0.041)	(0.041)	(0.041)
Married	0.181***	0.181***	0.182***	0.181***	0.181***	0.182***	0.181***	0.181***	0.182***
	(0.012)	(0.012)	(0.012)	(0.012)	(0.012)	(0.012)	(0.012)	(0.012)	(0.012)
Male	-0.010	-0.010	-0.010	-0.010	-0.010	-0.010	-0.010	-0.010	-0.010
	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)
Size of the Household	0.010**	0.010**	0.010**	0.010**	0.010**	0.010**	0.010**	0.010**	0.010**
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
Age when Completed Education									
Up to 14	-0.252***	-0.252***	-0.251***	-0.251***	-0.251***	-0.251***	-0.251***	-0.251***	-0.251***
	(0.029)	(0.029)	(0.029)	(0.029)	(0.029)	(0.029)	(0.029)	(0.029)	(0.029)
Between 15 and 19	-0.142***	-0.142***	-0.142***	-0.142***	-0.142***	-0.142***	-0.142***	-0.142***	-0.142***
	(0.023)	(0.023)	(0.022)	(0.022)	(0.022)	(0.022)	(0.022)	(0.022)	(0.022)
Older than 20	-0.028*	-0.028*	-0.028*	-0.027*	-0.028*	-0.028*	-0.027*	-0.027*	-0.028*
	(0.015)	(0.015)	(0.015)	(0.015)	(0.014)	(0.014)	(0.015)	(0.014)	(0.014)
Macroeconomic Variables									
Unemployment Rate in the Country	-0.010	-0.009	-0.008	-0.007	-0.007	-0.007	-0.006	-0.007	-0.007
	(0.006)	(0.006)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
Log GDP per Capita	0.104	0.267	0.320	0.879	0.865	0.787	0.739	0.750	0.734
	(0.444)	(0.515)	(0.485)	(0.599)	(0.593)	(0.578)	(0.514)	(0.518)	(0.504)
Log 1st Lag GDP per Capita				-0.763	-0.667	-0.520	-0.253	-0.259	-0.321
				(0.628)	(0.720)	(0.763)	(0.664)	(0.655)	(0.643)
Log 2nd Lag GDP per Capita							-0.359	-0.303	-0.153
							(0.408)	(0.431)	(0.526)
First Lag of Adv Expenditure									
Log Total Adv Expenditure		-0.077			-0.039			-0.030	
		(0.118)			(0.124)			(0.126)	
Stock of Adv Expenditure (1st to 3rd Lags)									
Sum of Log Adv Expenditure			-0.118			-0.085			-0.078
			(0.122)			(0.137)			(0.147)
Country FE	yes	yes	yes	yes	yes	yes	yes	yes	yes
Year FE	yes	yes	yes	yes	yes	yes	yes	yes	yes
Constant	2.426	1.316	1.195	2.251	1.710	1.424	2.142	1.742	1.442
	(4.647)	(4.906)	(4.552)	(4.641)	(5.253)	(4.898)	(4.648)	(5.239)	(4.916)
Observations	295,803	295,803	295,803	295,803	295,803	295,803	295,803	295,803	295,803
R-squared	0.219	0.219	0.219	0.219	0.219	0.219	0.219	0.219	0.219

Significance *** p<0.01, ** p<0.05, * p<0.1. Clustered (by country) robust standard errors in parentheses. Number of clusters: 14. All regressions include year and country dummies (base line country is Austria). Dependent variable: reported life satisfaction. The exact question is: *"On the whole, are you very satisfied, fairly satisfied, not very satisfied or not at all satisfied with the life you lead"*. The overall mean of the dependent variable is 3.07. Natural logarithm of GDP per capita and lagged advertising expenditures is used. Advertising expenditures are in constant 2005 million USD and GDP per capita in constant 2005 USD.

Table S5: Checking for Reverse Causality -- Log Total-Advertising Expenditure Equations for 27 Countries from Year 1981 to Year 2011, OLS

Explanatory Variables	(1)	(2)	(3)	(4)	(5)	(6)
Advertising last period						
Log of Total Ad Expenditures Last period	0.941***	0.940***	0.941***	0.837***	0.820***	0.945***
	(0.014)	(0.014)	(0.013)	(0.084)	(0.078)	(0.027)
Macroeconomic Variables						
Unemployment rate in the country	-0.007***	-0.008***	-0.007***	-0.012**	-0.012**	-0.015***
	(0.002)	(0.002)	(0.002)	(0.005)	(0.005)	(0.003)
Log GDP per capita	1.788***	1.771***	1.766***			
	(0.284)	(0.280)	(0.292)			
Log 1st Lag GDP per Capita	-1.543***	-1.550***	-1.497***	-0.030	0.024	-0.194
	(0.375)	(0.377)	(0.374)	(0.235)	(0.212)	(0.177)
Log 2nd Lag GDP per Capita	-0.235	-0.202	-0.242			
	(0.193)	(0.196)	(0.218)			
Mean Satisfaction						
Current Mean Satisfaction				0.068		
				(0.100)		
1st Lag Mean Satisfaction	-0.002				0.002	
	(0.042)				(0.085)	
2nd Lag Mean Satisfaction		-0.037				-0.104
		(0.056)				(0.084)
3rd Lag Mean Satisfaction			0.054			
			(0.052)			
Country FE	yes	yes	yes	yes	yes	yes
Year FE	yes	yes	yes	yes	yes	yes
Constant	0.424	0.459	0.103	1.325	1.105	2.835*
	(0.955)	(0.877)	(0.767)	(1.986)	(1.733)	(1.654)
Observations	416	412	389	438	435	412
R-squared	0.999	0.999	0.999	0.997	0.997	0.998

Significance *** p<0.01, ** p<0.05, * p<0.1. Clustered (by country) robust standard errors in parentheses. Number of clusters: 27. All regressions include year and country dummies (base line country is Austria). Dependent variable: log of total advertising expenditure (in in constant 2005 million USD). Mean satisfaction variable is the average of reported life satisfaction by year and country. GDP is per capita in constant 2005 USD.

Table S6: Descriptive Statistics for the Regression-Equation Explanatory Variables

	Mean	Standard Deviation	Min	Max	Observations
Demographics					
Age	44.675	18.161	15	99	1321739
Unemployed	0.066	0.249	0	1	1347518
Married	0.612	0.487	0	1	1252627
Male	0.473	0.499	0	1	1353045
Size of the Household	2.903	1.491	1	9	1181314
Age when completed education*					
Up to 14	0.214	0.410	0	1	1239393
Between 15 and 19	0.463	0.499	0	1	1239393
Older than 20	0.229	0.420	0	1	1239393
Macroeconomic Variables					
Unemployment Rate	8.875	3.818	2.5	23.9	1295463
GDP per Capita	27988.23	10590.15	3553.93	54599.3	1330368

*excluded category is “still studying”