We examine the asset value of advertising expenditures for a sample of 320 firms with reported advertising expenditures for each of the 10 consecutive years ending in 1994. We find that, depending upon the industry, changes in advertising expenditures are significantly associated with earnings up to five years following the year of the expenditure. Furthermore, the asset values are significantly associated with the market values of the firms. Across all industries, the asset value of advertising expenditures appears to have a 3-year life with the greatest value on the current year and declining value in subsequent years. Asset values are found to be longest lived in the consumer products and industrial products industries and shortest lived in the sales and services industry.

This article makes four contributions to the literature on advertising expectations. First, it looks at the multiperiod rather than single-period effects of advertising. Studies in our review used single-period advertising models, which limit generalizability of their results. The second contribution is derived from the first; by using a multiperiod model, we can estimate asset value directly from future earnings rather than infer it from the size of single-period coefficients relating advertising and market value. Third, we avoid a logical inconsistency that arises when advertising asset value is implied from its relation with market value in a single regression model. Because market prices are determined largely by reported financial variables, it is circular to suggest that those same variables are derived from market values. Fourth, this study takes the form of future cash flows, which derive from future sales. Future sales are influenced by advertising expenditures, which alter customer preferences for particular products or vendors. Evidence for the asset value of advertising expenditures is mixed. While some studies support the notion of advertising asset value (e.g., Peles, 1970; Hirschey, and Weigandt, 1985; Green, Barclay and Ryan, 1995; Chauvin and Hirschey, 1993; Lev and Sougiannis, 1996), others do not (e.g., Bublitz and Ettredge, 1989; Erickson and Jacobson, 1992; Aaker and Jacobson, 1994). None of the studies directly measures the future effect of advertising expenditures. Our first goal therefore is to extend prior research by establishing a link between advertising expenditures and future earnings. Connecting current-year advertising expenditures with future earnings provides a reasonable estimate of the asset value of advertising expenditures. The relation between asset value and market value is well established (Ball and Brown, 1968), and a connection should exist between items contributing to asset value—in our case advertising expenditures—and market value. Therefore, our second goal is to examine whether advertising assets, as derived from the association between advertising expenditures and future earnings, are associated with firm value.

Advertising is one of the most visible and least understood of a firm's marketing expenditures. Budgets over $60 billion were allocated to advertising media by the top 200 consumer products advertisers in 1995. In that same year, Proctor & Gamble alone spent $2.7 billion on advertising (Leading National Advertisers, 1996), and business-to-business advertising exceeded $11 billion for the category (Kosek, 1996). Firms that allocate large amounts of their resources to advertising expect their expenditures to contribute, ultimately, to the financial performance of the firm. In this study, we examine the effect of advertising expenditures on financial performance by measuring the contribution made by year-to-year differences in advertising expenditures to the asset values and subsequent market values of publicly traded firms. Relations among advertising and financial performance are investigated over time and across industries.

For advertising expenditures to have asset value, they must result in an expected future benefit to the firm. The benefit...
associates advertising asset value with market values after deriving direct effects. This procedure provides added confidence in results supporting the asset value of advertising.

Prior Research

Research related to the asset value of advertising can be categorized into studies of the direct benefits of advertising, studies of the associations between firm market value and advertising intensity, and studies of associations between stock returns and advertising intensity.

Direct Benefits

Direct benefit studies measure the relation between advertising expenditures and hypothesized future benefits. Peles (1970) reported an association between current-year sales and advertising expenditures from up to 3 years prior to the current year. More recently, Green, Barclay, and Ryan (1995) examined determinants of long-term performance of entrants into the software industry and found significant and long-lived benefits to advertising among word processing suppliers. They found no future benefits, however, for entrants in the business graphics market, a result they attributed in part to the structural differences between the two markets during their product introduction phases.

Tellis and Weiss (1995) found no current period effects from advertising, but a number of limitations restrict generalizability of the study’s results. The data were restricted to one product category (laundry detergent) and television advertising—a small subset of the companies and industries that rely on various advertising media to produce long-term benefits. Data were also heavily biased toward one company, Proctor and Gamble, which provided 50% of the purchases and television exposures in the sample. Additionally, the time frame (just over 1 year) was too short to isolate long-run effects, which may be present if direct effects, such as buyer awareness and brand loyalty, extend into future periods.

Market Value

Market value studies are based on the efficient market hypothesis (EMH) (Fama, 1970), which suggests that a firm’s market value is “the present value of all expected cash flows from a firm’s assets and, at any given time, reflects all the available information about a firm’s current and future profit potential” (Agrawal and Kamakura, 1995, p. 57). In the context of the EMH, if market participants value advertising based on advertising’s future benefits, the relation can be detected statistically by coefficients of association between current advertising expenditures and current market values that are greater than one. Coefficient estimates reported by Hirschey and Weygandt (1985), Chauvin and Hirschey (1993), and Lev and Sougiannis (1996), all of which exceed 1.0, support the notion that current advertising expenditures represent future market value.

Associations between Stock Returns and Advertising Intensity

Studies of association between stock returns and advertising intensity also rely on the EMH. Because market value is assumed to reflect all publicly available information, an association between price changes (returns) and advertising should include the market’s perception of the creation of new value from advertising expenditures. Recent research conducted in this area shows either a negative association (Bublitz and Ettredge, 1989) or no association (Erickson and Jacobson, 1992; Aaker and Jacobson, 1994) between advertising and market returns when earnings changes or returns on investment are included as explanatory variables. Returns studies, however, probably provide a weak test of the value of advertising. Earnings changes are a poor proxy for changes in market participants’ expectations of future profitability; only “unexpected” changes in future cash flows would show up in associations with current-year returns.

Estimating the Advertising–Earnings Relation

The advertising-earnings relation is estimated from the fundamental relation between assets and the earnings they generate. For accounting purposes, assets generally are categorized as tangible (i.e., assets with physical substance) or intangible (i.e., assets without physical substance). Following Lev and Sougiannis (1996), we show the asset-earnings relation as [Eq. (1)]:

\[
\text{Earnings}_{it} = g(T\text{Assets}_{it}, I\text{Assets}_{it}),
\]

where \( g \) represents the earnings process, \( T\text{Assets} \) the tangible assets, and \( I\text{Assets} \) the intangible assets of firm \( i \) in year \( t \).

Although earnings, tangible asset, and certain intangible asset (e.g., purchased goodwill) values are recorded by a firm’s accounting system, other intangible assets are not. Accounting regulations require both advertising and research and development (R&D) expenditures to be expensed as incurred. If, however, advertising and R&D expenditures contribute to future earnings, it follows that earnings in any particular year are determined to some extent by both prior-year and current-year expenditures. If so, equation 1 can be expanded to [Eq. (2)]

\[
\text{Earnings}_{it} = g(AT\text{Gassets}_{it}, \text{RDassets}_{it}, \text{ADasset}_{it}),
\]

where \( AT\text{Gassets} \) equals the tangible and intangible assets recorded by firm \( i \)’s accounting system, \( \text{RDasset} \) equals the R&D asset and \( \text{ADasset} \) equals the advertising asset.

By definition, the asset value of advertising and R&D expenditures is the contribution of each year’s expenditures to future earnings. Lev and Sougiannis (1996), for example, show the R&D asset (\( \text{RDasset} \)) as \( \sum_{k=0}^{n} \eta_{i,t-k} \cdot \text{RD}_{i,t-k} \) where \( \eta_{i,t-k} \) is the contribution of a dollar in R&D expenditure in year \( t-k \) (\( k = 0, \ldots, n \)) to earnings in year \( t \). We also express the R&D asset as the sum of yearly asset values and expand the Lev and Sougiannis definition to advertising assets (because of data restrictions, Lev and Sougiannis use current-year advertising...
This allows us to estimate the contribution of advertising to earnings results using net income and operating income after taxes because they represent, to some extent, discretionary spending. An instrumental variable, thereby solving regression problems produced by tangible and intangible assets. Depreciation, advertising, and R&D expenses may overemphasize the effect of certain year’s advertising. The relation between advertising expenditures and negative net worth is undefined. We require 10 years of continuous data on advertising expense in 1994, 320 reported in each of the 10 years represented in our sample. Our requirement of 5 years of current and prior advertising expense for each year’s earnings results in 1,600 possible firm-years from 1990 through 1994. Of the 1,600 possible firm-years, 96 are excluded because of missing financial statement data on the Compustat tape. The final sample includes 1,504 available firm-years to estimate the contribution of advertising expenditures to earnings.

The sample is divided into three categories of firms: consumer products firms (selling products to final consumers), industrial products firms (selling manufactured products to other firms), and sales and services firms (retail, wholesale, and other service providers). Precedent for these classifications comes from studies by Blasubramanian and Kumar (1990) and Zinkhan and Cheng (1992). Blasubramanian and Kumar’s regression correlates for market growth and market share on marketing communication intensity varied by consumer, industrial, and service market classifications. Zinkhan and Cheng found similar differences for advertising expenditures, with firms selling products to final consumers spending more on advertising than firms selling products to other firms, and manufacturers spending more than service providers.

To determine each firm’s category, we examined its Schedule 10-k, which includes a section describing a firm’s business and its largest markets. All publicly traded companies must file Schedule 10-k reports electronically with the Securities and Exchange Commission (SEC). The SEC provides the reports in its Edgar database, which files on the Internet.

The Earnings Regression
We operationalize equation 3 with the following regression model:

\[ Earnings_{it} = \beta_0 + \beta_{AD}AD_{it-k} + \beta_{RD}RD_{it-k} + \varepsilon_{it} \]

All variables are inflation adjusted to equate all values in real terms to 1985 dollar values (the first year in the sample). Earnings are measured as operating income before depreciation, advertising, and R&D expenses. Operating income (sales less cost of sales) is used as the measure of the earnings produced by tangible and intangible assets. Depreciation, advertising, and R&D expenses are added back to operating income because they represent, to some extent, discretionary write-offs of recorded and unrecorded assets (however, regression results using net income and operating income after depreciation, advertising, and R&D expenses are qualitatively similar). D91, D92, D93, and D94 are yearly indicator vari-

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Table 1. Sample Selection

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of Firms</th>
</tr>
</thead>
<tbody>
<tr>
<td>1994</td>
<td>871</td>
</tr>
<tr>
<td>1993</td>
<td>802</td>
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<tr>
<td>1992</td>
<td>709</td>
</tr>
<tr>
<td>1991</td>
<td>617</td>
</tr>
<tr>
<td>1990</td>
<td>546</td>
</tr>
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<td>1989</td>
<td>486</td>
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<tr>
<td>1988</td>
<td>430</td>
</tr>
<tr>
<td>1987</td>
<td>396</td>
</tr>
<tr>
<td>1986</td>
<td>357</td>
</tr>
<tr>
<td>1985</td>
<td>320</td>
</tr>
</tbody>
</table>

Panel B: Number of Available Firm Years

- Total firm-years available (320 by ten years): 3,200
- Firm-years available to estimate asset values (320 by 5 years): 1,600
- Firm-years excluded because of missing financial statement data: 96
- Firm-years available for the advertising-earnings regression: 1,504
- Firm-years excluded because of missing market values or negative net worth: 134
- Firm-years available for the advertising-market value regression: 1,370
ables included to control for year-specific effects. ATGassets includes the accounting values for plant and equipment, inventories, and unconsolidated subsidiaries.

R&D expense, which is a significant unrecorded asset, would likely result in a missing variable problem in our regression if not included in equation 4 (Lev and Sougiannis, 1996). However, R&D expenditures are reported by fewer than 50% of the firms in our sample (approximately 51% of the consumer products companies, 85% of the industrial products companies, and 15% of the sales and service companies). For this reason, we use the Lev and Sougiannis (1996) estimates (the \( \eta \)) of the yearly contribution of R&D expenditures to current earnings. The sum of the yearly reported R&D values multiplied by their yearly contribution to earnings forms the RD\(_{t-5:t+1}\) variable in the earnings regression (i.e., RD\(_{t-5:t+1} = \sum_{\eta_{t-5:t+1} \cdot RDi,t + 1} \)).

Year-to-year differences in advertising expenditures are used to measure changes in advertising. We use the amount of advertising change rather than the total amount of advertising because of the high correlation among year-to-year advertising expenditures. Inflation adjusted changes in advertising are likely to be much less correlated with following years’ advertising changes. Low Pearson correlations (the largest equals -0.2116 between ADchg\(_{i,t-1} \) and ADchg\(_{i,t-2} \)) suggest the reasonableness of this assertion.

As a precaution against heteroscedasticity, we standardize (i.e., divide) all variables, including the intercept and yearly indicator variables, by current-year sales. While successful (the chi-square test for each regression fails to reach statistical significance at \( \alpha = 0.10 \)), it is noted that regressions run with undeflated variables produce similar results. In addition, standard cutoff rules as identified in Belsley, Kuh, and Welsch (1980) fail to identify any unduly influential observations, providing further assurance against the presence of heteroscedastic error terms.

### Earnings Regression Results

Panel A of Table 2 presents the earnings regression results for the combined sample, the consumer products firms, the industrial products firms, and the sales and services firms. The coefficient relating operating assets to earnings (\( \beta_i \)) is statistically significant (\( \alpha = 0.05 \)) in all four regressions, as is the coefficient relating the contribution of R&D expenditures to earnings (\( \beta_i \)). These coefficients are largest for the industrial products category, which is not surprising given the large investment in fixed assets and the importance of R&D to firms in that group.

Regression results provide general evidence of advertising asset values in that advertising expenditures contribute to earnings for more than one period. The results in the all companies regression suggest that across consumer products, industrial products, and sales and service industries, advertising expenditures have a 3-year asset life. Advertising has the greatest contribution in the year of the expenditure and then declines over subsequent years.

When examined by group, however, advertising asset lives vary. Sales and services companies show the fewest advertising asset years, with significant coefficients in only the first 2 years of advertising changes. Coefficients rapidly decline in size after the first year. The short-term life of advertising in this group of firms may be explained by the shorter term advertising objectives among those companies (e.g., retailers advertising 2 days prior to a weekend sale). Consumer products firms show an average 4-year advertising asset life with the first 2 years showing coefficients close in size. The similarly sized coefficients over the first 2 years suggest that advertising has a strong 2-year effect with the third-year effect about one-half of either of the first 2 years’ effects. This industry also has the largest average advertising-to-sales ratio; greater advertising expenditures in this group may contribute to the strong effect in the second year. Industrial products firms show advertising coefficients generally remaining around two rather than decreasing over time. In addition, each coefficient is statistically significant, even into years 4 and 5. These results may reflect long product lives and thus long advertising asset lives in this industry.

First-year advertising coefficients are greater than one for relations between advertising changes and earnings across all four regressions in panel A. Coefficients greater than one imply that the contribution of a change in advertising expenditure exceeds the nominal value of the expenditure, which suggests that advertising can create value if the present value of this benefit exceeds its cost. The sales and services industry receives the largest value for its advertising expenditures, with a first-year contribution of 3.174 times the advertising change.

### Estimating the Advertising–Firm Value Relation

To test the economic significance of advertising assets, we use a valuation method based on the theoretical work of Tobin (1978). The Tobin method describes the equality of a firm’s market value and the market value of its net assets. The value of a firm in the Tobin context is expressed as [Eq. (5)]:

\[
\text{Market Value}_{it} = q(\text{Assets}_{it} - \text{Liabilities}_{it})
\]

where Market Value\(_{it}\) equals the market value of firm i at time t, q is a multiplier (hypothetically equaling one), and Assets - Liabilities equals the firm’s net assets.

A firm’s market value seldom equals the accounting value of its net assets. The inequality between market value and accounting value stems from two characteristics of accounting regulations. First, accounting requires assets to be recorded at their acquisition cost and asset values are amortized over time (thus q is generally greater or less than one). Second, accounting requires objective evidence of an asset’s value before it can be recorded. As values for advertising and R&D assets are not considered objective by accounting standards, advertising and R&D expenditures are expensed in the year they are incurred rather than capitalized as assets. Adding unrecorded R&D and advertising assets to equation 4 obtains [Eq. (6)]:
Table 2. The Earnings and Market Value Regressions by Product Type

Panel A: The Advertising-Earnings Relation by Product Type

\[
\text{Earnings}_t = \beta_0 + \beta_1 \text{ATGassets}_{t-1} + \beta_2 \text{RDasset}_{t-1} + \beta_3 \text{ADasset}_t + \epsilon
\]

<table>
<thead>
<tr>
<th></th>
<th>( \beta_0 )</th>
<th>( \beta_1 )</th>
<th>( \beta_2 )</th>
<th>( \beta_3 )</th>
<th>( \beta_4 )</th>
<th>( \beta_5 )</th>
<th>( n )</th>
<th>( \text{Adj. } R^2 )</th>
</tr>
</thead>
<tbody>
<tr>
<td>All companies</td>
<td>-0.008</td>
<td>0.221</td>
<td>0.680</td>
<td>1.589</td>
<td>1.508</td>
<td>0.854</td>
<td>0.310</td>
<td>0.250</td>
</tr>
<tr>
<td>Consumer products</td>
<td>0.429</td>
<td>0.237</td>
<td>2.000</td>
<td>1.474</td>
<td>1.538</td>
<td>0.993</td>
<td>0.718</td>
<td>0.468</td>
</tr>
<tr>
<td>Industrial products</td>
<td>-0.099</td>
<td>0.265</td>
<td>0.454</td>
<td>2.099</td>
<td>2.520</td>
<td>1.747</td>
<td>2.080</td>
<td>0.420</td>
</tr>
<tr>
<td>Sales and services</td>
<td>0.030</td>
<td>-0.180</td>
<td>0.856</td>
<td>3.174</td>
<td>1.61</td>
<td>0.297</td>
<td>-0.124</td>
<td>-0.114</td>
</tr>
</tbody>
</table>

Panel B: The Advertising-Market Value Relation by Product Type

\[
\text{Market Value}_{it} = \beta_0 + \beta_1 \text{NETassets}_i + \beta_2 \text{RDasset}_t + \beta_3 \text{ADasset}_t + \epsilon
\]

<table>
<thead>
<tr>
<th></th>
<th>( \beta_0 )</th>
<th>( \beta_1 )</th>
<th>( \beta_2 )</th>
<th>( \beta_3 )</th>
<th>( \beta_4 )</th>
<th>( \beta_5 )</th>
<th>( n )</th>
<th>( \text{Adj. } R^2 )</th>
</tr>
</thead>
<tbody>
<tr>
<td>All companies</td>
<td>-0.714*</td>
<td>2.150</td>
<td>2.690</td>
<td>0.839</td>
<td>1370</td>
<td>0.61</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Consumer products</td>
<td>0.436*</td>
<td>2.279</td>
<td>2.288</td>
<td>0.312</td>
<td>521</td>
<td>0.65</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Industrial products</td>
<td>-1.641</td>
<td>1.693</td>
<td>6.112</td>
<td>1.399</td>
<td>402</td>
<td>0.37</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sales and services</td>
<td>0.138*</td>
<td>2.230</td>
<td>3.189</td>
<td>11.882</td>
<td>447</td>
<td>0.66</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

\* = not significant (\( \alpha = 0.05 \)); statistics are derived using White’s (White, 1980) consistent covariance estimates.

Notes: Consumer product companies sell primarily to final consumers. Industrial product companies sell primarily to other businesses. Sales and service companies include retail, wholesale, and service companies.

For the advertising earnings regressions in panel A, earnings equal operating earnings plus advertising and research and development expenditures, ATGassets equals beginning of the year plant and equipment, inventory, and long-term investments, RD equals the 5-year contribution of research and development expenditures to earnings, and ADAsset equals changes in advertising expenditures.

For the market value regressions in panel B, market value equals end-of-year share price multiplied by number of common shares outstanding and NET assets equals assets minus liabilities and preferred stock. RDAsset equals the 5-year asset value of research and development expenditures derived from the regression shown in panel A. ADAsset equals the asset value of advertising expenditure changes derived from the regression results shown in panel A.

All regressions include four dummy indicator variables for years 1991 through 1994 (not shown) to control for year effects.

To reduce heteroscedasticity all variables including the intercepts and dummy variables are divided by sales.

\[
\text{Market Value}_t = q_1 (\text{Assets}_t - \text{Liabilities}_t) + q_2 \text{RDasset}_t + q_3 \text{ADasset}_t + \epsilon \quad (6)
\]

where RDAsset equals an unrecorded R&D asset and ADAsset equals an unrecorded advertising asset and \( q_1, q_2, \) and \( q_3 \) equal appropriate multipliers.

The Valuation Regression

We operationalize equation 6 with the following regression model [Eq. (7)]:

\[
\text{Market Value}_t = \beta_0 + \beta_1 \text{D91} + \beta_2 \text{D92} + \beta_3 \text{D93} + \beta_4 \text{D94} + \beta_5 \text{NETassets}_t + \beta_6 \text{RDasset}_t + \beta_7 \text{ADasset}_t + \epsilon \quad (7)
\]

We measure MarketValue by multiplying the end-of-year share price by number of common shares outstanding, NETassets is equal to recorded assets less recorded liabilities and preferred stock. Both RDAsset and ADAsset are calculated by summing prior-year expenditures’ remaining contributions to earnings in the following fashion. First, the contributions of advertising expenditures are derived from our earnings regressions. Panel A of Table 2, for example, indicates that advertising expenditures in the consumer products industry contribute to earnings for up to 4 years. Current-year expenditures in that industry will contribute to earnings for 3 more years, the prior-year’s expenditures will contribute for 2 more years and the expenditures of 2 years prior for 1 more year. The average Consumer Products industry advertising asset therefore is calculated as [Eq. (8)]:

\[
\text{AdChgt}_{t-1} \cdot (1.538 + 0.933 + 0.718) + \text{AdChgt}_{t-2} \cdot (0.933 + 0.718) + \text{AdChgt}_{t-3} \cdot (0.718) \quad (8)
\]

R&D asset values are similarly calculated using the \( \alpha \) estimates given in Lev and Sougiannis (1996) for the years in our sample. ADAsset is not significantly correlated with either NETassets or RDAsset.

Valuation Regression Results

Panel B of Table 2 presents the results of the valuation regressions. The number of firm-years is less than in the earnings regression because we exclude 134 firms with missing market value data or negative net worth (see Table 1).
As expected, and consistent with EMH research, the coefficients relating net assets to market value ($b_1$) are significant in all four regressions. The $b_1$ coefficients are all greater than one, suggesting that accounting values are significantly less than their market values. Also as expected, and consistent with Lev and Sougiannis (1996), the coefficients relating the R&D assets to market value ($b_2$) are significant in all four regressions. The $b_2$ coefficients are large, ranging from 2.288 in the consumer products industry to 6.112 in the industrial products industry. The larger $b_2$ coefficient for the industrial oproducts industry suggests the greater importance of R&D for firms in that industry.

The results also provide evidence that market participants consider advertising assets when valuing firms. All regressions show a statistically significant relation between firm market value and advertising asset value. The coefficient relating the advertising asset to market value ($b_3$) for the firms in the sales and services industry is quite large (11.882), suggesting the importance of the 2-year advertising effect to the firms in this industry. The smallest $b_3$ coefficient is in the consumer products industry.

Concluding Remarks

This study examines the asset value of advertising expenditures for 320 firms with reported advertising expenditures for each of the 10 consecutive years ending in 1994. We find that, depending upon the type of product, changes in advertising expenditures are significantly associated with earnings up to 4 years following the year of the expenditure. Across the combined industries in our sample, the asset value of advertising expenditures appears to have a 3-year life, and advertising assets are associated with market value. Overall, advertising asset value is greatest in the current year and declines uniformly in subsequent years. Asset values are longest lived in the industrial products industry and shortest lived in the sales and services industry.

Our results show that real dollar advertising changes are associated with future earnings and with market values. This suggests that the effects of increasing or decreasing advertising expenditures in real terms can be very long lived. In this sense, then, our results provide a strong indication of the contribution of advertising expenditures to earnings and market values.

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