# ADVERTISING'S MONETARY CONTRIBUTION TO SHAREHOLDER VALUE

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*The purpose of this research is to further examine the relationship between advertising expenditures and shareholder value. Using an alternative valuation framework, we are able to determine the exact dollar amount of shareholder value added by investments in advertising. This twenty-year sample of 2,852 unique firms is also used to examine important temporal variations in the advertising-shareholder value relationship. Essentially, we show that the monetary value shareholders ascribe to advertising expenditures can be measured and varies over time. Our findings present strategic opportunities and challenges for researchers, managers, analysts, and shareholders.*

## INTRODUCTION

Corporate advertising expenditures (advertising hereafter) represent investments in the promotion and advertising of products and services offered by firms. The decision on how much to invest in corporate advertising is an important strategic decision for firms, as advertising can be used to build awareness of the firm and its products/services, to reinforce or change customer attitudes, to build brands, and to communicate the firm's sustainable competitive advantage. While these tend to be more customer-focused, marketers are faced with the challenge of justifying marketing expenditures (advertising included) and showing the impact of such expenditures on the success of the firm. In 2004, exploring the link between advertising and firm value was identified as a major research priority in marketing (Rust et al. 2004). Scholars responded to this priority with research focused on the relationship between advertising and equity performance (Conchar, Crask, and Zinkhan 2005; Edeling and Fischer 2016; Joshi and Hanssens 2009, 2010; Lou and Donthu 2006; Luo and de Jong 2012; Shah, Stark, and Akbar 2009; Srinivasan et al. 2009; Vitorino 2014).

The marketing literature supports an overall positive relationship between advertising and equity performance of the firm. Advertising spending has been shown to increase revenue and profit (Joshi and Hanssens 2009), to improve cash flow (Srinivasan et al. 2009), and to generate future growth in earnings (Graham and Frankenberger 2000). It is important to note that revenue, profit, cash flow, and earnings are all direct and indirect drivers of shareholder value. Advertising has also been shown to reduce the risk of firm cash flows (Srinivasan et al. 2009) and to positively impact stock returns (Joshi and Hanssens 2010). So, the marketing literature does support the use of advertising investments by managers as a competitive and strategic tool to create shareholder value.

Results of a recent meta-analysis of prior documented elasticities of the stock market impact from advertising confirm a positive and significant effect of advertising on shareholder value (Edeling and Fischer 2016). They document a wide dispersion in elasticities across industries and during economic contraction periods. The authors caution that their results are sensitive to research design and present four requirements for future analysis and research: addressing potential temporal variation in the data; the type of dependent variable used; inclusion of control variables for earnings; and whether to account for endogeneity. The current study seeks to add to the current body of knowledge by addressing the first three of these requirements.

Using an alternate framework to traditional methods, the purpose of this research is twofold. First, this manuscript adds to the

The Marketing Management Journal
Volume 30, Issue 2, Pages 104-121

research in this area by making a methodological contribution. We introduce a new empirical model to determine the ***dollar amount*** of shareholder value added by marketing investments in advertising. Our examination is warranted as research on the specific monetary effect of advertising on shareholder value is missing from the current literature, which primarily focuses on unit changes (e.g., Tobin's Q) and shareholder value elasticities relating to advertising spending. Second, this research also highlights important temporal variations in this relationship. In essence, the assumption of a time-invariant positive and significant market value of advertising would suggest that the returns to advertising are consistently higher than the firm's cost of equity capital. In a frictionless business environment, the resulting implication would be that managers would simply increase advertising budgets to create additional shareholder value; however, this implication is inconsistent with economic reality.

The findings of this research have important benefits and implications for academic researchers, marketing managers, and analysts, and shareholders. The alternative framework introduces a new specification for researchers seeking to determine the shareholder value contribution of advertising and highlights the importance of considering time differentials in this contribution. Determining the dollar amount of shareholder value added by each dollar of advertising spending supports marketing managers in the justification of advertising spending, campaigns, and budgets. Being able to quantify the value created by each dollar of advertising provides marketers with the information necessary to effectively communicate with members of the C-suite. Allowing the market value of advertising to vary over time gives marketing managers insight into the most effective use of advertising budgets over time. The more marketers can learn about the value of advertising and its variation over time, the more effectively they can achieve optimal investment of their advertising expenditures. Finally, our alternative framework also aids analysts and shareholders in their estimates, recommendations, and investment decisions.

This manuscript begins with a review of the existing literature pertaining to advertising and shareholder value. Next, the empirical method is introduced and explained, followed by a description of the sample and appropriate summary statistics. After the results, the manuscript concludes with a discussion of the managerial implications, limitations, and directions for future research.

## ADVERTISING & SHAREHOLDER VALUE

Several channels explain the positive relation between shareholder value and advertising. These primarily include product market effects and spillover benefits. This section provides an overview of literature in this area.

Stigler's (1961) information motive states that advertising provides information to customers regarding the features of existing and/or new products or services offered. Comanor and Wilson (1967) argue that advertising can be used to create brand equity, which results in the creation of long-term customers and, hence, revenue growth. Advertising may also be used to signal either product quality relative to substitute products (Milgrom and Roberts 1986) or the financial health of the advertising firm (Chauvin and Hirschey 1993). With the latter, managers use advertising activities to signal to customers that the firm is financially stable and able to meet product guarantees and warranties. Because financial stability normally relates to firm value, this suggests that advertising relates to shareholder value. Interestingly, Hozier and Schatzberg (2000) provide evidence of this relationship finding that firms terminating or even reviewing their contracts with advertising agencies experience decreases in shareholder value. Joshi and Hanssens (2010) divide advertising into its tangible and intangible contributions to shareholder value. Their findings provide evidence of the direct or tangible contribution of advertising to shareholder value via product markets. These findings provide support for the signaling value associated with advertising strategies.

In addition to product market effects, Joshi and Hanssens (2010) discuss that advertising can contribute to shareholder value through

spillover benefits that ultimately reduce the cost of equity capital (i.e., the indirect or intangible contribution). Importantly, a lower cost of equity capital improves the firm's competitive advantage in acquiring attractive capital investments. Results from the finance literature support the view of spillover benefits accompanying advertising. For example, Grullon, Kanatas, and Weston (2004) show that firms with higher advertising expenditures have increased breadth of ownership and stock liquidity, both of which normally increase shareholder value. Chemmanur and Yan (2009) find that managers increase their product market advertising around the issuance of equity. The authors argue that the increase in advertising improves visibility, which reduces the need for the underpricing of newly issued equity shares. Consistent with the above studies, Singh Faircloth, and Nejadmalayeri (2005) report a negative relation between the cost of capital and advertising levels, again suggesting a relationship between advertising and shareholder value.

The aforementioned theory and evidence have motivated an extensive body of literature in the marketing discipline to examine the relation between shareholder value and advertising expenditures. Much of the published research in this vein includes studies that focus on a handful of industries over short time periods to studies with samples that cover various industries over many years. Joshi and Hanssens (2010) analyze two industries (i.e., PCs and sporting goods) to determine the direct and indirect effect on advertising expenditures on shareholders. Their findings suggest that advertising increases sales, thus affecting shareholders indirectly. Specifically, increased sales should result in some degree of increased future cash flow—one of the drivers of shareholder value. Further, Joshi and Hanssens reason that advertising affects shareholders directly through investors' perceptions of the firm, providing more support for the signaling argument. McAlister, Srinivasan, and Kim (2007) focus on a different driver of shareholder value—risk. Specifically, they find that advertising reduces the systematic risk of the firm, hence positively affecting shareholder value.

Findings presented by Srinivasan et al. (2009) provide evidence linking advertising to cash flow. Specifically, they find a positive link suggesting that advertising improves the degree and timeliness of cash flows and reduces of the risk of that cash flow. Luo and de Jong (2012) suggest that financial analysts play an integral role in linking advertising spending to shareholder value. Specifically, the authors find that the relation between shareholder value and advertising is amplified when analysts incorporate the firm's advertising spending into earnings forecasts. McAlister et al. (2016) report evidence consistent with firm strategy influencing the relation between shareholder value and advertising spending. Their results suggest that the market value of advertising is higher for firms that pursue a product differentiation strategy. The commonality in these studies is that advertising activities do not provide the same value across a cross-section of firms. While the samples and valuation models differ, the vast majority of the advertising research reports a direct relation between shareholder value and advertising expenditures. This positive relation is generally attributed to the aforementioned product market effects and spillover benefits associated with investments in advertising.

Finally, Edeling and Fischer (2016) via meta-analysis determine firm value elasticity as the measure of marketing input effectiveness (which includes advertising) and document a positive relationship between firm value and advertising. As firm value is synonymous with shareholder value, these findings go a long way towards confirming the positive relationship between shareholder value and advertising. However, they acknowledge a major difference in firm value elasticity and sales response elasticity with respect to marketing input effectiveness. Firm value is a function of discounted expected future cash flows, while the relationship between sales and marketing inputs is more direct, even monotonic. Edeling and Fischer (2016) further explain how marketing inputs affect profit and cash flows both positively (i.e., the benefit) and negatively (i.e., the actual cost of the marketing input representing an expense and a cash outflow for the firm). Because of this conflicting effect, the interpretation of firm value elasticity is

complicated. For example, a firm value elasticity of zero could indicate optimal investment in advertising, where a positive (negative) elasticity could indicate an underinvestment (overinvestment) in advertising. This limitation lends credibility to the need for an alternative metric for determining shareholder value.

Based on the aforementioned review of the literature, our expectation is to document a positive and significant relation in *dollar* terms between advertising and shareholder value. This expectation is stated formally in Hypothesis 1.

**$H_1$:** In dollar terms, shareholder value and advertising expenditures are positively related.

Despite a growing body of literature that examines the relation between advertising expenditures and various measures of financial performance, little attention has been devoted to examining temporal variation in the relation between advertising and shareholder value. As described above, there are various channels through which advertising can increase shareholder value, including product market effects and reduced firm risk. It is unlikely, however, that these channels provide a static way for advertising activities to increase shareholder value. In their 2016 meta-analysis of the stock market impact of marketing actions, Edeling and Fischer emphasize the importance of temporally aggregating data in future research. This remains a current issue for researchers in this area.

Advertising expenditure decisions, just like decisions on other marketing mix variables, are made in a complex and dynamic external environment. In instances where researchers are examining "a long data series," the external environment can experience many changes, including changes in "consumer tastes, legislation, competitive activity, and intrafirm changes in strategy" (Winer 1979, p. 563). Researchers should not assume that hypothesized advertising-sales relationships are stable over time (Winer 1979), as failure to incorporate changes in the external environment could lead to results that undervalue advertising's long-run effects (DeKimpe and Hanssens 1995).

Does the relationship between advertising and shareholder value persist across different time periods? We examine this question first across decades, then for five-year sub-groups, and finally on a yearly basis. Wildt and Winer (1983) state that "with such complex environments it is expected that the influence of decision/predictor variables on market performance will vary over time (and space where multiple cross-sections are considered)" (p. 366). Consequently, the relation between shareholder value and advertising is likely to vary over time as well. Thus, we expect to document substantial variation in the relation across firm years, as stated formally in Hypothesis 2.

**$H_2$:** In dollar terms, the relation between shareholder value and advertising expenditures displays temporal variation.

## EMPIRICAL METHODS

### Excess Return Model

We estimate the market value of advertising using a variant of the valuation framework presented by Faulkender and Wang (2006). This model is used to study the value implications of various aspects of corporate finance, including firm-level political activity and working capital behavior. The dependent variable of the regression model is specified as annual excess stock returns, while the independent variables control for financial characteristics that are generally accepted as determinants of shareholder value. Due to this model specification, a positively signed coefficient estimate suggests that an increase in the respective independent variable is associated with a return above the required return on equity (i.e., an excess return), much like the acquisition of a positive net present value investments.

The baseline model used to estimate the market value of advertising for the pooled sample period is shown below:

$$ExRet_{i,t} = \gamma_0 + \gamma_1 \frac{AdvExp_{i,t}}{MVE_{i,t-1}} + \gamma_2 \frac{Earn_{i,t}}{MVE_{i,t-1}} + \gamma_3 \frac{Assets_{i,t}}{MVE_{i,t-1}} + \gamma_4 \frac{R\&D_{i,t}}{MVE_{i,t-1}} + \gamma_5 \frac{IntExp_{i,t}}{MVE_{i,t-1}} + \gamma_6 \frac{Div_{i,t}}{MVE_{i,t-1}} + \gamma_7 \frac{Lev_{i,t}}{MVE_{i,t-1}} + \gamma_8 \frac{NetFin_{i,t}}{MVE_{i,t-1}} + TimeDummies + \varepsilon_{i,t} \quad (1)$$

Our proxy for shareholder value is the firm's annual excess stock return (*ExRet*), defined as the annual raw equity return minus the benchmark portfolio return. The raw equity return is the sum of the change in market value of equity and dividends scaled by lagged market equity. These variables are collected from the Center for Research in Security Prices (CRSP). The benchmark return series consists of the Fama and French (1993) 5x5 size and book-to-market portfolio sorts (formed at the end of June in year *t)*. The size sort uses the firm's market value of equity as of the end of June in year *t*, and the book-to-market sort uses the ratio of book value of equity at fiscal year-end in calendar year *t-1* and market equity at the end of December in calendar year *t-1*. Overall, *ExRet* represents the equity return above or below that justified by the size and book-to-market ratio for a particular firm.

To mitigate the influence of omitted variables bias on the relation between shareholder value and advertising expenditures, we control for product market performance and investing and financing policies. We proxy product market performance with earnings before extraordinary items (*Earn*).' Edeling and Fischer (2016) specifically suggest the inclusion of an earnings control variable as it relates significantly and directly to shareholder value, which is left out of contemporaneous accounting performance. Control variables for investments, other than advertising expenditures, include research and development expense (*R&D*) and total assets (*Assets*). Controls for financing policies include interest expense ($IntExp_t$), dividends (*Div*), market leverage (*Lev*), and net financing (*NetFin*).

We account for variation in firm size by scaling the financial variables by the lagged market value of equity ($MVE_{t-1}$). The majority of prior marketing studies into this topic scale their financial control variables by either total assets or revenue. This difference is significant and provides the avenue for the methodological contribution of this study. Faulkender and Wang (2006) explain how scaling both the dependent (i.e., shareholder value) and independent variables (e.g., advertising) by the lagged market value of equity results in a coefficient that is interpreted as the dollar change in shareholder value resulting from a dollar change in the independent variable of interest—advertising in our case.

The time dummies are binary variables that control for time-varying unobserved variables that are potentially correlated with *AdvExp*. We use multiple definitions for the time dummies, as described in the results section.

The variable of interest from Equation (1) is *AdvExp*, defined as advertising expenditures scaled by the lagged market value of equity. Advertising expenditures capture managements' investment in the promotion and advertisement of the firm's products and services. As described in the Compustat data definition manual, "advertising expenses represent a firm's annual aggregate costs of advertising media (via radio, television, newspapers, and periodicals) and promotional expenses, separate from selling and marketing expenses." Consequently, the coefficient on *AdvExp* ($\gamma_1$) provides an estimate of the net monetary contribution in dollar terms of advertising on shareholder value, after controlling for product market performance, corporate investment, and financing policy. Hereafter, we refer to $\gamma_1$ as the market value of advertising. We expect that $\gamma_1$ will be positively signed and statistically significant for the pooled sample, as shown in the aforementioned literature.

**Temporal Variation Model**

A limitation of the specification of Equation (1) is that the model restricts the relation between shareholder value and advertising to remain constant over time. Assuming a constant market value of advertising is likely an inappropriate assumption, especially over longer periods of time and given that firms are operating in complex and constantly changing external

environments (Winer 1979; Wildt and Winer 1983). To examine the temporal variation in the market value of advertising, we follow a "wide to narrow" approach. That is, we adjust Equation (1) in order to estimate the market value of advertising across decades, five-year subgroups, and for each sample year. Our results suggest substantial temporal variation in the market value of advertising.

## SAMPLE AND SUMMARY STATISTICS

The initial sample consists of firms incorporated in the U.S. that are covered by the Compustat database. Our sample firms operate in various industries with clear operating differences that likely have ramifications on the success of advertising. For example, our sample firms operate in industries that focus on both B2B- (e.g., airplane manufacturer) and B2C-type (e.g., retailers) sales transactions. We exclude observations in the financial and utility industries and eliminate observations with negative values for assets, dividends, market value of equity, and revenues. Missing accounting data for required variables further restricts the initial sample size. Inclusion of the lagged market value of equity as a scalar results in the loss of the first observation per firm, as well as any non-consecutive firm-year observations. To mitigate the influence of outliers, we winsorize the dataset at the 1% level for the tails of the distribution for each financial variable appearing in Equation (1).

The usable sample consists of an unbalanced panel of 13,285 firm-year observations for 2,852 unique firms over the 1991-2010 period. Table 1 presents descriptive statistics for the sample. The sample mean and median for *ExRet* are 2.4% and -7.4%, respectively. As expected, these measures of location indicate that the distribution of excess equity returns is right-skewed. The summary statistics for the control variables are similar in sign and magnitude to those reported by studies that use variants of the Faulkender and Wang (2006) valuation methodology (e.g., Dittmar and Mahrt-Smith 2007; Hill et al. 2013; and Beauchamp et al. 2014).

The mean value for *AdvExp* is 6.50%, which indicates that the typical sample firm reports approximately $0.07 in annual advertising

**TABLE 1:**
**Descriptive Statistics**

| *Variables* | *N* | *Mean* | *Median* | *StdDev* |
|---|---|---|---|---|
| *ExRet* | 13,285 | 0.024 | -0.074 | 0.614 |
| *AdvExp* | 13,285 | 0.065 | 0.024 | 0.119 |
| *Earn* | 13,285 | 0.021 | 0.058 | 0.261 |
| *Assets* | 13,285 | 1.868 | 1.121 | 2.374 |
| *R&D* | 13,285 | 0.035 | 0.000 | 0.070 |
| *IntExp* | 13,285 | 0.060 | 0.015 | 0.135 |
| *Div* | 13,285 | 0.008 | 0.000 | 0.015 |
| *Lev* | 13,285 | 0.243 | 0.165 | 0.247 |
| *NetFin* | 13,285 | 0.017 | -0.001 | 0.217 |

**Notes:** This table shows the sample characteristics of the 13,285 observations for 2,852 unique firms from 1991 to 2010. Variables are reported in decimal form. *ExRet* represents the annual excess stock return. With the exception of *Lev*, the remaining variables are scaled by lagged market value of equity. *AdvExp* is advertising expenditures. *Earn* is earnings, defined as earnings before extraordinary items. *Assets* is total assets. *R&D* is research and development expenditures. *IntExp* is interest expense. *Div* is common dividends. *Lev* is the market leverage ratio. *NetFin* is net new financing.

expenditures per $1 of market value of equity. In dollar terms, the sample reports over $71 billion in aggregate advertising expenditures during fiscal year 2010 alone. The positive skew in the distribution of *AdvExp* and the variable's standard deviation show substantial cross-sectional variation in advertising expenditures. From these summary statistics we infer that advertising expenditures are economically significant and that certain sample firms spend substantially more than others on advertising activities. Further, the economic significance of advertising expenditures further motivates a better understanding of the temporal variation in the market value of advertising expenditures.

Table 2 presents the correlations between the financial variables included in Equation (1). Interestingly, we observe an insignificant pairwise correlation between *ExRet* and *AdvExp*. We discuss the insignificance of this correlation in greater detail within the context of the annual correlations between the variables. The correlations in the second column of the table indicate significant associations between *AdvExp* and the other independent variables. These correlations and the other significant cross-correlations motivate our discussion of the variance inflation factors obtained after estimating the baseline version of Equation (1).

Given the nature of our research question, we present in Table 3 the mean of *AdvExp* and the correlation between *ExRet* and *AdvExp* for each sample year. Column 2 shows that the annual sample size ranges between 288 observations in 1995 to 954 observations in 1991. Column 3 provides the annual mean value for *AdvExp*. The annual mean of *AdvExp* reaches a peak of 10.5% in 1991 and a minimum of 3.1% in 2007. Overall, the annual mean values in column 3 indicate substantial temporal variation in the relative level of advertising expenses for the sample.

The final column of Table 3 shows the pairwise correlation between *ExRet* and *AdvExp* for each sample year. The correlation between these variables is positive and significant in nine of the sample years. The correlations also show that the variables are negatively correlated in three of the sample years. Further, *ExRet* and *AdvExp* are uncorrelated in eight sample years. The observed variation in the annual correlations is consistent with the insignificance of the correlation between these variables for

**TABLE 2:**
**Correlation Analysis**

| | *ExRet* | *AdvExp* | *Earn* | *Assets* | *R&D* | *IntExp* | *Div* | *Lev* |
|---|---|---|---|---|---|---|---|---|
| *AdvExp* | 0.012 | | | | | | | |
| *Earn* | 0.360*** | 0.226*** | | | | | | |
| *Assets* | 0.068*** | 0.508*** | 0.320*** | | | | | |
| *R&D* | 0.030*** | -0.281*** | -0.246*** | -0.197*** | | | | |
| *IntExp* | -0.040*** | 0.454*** | 0.287*** | 0.769*** | -0.295*** | | | |
| *Div* | 0.075*** | 0.031*** | 0.197*** | -0.085*** | -0.100*** | -0.037*** | | |
| *Lev* | -0.218*** | 0.373*** | 0.190*** | 0.671*** | -0.303*** | 0.900*** | -0.008 | |
| *NetFin* | -0.008 | -0.089*** | -0.151*** | -0.070*** | 0.070*** | -0.068*** | -0.078*** | -0.026*** |

This table presents Spearman correlation coefficients for the financial variables appearing in Equation (1). The sample consists of 13,285 observations for 2,852 unique firms from 1991 to 2010. *ExRet* represents the annual excess stock return. With the exception of *Lev*, the remaining variables are scaled by lagged market value of equity. *AdvExp* is advertising expenditures. *Earn* is earnings, defined as earnings before extraordinary items. *Assets* is total assets. *R&D* is research and development expenditures. *IntExp* is interest expense. *Div* is common dividends. *Lev* is the market leverage ratio. *NetFin* is net new financing. *, **, and *** denote statistical significance at the 10%, 5%, and 1%, levels, respectively.

the pooled sample shown in Table 2. We delay making further inferences regarding the association between *ExRet* and *AdvExp* until the presentation of our multivariate evidence.

## MULTIVARIATE ANALYSIS

The remaining tables present multivariate regression results after estimating variants of Equation (1). Each regression model is estimated using OLS with standard errors that are robust to heteroskedasticity.

### Baseline Evidence on the Market Value of Advertising

Table 4 displays our baseline results. We begin our analysis by highlighting the proportion of the variance of shareholder value that is explained by advertising expenditures. Column 1 presents results from a modified version of Equation 1 that drops advertising expenditures. From this model, we observe that *ExRet* is directly and significantly related to earnings, assets, research and development expenditures, and net financing. The results also suggest an inverse relation between shareholder value and the market leverage ratio. The observed statistical insignificance for dividends and interest expense represent departures from prior studies that use the Faulkender and Wang (2006) valuation model. These differences in results may be due to our particular sample period and sample restrictions. The $R^2$ of the first model is 24.44%. Column 2 shows results after regressing shareholder value on advertising expenditures. As expected, shareholder value is positively related to advertising expenditures. The $R^2$ for the parsimonious model indicates that advertising expenditures explain 2.27% of the variation in shareholder value.

**TABLE 3:**
**Descriptive Statistics by Year**

| *Year* | *N* | *Mean of AdvExp* | *Correlation between ExRet and AdvExp* |
|---|---|---|---|
| 1991 | 954 | 0.105 | 0.025 |
| 1992 | 883 | 0.089 | 0.128*** |
| 1993 | 827 | 0.076 | 0.097*** |
| 1994 | 387 | 0.076 | 0.004 |
| 1995 | 288 | 0.092 | -0.107* |
| 1996 | 410 | 0.080 | -0.009 |
| 1997 | 500 | 0.079 | 0.055 |
| 1998 | 508 | 0.065 | 0.107** |
| 1999 | 528 | 0.072 | -0.008 |
| 2000 | 570 | 0.076 | 0.007 |
| 2001 | 585 | 0.088 | 0.096** |
| 2002 | 650 | 0.071 | 0.191*** |
| 2003 | 708 | 0.072 | 0.059 |
| 2004 | 767 | 0.045 | 0.116*** |
| 2005 | 798 | 0.036 | 0.107*** |
| 2006 | 796 | 0.034 | 0.131*** |
| 2007 | 795 | 0.031 | -0.109*** |
| 2008 | 829 | 0.036 | -0.102*** |
| 2009 | 828 | 0.073 | 0.313*** |
| 2010 | 674 | 0.040 | -0.025 |

**Notes**: This table shows the time distribution of the sample. The full sample consists of 13,285 observations for 2,852 unique firms from 1991 to 2010. *AdvExp* is advertising expenditures scaled by lagged market value of equity. *ExRet* represents the annual excess stock return. The last two columns of the table show the mean of *AdvExp* and the pairwise correlation between *ExRet* and *AdvExp* by sample year. *, **, and *** denote statistical significance at the 10%, 5%, and 1%, levels, respectively.

Column 3 provides results for the full version of Equation (1). Despite the significant correlation coefficients reported in Table 2, the untabulated variance inflation factors (VIFs) for the baseline model suggest that multicollinearity has not unduly impacted the standard errors for the independent variables. The VIFs are available upon request. Overall, the statistical inferences shown in the full baseline model are consistent with those shown in columns 1 and 2, with the exception of the increase in the $R^2$.

The primary variable of interest is *AdvExp*. Results in column 3 suggest that shareholder value is positively and significantly (*p*-value = 0.003) related to advertising expenditures. This result, along with that shown in column 2, supports $H_1$. The strength of this relation is noteworthy, given that Equation (1) accounts for various financial characteristics that are generally accepted as determinants of shareholder value.

In addition to the statistical significance of advertising expenditures, the economic significance of the relation between *ExRet* and *AdvExp* is also of interest. The estimated marginal effect of advertising expenditures on shareholder value is determined by differentiating Equation (1) with respect to *AdvExp*. Since lagged market value of equity is the scale factor for both the left-hand and right-hand sides of the model, $\gamma_1$ represents the incremental change in shareholder value that is attributable to a $1 increase in advertising

**TABLE 4:**
**Baseline Results**

| *Independent Variables* | (1) | (2) | (3) |
|---|---|---|---|
| *AdvExp* | | 0.527*** | 0.195*** |
| | | [0.000] | [0.003] |
| *Earn* | 0.594*** | | 0.575*** |
| | [0.000] | | [0.000] |
| *Assets* | 0.120*** | | 0.109*** |
| | [0.000] | | [0.000] |
| *R&D* | 0.711*** | | 0.714*** |
| | [0.000] | | [0.000] |
| *IntExp* | 0.242 | | 0.006 |
| | [0.105] | | [0.957] |
| *Div* | 0.050 | | 0.014 |
| | [0.130] | | [0.961] |
| *Lev* | -1.300*** | | -1.190*** |
| | [0.000] | | [0.000] |
| *NetFin* | 0.284*** | | 0.273*** |
| | [0.000] | | [0.000] |
| Sample | Pooled | Pooled | Pooled |
| Observations | 13,285 | 13,285 | 13,285 |
| R-squared | 0.244 | 0.023 | 0.247 |

**Notes:** This table presents OLS regressions estimating Equation (1). The full sample consists of 13,285 observations for 2,852 unique firms from 1991 to 2010. *ExRet* represents the annual excess stock return. With the exception of *Lev*, the remaining variables are scaled by lagged market value of equity. *AdvExp* is advertising expenditures. *Earn* is earnings, defined as earnings before extraordinary items. *Assets* is total assets. *R&D* is research and development expenditures. *IntExp* is interest expense. *Div* is common dividends. *Lev* is the market leverage ratio. *NetFin* is net new financing. Model intercepts and annual time dummies are not tabulated due to space constraints. Standard errors are robust to heteroskedasticity. *P*-values appear in brackets. *, **, and *** denote statistical significance at the 10%, 5%, and 1%, levels, respectively.

expenditures. The initial estimate of market value of advertising expenditures is 0.195, which implies that an additional $1 in advertising expenditures increases shareholder value by roughly $0.20. Furthermore, a one standard deviation increase in the change in advertising expenditures implies a 2.32% (0.119*0.195) increase in excess return.

The positive relation between *ExRet* and *AdvExp* is consistent with previous research on the relation between shareholder value and advertising expenditures (Conchar, Crask, and Zinkhan 2005). This result is also consistent with the various motives of advertising activities, including improved product market performance (Leone 1995), spillover benefits (Joshi and Hanssens 2010), and a lower cost of capital (Singh, Faircloth, and Nejadmalayeri 2005).

**Temporal Variation in the Market Value of Advertising**

Next, we proceed by examining the temporal variation in the relation between shareholder value and advertising over the twenty-year sample period. Overall, our results provide strong support for $H_2$, as we find consistent evidence of significant temporal variation in the market value of advertising. We follow a "wide to narrow" approach by first presenting variation in the market value of advertising by decade and then over five-year periods. Our analysis concludes with the presentation of the annual variation in the market value of advertising.

Columns 1 and 2 of Table 5 present results after estimating Equation (1) separately for both sample decades. The results indicate a positive estimate of $\gamma_1$ for both decades. The economic and statistical significance of the market value of advertising is higher for the observations occurring in the more recent decade. In fact, $\gamma_1$ is only marginally significant (*p*-value = 0.078) for the older decade (1990-1999).

We test for differences in the market value of advertising across the decades by including in Equation (1) the interaction term *AdvExp*Dec90s*. The variable *Dec90s* is a dummy variable set equal to 1 if the observation occurred during the period 1990 through 1999, 0 otherwise. The coefficient estimate for the market value of advertising during the latter portion of the sample period is 0.364. The negatively signed and statistically significant coefficient on *AdvExp*Dec90s* indicates a lower market value of advertising during the 1990s. The coefficient on the decade interaction term is -0.247, which implies a point estimate of $0.12 (0.364-(0.247*1)) for the market value of an additional $1 spent on advertising in the 1990s. Overall, the results in Table 5 suggest that the value that shareholders place on advertising was significantly higher during the latter portion of the sample period, relative to the value ascribed to advertising in the 1990s.

Next, we examine the temporal variation in the market value of advertising by re-estimating Equation (1) across the four five-year panels that comprise the sample period (i.e., 1991-1995, 1996-2000, 2001-2005, and 2006-2010). We follow the same order as with the decade results by first presenting the market value of advertising for each five-year panel and then with a pooled model that includes multiple interaction terms.

The results for the five-year panels appear in Table 6. The columns of Table 6 are arranged in ascending order with respect to time. During the sample period 1991 through 1995, the market value of advertising is positive and marginally significant (*p*-value = 0.080). The market value of advertising is insignificantly different than zero over the sample period 1996 -2000 (column 2). During the sample periods 2001 through 2005 and 2006 through 2010, we observe a dramatic increase in the economic and statistical significance of the market value of advertising.

The results in columns 1 through 4 are confirmed by those in column 5, which shows results for the pooled sample after adding to Equation (1) the interaction terms for the first three five year panels. Results in column 5 show a coefficient estimate on *AdvExp* of 0.463 for the base period of 2006-2010. Relative to the base period, the market value of advertising is significantly lower during the first two five-year panels. Meanwhile, the market value of advertising is insignificantly different across the 2001-2005 and 2006-2010 subgroups.

**TABLE 5:**
**Decade Variation**

| *Independent Variables* | (1) | (2) | (3) |
|---|---|---|---|
| *AdvExp* | 0.159* | 0.291*** | 0.364*** |
| | [0.078] | [0.003] | [0.000] |
| *AdvExp*Dec90s* | | | -0.247*** |
| | | | [0.007] |
| *Earn* | 0.655*** | 0.502*** | 0.557*** |
| | [0.000] | [0.000] | [0.000] |
| *Assets* | 0.097*** | 0.116*** | 0.112*** |
| | [0.000] | [0.000] | [0.000] |
| *R&D* | 0.756*** | 0.786*** | 0.766*** |
| | [0.000] | [0.000] | [0.000] |
| *IntExp* | 0.158 | -0.033 | -0.008 |
| | [0.382] | [0.836] | [0.944] |
| *Div* | -0.707 | 0.648* | 0.136 |
| | [0.107] | [0.071] | [0.625] |
| *Lev* | -1.340*** | -1.101*** | -1.191*** |
| | [0.000] | [0.000] | [0.000] |
| *NetFin* | 0.320*** | 0.209*** | 0.258*** |
| | [0.000] | [0.000] | [0.000] |
| Sample Period | 1991-1999 | 2000-2010 | 1991-2010 |
| Observations | 5,285 | 8,000 | 13,285 |
| R-squared | 0.240 | 0.244 | 0.240 |

**Notes:** This table presents OLS regressions estimating variants of Equation (1). The full sample consists of 13,285 observations for 2,852 unique firms from 1991 to 2010. *ExRet* represents the annual excess stock return. With the exception of *Lev*, the remaining variables are scaled by lagged market value of equity. *AdvExp* is advertising expenditures. *Earn* is earnings, defined as earnings before extraordinary items. *Assets* is total assets. *R&D* is research and development expenditures. *IntExp* is interest expense. *Div* is common dividends. *Lev* is the market leverage ratio. *NetFin* is net new financing. Model intercepts and indicator variables for time are not tabulated due to space constraints. Standard errors are robust to heteroskedasticity. *P*-values appear in brackets. *, **, and *** denote statistical significance at the 10%, 5%, and 1%, levels, respectively.

The findings in Table 6 confirm and extend the decade results shown in Table 5. Specifically, both sets of results indicate a lower market value of advertising during the earlier portion of the sample period. The five-year panel results indicate that the relation between excess returns and advertising expenses is particularly weak during the period 1996-2000.

We further refine our investigation of the temporal variation in the market value of advertising by re-estimating Equation (1) separately for each sample year. The results appear in Table 7. For clarity, we only tabulate results that pertain to the relation between excess returns and *AdvExp*. The full model results for each sample year are available upon request.

The results in Table 7 suggest that the relation between excess returns and advertising expenditures is conditional on the sample year. The coefficient estimate for $\gamma_1$ is positive and significant for only four of the twenty sample years. While $\gamma_1$ is negatively signed in 1994, 1995, 1999, 2000, 2007, and 2008, the coefficient estimates are statistically insignificant. Thus, the results do not suggest that advertising activities reduced shareholder value during the sample period. Overall, the relation between shareholder value and advertising is insignificantly different than zero in sixteen of the twenty sample years.

The sample years in which $\gamma_1$ is positive and significant include 1992, 2002, 2005, and 2006. The lack of positive and significant annual estimates for $\gamma_1$ during the first half of the sample period is consistent with the decade and five-year subgroup regression estimates presented in Tables 5 and 6, respectively. In terms of economic significance, the estimates for $\gamma_1$ during these years range from a maximum value of 0.687 in 2006 to a minimum value of

**TABLE 6:**
**Five-Year Sub-Group Variation**

| *Independent Variables* | (1) | (2) | (3) | (4) | (5) |
|---|---|---|---|---|---|
| *AdvExp* | 0.194* | 0.038 | 0.395*** | 0.373** | 0.463*** |
| | [0.080] | [0.765] | [0.003] | [0.021] | [0.000] |
| *AdvExp*1991-1995DV* | | | | | -0.288*** |
| | | | | | [0.004] |
| *AdvExp*1996-2000DV* | | | | | -0.387*** |
| | | | | | [0.005] |
| *AdvExp*2001-2005DV* | | | | | -0.058 |
| | | | | | [0.574] |
| *Earn* | 0.667*** | 0.558*** | 0.619*** | 0.450*** | 0.565*** |
| | [0.000] | [0.000] | [0.000] | [0.000] | [0.000] |
| *Assets* | 0.090*** | 0.116*** | 0.096*** | 0.129*** | 0.111*** |
| | [0.000] | [0.000] | [0.000] | [0.000] | [0.000] |
| *R&D* | 0.667*** | 0.968*** | 1.175*** | 0.469** | 0.757*** |
| | [0.000] | [0.001] | [0.000] | [0.017] | [0.000] |
| *IntExp* | 0.154 | 0.232 | 0.033 | 0.023 | 0.001 |
| | [0.448] | [0.444] | [0.886] | [0.925] | [0.992] |
| *Div* | -0.628 | -0.924 | -0.262 | 1.203*** | 0.054 |
| | [0.218] | [0.225] | [0.709] | [0.002] | [0.848] |
| *Lev* | -1.314*** | -1.430*** | -1.127*** | -1.003*** | -1.189*** |
| | [0.000] | [0.000] | [0.000] | [0.000] | [0.000] |
| *NetFin* | 0.318*** | 0.298*** | 0.341*** | 0.070 | 0.266*** |
| | [0.000] | [0.000] | [0.000] | [0.361] | [0.000] |
| Sample Period | 1991-1995 | 1996-2000 | 2001-2005 | 2006-2010 | Full |
| Observations | 3,339 | 2,516 | 3,508 | 3,922 | 13,285 |
| R-squared | 0.242 | 0.247 | 0.234 | 0.281 | 0.242 |

**Notes:** This table presents OLS regressions estimating variants of Equation (1). The full sample consists of 13,285 observations for 2,852 unique firms from 1991 to 2010. *ExRet* represents the annual excess stock return. With the exception of *Lev*, the remaining variables are scaled by lagged market value of equity. *AdvExp* is advertising expenditures. *Earn* is earnings, defined as earnings before extraordinary items. *Assets* is total assets. *R&D* is research and development expenditures. *IntExp* is interest expense. *Div* is common dividends. *Lev* is the market leverage ratio. *NetFin* is net new financing. Model intercepts and indicator variables for time are not tabulated due to space constraints. Standard errors are robust to heteroskedasticity. *P*-values appear in brackets. *, **, and *** denote statistical significance at the 10%, 5%, and 1%, levels, respectively.

0.355 in 1992. Despite being the minimum statistically significant estimate for $\gamma_1$, the latter still has economic implications as the coefficient indicates that shareholders placed a value of $0.36 on each incremental dollar spent on advertising in 1992. We assess the trend in the annual estimates by displaying the three-year moving average values (column 4 of Table 7) and via the trend chart displayed by Figure 1. While both the three-year moving average and Figure 1 highlight substantial temporal variation $\gamma_1$, we observe no discernible trend in the market value of advertising. The mean of the annual estimates for $\gamma_1$ is 0.181, which is qualitatively and quantitatively similar to the point estimate of 0.195 from column 1 of Table 4. Thus, it appears that the positive and significant estimate of $\gamma_1$ for the pooled sample is primarily driven by the relation between excess returns and advertising expenses for a handful of sample years.

In total, these findings of temporal variation are important for advancing the current topic of

research. A key implication is that the value relevance associated with advertising is less pervasive than is commonly suggested in the existing literature. This has implications for those basing future research and managerial decisions on the general belief that, on average, advertising is positively and significantly related to shareholder value.

We posit two possible driving forces behind this finding. First, Edeling and Fisher (2016) suggest that recessions could affect the firm value elasticity relative to advertising expenditures due to advertising's role in balancing revenue and mitigating increased cash flow volatility during contractionary periods. Lehmann (2004, p. 73) explains that marketing managers are under "increasing pressure to meet the numbers (i.e., deliver strong financial performance)." He goes on to explain that this pressure is highest during periods of economic weakness. Given that the years of significance in our study are all years where the U.S. economy either immediately followed a period of economic contraction (1992 and 2002) or experienced weak economic growth (2005 and 2006), economic weakness could, at least, partially explain our findings.

The goal of the marketing manager should be to optimize its advertising budget with the goal of maximizing shareholder value. However, several studies find that the optimality of advertising budgets varies over time or is time dependent (Edeling and Fischer 2016; Joshi and Hanssens 2010; and Raman et al. 2012). Again, our results could be partially explained by this time factor. Though this finding warrants further analysis, doing so is beyond the scope of the current study. The potential for further research is discussed below.

## DISCUSSION AND IMPLICATIONS

Overall, we provide an empirical model positively relating firm advertising expenditures to shareholder value. Our model indicates that every $1 in advertising expenditures results in the addition of $0.20 in shareholder value over our sample period. However, we also document significant temporal variation in this relationship. Our results have important implications for academic researchers, marketing managers, analysts, and shareholders alike.

### Academics

First, these findings should be of interest to academic researchers, as this study extends the growing body of knowledge relating advertising to shareholder value. Our research differs from previous work in this area by introducing the use of the firm's annual excess stock return as a measure of shareholder value and by normalizing the explanatory variables by the market value of equity. Doing so allows researchers to analyze the relationship between advertising and shareholder value across different industries/sectors and to determine the exact monetary contribution of advertising to shareholder value. As a result, models can be estimated easily and can produce easily interpreted results. The findings also show the importance of considering time variance when utilizing a lengthy data series.

### Marketing Managers

The findings of the current study should also help marketing managers connect to the C-Suite with respect to justifying marketing budgets and marketing's contribution to the goal of the firm (i.e., maximizing shareholder value). Our framework allows marketing managers to determine the actual monetary contribution of advertising to shareholder value in dollar terms. This is akin in importance to corporate managers assigning a net present value to potential capital projects, which is the cornerstone of capital allocation decisions in corporate financial planning.

A global survey conducted in 2009 by McKinsey & Co. states that companies utilize rules of thumb and historical marketing allocations more often than quantitative measures when allocating marketing budgets (Doctorow, Hoblit, & Sekhar 2009). Our findings give managers the ability to predict (dollar for dollar) the impact of advertising on shareholder value past that of historical allocations and rules of thumb. This adds another dimension to the decision criteria currently used by marketing managers in allocating expenditures.

**TABLE 7:**
**Annual Variation**

| *Year* | *Sample Size* | $\gamma_1$ | *3-Year Moving Average of* $\gamma_1$ |
|---|---|---|---|
| 1991 | 954 | 0.198 | |
| 1992 | 883 | 0.355** | |
| 1993 | 827 | 0.232 | 0.262 |
| 1994 | 387 | -0.17 | 0.139 |
| 1995 | 288 | -0.027 | 0.012 |
| 1996 | 410 | 0.002 | -0.065 |
| 1997 | 500 | 0.272 | 0.082 |
| 1998 | 508 | 0.249 | 0.174 |
| 1999 | 528 | -0.200 | 0.107 |
| 2000 | 570 | -0.114 | -0.022 |
| 2001 | 585 | 0.178 | -0.045 |
| 2002 | 650 | 0.481** | 0.182 |
| 2003 | 708 | 0.366 | 0.342 |
| 2004 | 767 | 0.368 | 0.405 |
| 2005 | 798 | 0.685* | 0.473 |
| 2006 | 796 | 0.687** | 0.580 |
| 2007 | 795 | -0.281 | 0.364 |
| 2008 | 829 | -0.115 | 0.097 |
| 2009 | 828 | 0.408 | 0.004 |
| 2010 | 674 | 0.055 | 0.116 |

**Notes:** This table presents OLS regressions estimating annual versions of Equation (1), where the dependent variable is specified as excess returns (*ExRet*). The full sample consists of 13,285 observations for 2,852 unique firms from 1991 to 2010. The term $\gamma_1$ represents the annual coefficient estimates on *AdvExp* (advertising expenditures scaled by lagged market value of equity). The last column of the table provides the 3-year moving averages for $\gamma_1$. For clarity, this table does not show results for the full set of controls specified in Equation (1). Standard errors are robust to heteroskedasticity. *, **, and *** denote statistical significance at the 10%, 5%, and 1%, levels, respectively.

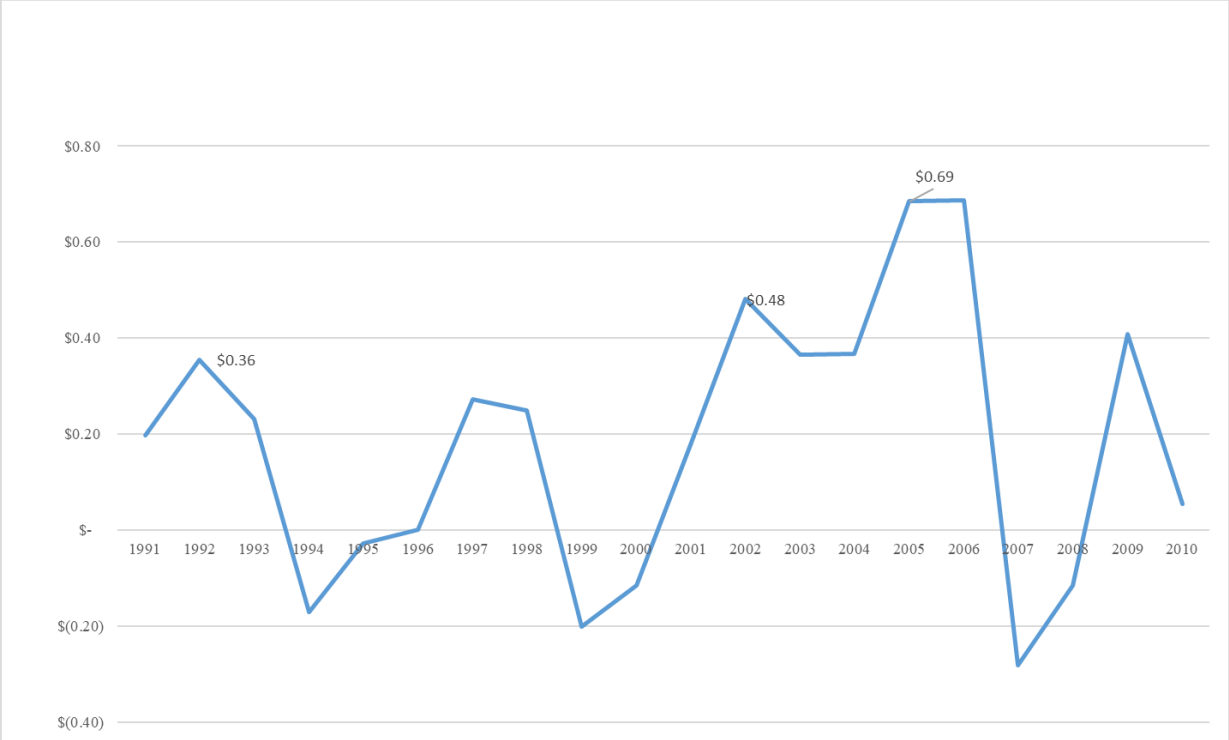
However, our findings of temporal variation in the market value of advertising suggest that investments in advertising yield returns in excess of the cost of equity capital in some years, but not every year. Put another way, the ability of managers to strategically use advertising to increase shareholder value varies over time. This inference is intuitive as advertising expenditures should not be expected to provide returns in excess of the required return on equity (i.e., excess returns) into perpetuity. We emphasize that the observed temporal variation in the market value of advertising does not necessarily suggest that managers waste corporate funds on advertising activities. In fact, none of our results suggest that advertising significantly reduces shareholder value. It appears that in most of our sample years advertising provides returns that are commensurate with the required return on equity. Therefore, marketing managers can justify their marketing budgets on an annual basis in terms of the promotion of goods and services for the firm with an added benefit of adding shareholder value in *some* years.

As a result, marketing managers should adjust their campaigns optimally with the goal of maximizing its effectiveness of promotion while minimizing its cost. Doing so will increase the probability of advertising significantly contributing to shareholder value.

**Analysts and Shareholders**

Finally, our results should be of interest to analysts and shareholders which already monitor and factor ad spending into their forecasts. Advertising spending has helped investors form expectations regarding a firm's future cash flows (Chauvin & Hirschey 1993). Lou and de Jong (2012) also found that "The more analysts factor in firm advertising spending and reflect it in their earnings

**FIGURE 1:**
**Annual Variation in the Market Value of Advertising Expenditures**




forecasts, the more likely the benefits of advertising are channeled into firm value" (p. 605). The results of this research build on this by providing analysts and shareholders with a more comprehensive and straightforward metric for determining advertising's effect on shareholder value. The ability to compare advertising to shareholder value on a dollar-for-dollar basis provides analysts with enhanced predictive capability. The result is improvements in earnings estimates, price projections, and buy/sell recommendations.

However, the documented temporal variation in the current study should encourage analysts and shareholders to continually engage in the active monitoring of corporate advertising expenditures and demand increased disclosure on advertising activities and strategy. This will aid analysts in the continuous improvement of their valuation model assumptions and should have a direct impact on the buy-sell recommendations they periodically issue. Of course, these buy-sell recommendations have implications for investors and money managers with respect to the allocations across their portfolios. These results also suggest that it is in the best interest of corporate managers to actively work with analysts and investors to convey information regarding advertising activities and strategy (and all other marketing activity, as well). There is no downside to doing so, and the upside is an amplification of the contribution of advertising to shareholder value in those years the contribution occurs.

## Limitations and Implications for Future Research

Our data cover U.S. firms (financial and utility excluded) in the Compustat database for the years 1991 through 2010. In 1994, Securities and Exchange Commission (SEC) issued Financial Reporting Release No. 44 (FRR44), which relaxed the requirement of public firms to disclose information deemed by management to be immaterial, including advertising expenses. This change in accounting standard impacted our sample. We followed the procedure set forth by previous researchers in this area (Grullon, Kanatas, and Weston 2004; Luo and de Jong 2012; Singh, Faircloth, and Nejadmalayeri 2005; Vitorino 2014; Wang, Zhang, and Ouyang 2009) and dropped

observations with missing advertising expenditures or those with a value of zero. With this in mind, a future research opportunity exists to reevaluate this study using alternative sources of advertising expenditure data (e.g., TNSMI/CMR data). Alternative sources might allow for the analysis of different types of advertising expenditures (e.g., television) on shareholder value.

Our study suggests new lines of inquiry with respect to the relation between shareholder value and advertising activities. First, while we document temporal variation in the market value of advertising, we do not explain the causal mechanism underlying this temporal variation. Why is advertising significantly effective only in certain years? Additional research is needed to refine our understanding of why shareholders ascribe value to advertising in certain years but not in others. Specifically, future research should concentrate on how economic weakness affects the advertising and shareholder value relationship. Researchers should also examine the mechanisms around managers rebalancing their advertising budgets around optimality.

Second, using annual excess stock returns as a proxy to measure shareholder value reveals several avenues for future research in marketing. With this new measure, researchers could examine the relationship between other marketing variables (e.g., new product sales or brand sales) and shareholder value. Doing so would allow marketing managers to compare sales of new products to shareholder value or to compare brand sales to shareholder value. Once again, these would be dollar for dollar comparisons. It would also be extremely interesting to compare the relationship between different types of advertising and shareholder value. Those results could be very telling for marketing managers trying to allocate marketing spending across different types of media.

Finally, an improved understanding of factors that interact with the shareholder value-advertising relation should be of interest to researchers. A growing but relatively nascent literature stream examines non-linearity in the relation between shareholder value and advertising. Still, further research is needed to refine our understanding of the factors that influence the market value of advertising. These factors could be readily framed within the context of the theoretical motives of advertising activities.

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## NOTES

We first apply the baseline model to the pooled sample to facilitate comparisons to results presented in the existing literature.

We appreciate Ken French for providing this data series.

Hereafter, we suppress the scaling of the independent variables. For example, *Earn* refers to .

$$\frac{Earn_{i,t}}{MVE_{i,t-1}}$$

The calculations and Compustat variable names follow. Market value of equity, *MVE*, is number of shares (CSHPRI:54) multiplied by share price at fiscal year-end (PRCC_F:199). *AdvExp* is advertising expense (XAD:45). *Earn* is earnings before extraordinary items (IB:18) plus interest expense (XINT:15), deferred tax credits (TXDI:50), and investment tax credits (ITCI:51). *R&D* is research and development expenditures (XRD:46). *Assets* is total assets (AT:6). *IntExp* is interest expense. *Div* is common dividends paid (DVC:21). *Lev* is market leverage, defined as long term debt (DLC:34) plus debt in current liabilities (DLTT:9) divided by the sum of market value of equity, long term debt, and debt in current liabilities. *NetFin* is net financing, calculated as equity issuance (SSTK:108) minus repurchases (PRSTKC:115) plus debt issuance (DLTIS:111) minus debt redemption (DLTR:114).

A detailed breakdown of our sample firms by industry affiliation is available upon request.

We follow Faulkender and Wang (2006) and set deferred tax credits (TXDI:50), investment tax credits (ITCI:51), and research and development expenditures (XRD:46) equal to zero if missing. In 1994, the SEC issued FRR44, which no longer required public firms to disclose advertising costs if management deemed the costs immaterial. We follow previous literature (Grullon, Kanatas, and Weston 2004; Luo and de Jong 2012; Singh, Faircloth, and Nejadmalayeri 2005; Vitorino 2014; Wang, Zhang, and Ouyang 2009) and drop observations with advertising expenditures that are missing or that equal zero.

We thank the editor for suggesting this addition to our analysis.

We include the final sample year of 2010 in the second decade.

Although untabulated, we include the term *Dec90s* in the model as well as the interaction.

The variable *1991-1995DV* is a dummy variable set equal to 1 if the observation occurred in fiscal year 1991 through 1995, 0 otherwise. The other five-year subgroup dummies are defined similarly.

The potential for collinearity problems, due to the length of our unbalanced panel, precludes us from presenting a pooled model with interactions between the annual time dummies and *AdvExp*.

Readers interested in inefficient advertising practices will find helpful the discussion and analysis provided by Luo and Donthu (2003).