The Debate over Doing Good: Corporate Social Performance and Firm-Idiosyncratic Risk (08-111)
Xueming Luo and C.B. Bhattacharya

Does a Firm’s Product Recall Strategy Affect Its Financial Value? (08-112)
Yubo Chen, Shankar Ganesan, and Yong Liu

Expanding the Role of Marketing: From Customer Equity to Market Capitalization (08-113)
V. Kumar and Denish Shah

Marketing and Shareholder Value: Sales Capitalization and Its Estimation (08-114)
Oliver Kim, Steve C. Lim, and Robert F. Lusch

Valuing Branded Businesses (08-115)
Natalie Mizik and Robert Jacobson

Innovation and the Ratchet Effect: How Firms Trade off Value Creation in Financial and Product Markets (08-116)
Christine Moorman and Fredrika J. Spencer
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Marketing and Shareholder Value: Sales Capitalization and Its Estimation

Oliver Kim, Steve C. Lim, and Robert F. Lusch

This approach links customer value to shareholder value by measuring how sales changes are translated into earnings changes and, ultimately, higher shareholder returns. The method offers a new tool to managers seeking firm-level estimates of profitable sales in the short and long run.

Report Summary
As marketers strive to uniquely identify the value of marketing, they increasingly focus on intangible or off-balance sheet assets such as customer equity or value and customer relationship management. Here, authors Kim, Lim, and Lusch propose an approach to link customer value to shareholder value. This approach, which is aggregate in nature and intended for firm-level strategic marketing and financial planning, is simple and relatively easy to implement for publicly traded firms.

They introduce the concept of sales capitalization, which is how sales increases (i.e., marginal sales) translate into increased returns to shareholders. Their study measures how sales changes are translated into earnings changes and ultimately into changes in earnings capitalization or share price. In addition, they model how advertising, research and development, the cash cycle, intangible assets, and gross margins influence the capitalization of sales and thus the enhancement of shareholder returns.

They estimate their model on a sample of 949 firms with accounting data in the annual Compustat and stock returns data in monthly CRSP from 1990–2006. Results demonstrate that earnings supported by sales are significantly more valuable to shareholders than the non-sales component of earnings.

The sales margin/margin capitalization planning model should be of use to CMOs, CFOs, and CEOs in integrating marketing and financial strategies and in providing an objective way of estimating the extent to which firms at an aggregate level are developing profitable sales in the short and long run. This method should be added to those used by the CMO, CFO, and CEO to allocate resources to marketing programs and efforts to generate sales and enhance firm value.
Introduction

With increasingly global competitive pressures, enterprises are more carefully examining the cost, investment, and return on business processes. At the same time, the marketing function has been mandated to generate continued sales growth and to contribute to stock market performance. However, the resulting focus on weekly, monthly, or quarterly sales performance has failed to produce sustainable profitable sales gains, as marketing tactics have prevailed over strategic marketing (Pauwels, Hanssens, and Siddarth 2002; Webster 1992; Bolton 2006).

Information technology may have stimulated this trend toward tactics because it is easier to measure the short-term gains from marketing promotions than to measure the long-term gains from strategic marketing investments. Unfortunately, this trend may encourage the marketing profession to revert to the sales and promotional tactics of earlier eras, before the emergence of the marketing concept. Some research suggests that while marketing promotions and price incentives may be saleseffective, they adversely affect customer equity or do not help long-term performance (Yoo and Hanssens 2005; Pauwels, Hanssens, and Siddarth 2002).

In response, some commentators and scholars suggest that marketing should become a general management responsibility rather than an organizational function focused on tactics and execution (Bolton 2006). Interestingly, this supports Drucker’s (1954) argument a half-century ago that the two fundamental purposes of organizations are to innovate and create customers, and that everyone in the firm and all business processes should be integrated and designed toward this end. The preceding is generally referred to as a move to big “M” from small “m,” or, alternatively, marketing as a general management responsibility vs. a functional activity. Essentially, it argues that everyone in the firm should be focused on customers, since they are the only source of sales, and without sales, there can be no profit and no growth of firm value (i.e., equity).

Coupled with this trend, and with increased accountability and global competitive pressures, the financial impact of marketing has received more scrutiny and increased attention from marketing scholars (Capon, Farley, and Hoening 1990; Lehmann and Reibstein 2006; Srivastava, Shervani, and Fahey 1999). Striving to uniquely identify the value of marketing and customers (big “M”), marketing has been increasingly connected to intangible or off-balance sheet assets (Lusch and Harvey 1994; Srivastava, Shervani, and Fahey 1998), with customer equity or value being most paramount (Blattberg, Getz, and Thomas 2001; Rust, Zeithaml, and Lemon 2001; Rust, Lemon, and Zeithaml 2004; Gupta, Lehmann, and Stuart 2004). It has also been connected to customer relationship management (CRM).

A move to big “M” requires new models to show the value of customers to the firm and to link shareholder value and customer value (i.e., Payne and Frow 2005). We offer a model toward this end. We begin by stating our belief and central assumption, that the primal source of firm value is the customer, the only sustainable source of sales revenue, and hence, profitability. The method and model developed provide an objective way of estimating the extent to which firms at an aggregate level are developing profitable sales in the short- and long-run. Thus, this method, coupled with other methods, should be added to the models and tools that the CMO, CFO, and CEO use to appropriately allocate resources to marketing programs and efforts to generate sales and enhance firm value.

We believe the method developed in this research can improve the link between marketing and finance. Marketing is traditionally the functional area responsible for creating customers (i.e., sales). Finance is the business
function traditionally thought of as relating to allocating financial resources to enhance stockholder value. Over the last two decades, with the development of customer relationship management (CRM), firms view customers as assets and sources of cash flow and attempt to manage relationships with them to enhance these cash flows. Thus marketing can be viewed as the business function that should link customer value with shareholder value.\(^1\) Many techniques and software programs, often under the rubric of “CRM,” have been developed to model and track the value of an individual customer or market segment; however, there continue to be fundamental questions related to the dominant drivers of sales revenue and how sales revenue relates to customer equity and firm value (Lehmann and Reibstein 2006). We develop a method to estimate the marginal sales capitalization (i.e., how much returns to shareholders rise from a one dollar rise in sales) which we hereafter simply refer to as “sales capitalization,” as well as an assessment of some of the fundamental drivers or determinants of the sales capitalization rate.

Our research comes at an appropriate time: marketing’s influence in the firm is receiving increased attention (Homburg, Workman, and Krohmer 1999; Moorman and Rust 1999; Nath and Mahajan 2008; O’Sullivan and Abela 2007; Webster 1992), as is the importance of marketing metrics and financial performance (Capon, Farley, and Hoening 1990; Lehmann and Reibstein 2006; Luo 2007; McAlister, Srinivasan, and Kim 2007; Mizzik and Jacobson 2003; O’Sullivan and Abela 2007; Srivastava, Shervani, and Fahey 1999). Further, a review of research by Lehmann and Reibstein (2006) finds that customer lifetime value drives stock price and firm valuation, and additional evidence would help solidify these findings.

Our approach differs from recent approaches to measure total customer equity such as Rust, Lemon, and Zeithaml (2004) and Gupta, Lehmann, and Stuart (2004), or to allocate marketing resources toward different marketing programs (Ailawadi, Lehmann, and Neslin 2001; Venkatesan and Kumar 2004) or between the acquisition and retention of customers (Reinertz, Thomas, and Kumar 2005). We propose an approach that is more aggregate in nature and intended for firm-level strategic marketing and financial planning (i.e., big “M” in nature). Importantly, the approach is simple and relatively easy to implement for publicly traded firms.\(^2\) The proposed approach moves beyond survey or qualitative data by using the financial performance of the firm and linking this to how capital markets value the firm’s equity in response to sales and marketing activity. In brief, the proposed study will measure how sales changes are translated into earnings changes and ultimately into changes in earnings capitalization or share price. In addition, we are able to model how advertising, research and development, the cash cycle, intangible assets, and gross margins influence the capitalization of sales and thus the enhancement of shareholder returns.

**Theoretical Background**

It is not unusual for the CEO and/or CFO to be presented with competing proposals to enhance the financial performance of the firm. For instance, as Rust, Moorman, and Dickson (2002) suggest, these proposals often can be focused on efficiency gains (cost reduction) or improved customer service or quality and hence effectiveness (revenue gains). As these authors suggest, the CFO may simply look to which proposal delivers the best improvement in earnings or earnings per share, arguing that the only concern of shareholders is earnings per se. However, Rust, Moorman, and Dickson (2002) show empirically that firms that adopt primarily a revenue expansion strategy create higher financial returns than firms that emphasize cost reductions or a dual emphasis on cost reduction and revenue.
expansion. Over the last decade, in an attempt to better define and measure the influence of improved customer service, quality, and a host of other marketing programs, firms have adopted CRM programs and information systems. As a result, as we argued in the Introduction, marketing executives are becoming more financially savvy in defending and lobbying for financial investments in marketing. However, despite the widespread acceptance of CRM techniques and their usefulness for negotiating or justifying funds to support a specific marketing program, it is also critical to have both the concepts and tools or methods to argue persuasively and logically for long-term strategic investments in marketing efforts for the entire organization.

It would seem straightforward and simple to show the economic value of earnings and sales gains. For instance, traditionally, financial analysts and investors compute a variety of measures in assessing firm performance. One of the more common measures is a firm's price-to-earnings multiple or what is termed the P/E ratio. One could also estimate a linear regression with stock price per share as the dependent variable, and earnings per share as the independent variable, and usually get respectable results (Kothari and Zimmerman 1995).

However, it is well known that sales is a key determinant of earnings and business success, and investors and financial analysts also often compute the price-to-sales or P/S ratio and argue that this ratio shows how sales are capitalized and contribute to market capitalization. Once again, if one estimates a linear regression between stock price per share and sales per share, the results are also respectably strong (Jegadeesh and Livnat 2006). Because the sales information is often valuable as well as the earnings knowledge, most firms provide both earnings and sales forecasts (Swaminathan and Weintrop 1991). However, simply examining or computing the P/E and P/S ratios can be misleading for various reasons, which we will explore below. In addition, these simple and easy to compute measures may not be very convincing to the CEO and CFO when marketers are lobbying for budgets. Further, they may not be convincing indicators of the broad strategic and long-term investments the firm should make in revenue growth and cost reductions.

To separate out the unique contribution of sales vs. expenses or the net difference (i.e., profit) on stock returns would seem to be quite straightforward. It would appear that the analyst could estimate a multiple regression equation with stock price as the dependent variable and earnings per share and sales per share as independent variables in an attempt to separate out the influence of sales on share prices while controlling for earnings per share. Unfortunately, the results will be misleading for the reasons indicated below.

It is well known that earnings are determined by more than sales and sales-related costs; for instance, external shocks to the firm can create cost surprises, which can in turn distort earnings per share. For this reason, one cannot simply look at earnings per share as related to stock or market valuations and get a good sense of the contribution of marketing to firm value. Ideally, one would want to be able to distinguish between the component of earnings that is supported by sales and the component that is due to other earnings surprises and to examine their differential effects on stock prices or market valuations (Kim, Lim, and Park 2008). However, to compute these effects by regressing stock prices on sales and expenses (the components of earnings) results in unstable regression coefficients because, at the aggregate firm level, sales and expenses are highly positively correlated (often above .90) and therefore, the regression coefficients are often quite similar. Furthermore, when these empirical relationships are estimated, the similar value of the estimated regression coefficients is misleading and suggests that both sales and cost management are equally important to market valuation (Kim, Lim, and Park 2008). However, simple logic would suggest
that an efficient capital market would not value sales-supported earnings and non-sales-supported earnings equally. There is a limit to how much a firm can boost earnings via non-sales–related cost reductions; consider, for instance, if a firm cut cost to nothing (but held sales constant), there is a limit to its total profit. However, if a firm could annually increase sales (while holding cost per unit of sales constant), then, over the long term, profits could continue to grow and not reach a limit (Ghosh, Gu, and Jain 2005; Ertimur, Livnat, and Martikainen 2003).

For the reasons outlined above, a technique developed by Kim, Lim, and Park (2008) with further refinements is used to decompose earnings into the sales-related components and sales-unrelated components. With these decomposed earnings (separated into two orthogonal components) and regressing stock prices on them, one is able to estimate how a change in sales affects contemporaneous earnings (sales margin) and how sales margin affects stock price (i.e., margin capitalization).

Theoretical model
The firm-specific relation between earnings and sales can be estimated by regressing annual changes in income ($\Delta Y_{i,t}$) on annual changes in sales ($\Delta S_{i,t}$):

$$\Delta Y_{i,t} = a_0 + a_1 \Delta S_{i,t} + \varepsilon_{i,t}$$

(1)

Both $\Delta Y_{i,t}$ and $\Delta S_{i,t}$ are deflated by the market value of equity at the beginning of the current year to control for the effect of scale differences and to generate an independent variable to be split into two components for Equation 4.3

The subscripts $i$ and $t$ denote the firm index and time period (year), respectively. Essentially, $a_1$ is the marginal sales margin, which hereafter, we refer to as the sales margin (SM), or, alternatively, the profits generated from additional sales of one dollar. Since SM is computed from a long-term time-series that often is over 10 years, it has the advantage of incorporating a long-term view of sales margins. This is important because, in the short run, there could be a variety of operating and macro-environmental factors that could influence SM, and thus, a focus on short-term or annual measures (such as annual net income divided by net sales) may be misleading for considering strategic or longer term investments in marketing.

Also, SM ($a_1$) is preferred to a gross margin ratio or contribution margin that marketing professionals may often use. At first glance, this seems a bit unusual because, logically, the marketing executive will argue that the only costs that matter are the cost of producing, distributing, and selling the product, and overall corporate overhead, and that the costs of other functional departments are irrelevant. However, if one is to argue for big “M” marketing, as we suggested in the outset, then marketing is the responsibility of everyone in the organization; thus, the other costs that, in the long run, are needed to support customers and sales should not be excluded from analysis. Importantly, this is consistent with the goal of developing a model that is not short run or myopic but rather, can be used for long-term strategic investments and planning by CFOs and CMOs.

Once estimates of $a_0$ and $a_1$ are obtained from Equation 1, then we can decompose the annual changes in earnings into two orthogonal components. The first component is the one supported by sales changes (called sales-supported margin or SMAR), and the second is earning changes supported by other factors (called earnings residual from sales or ERFS).

$$\text{SMAR}_{i,t} = a_0 + a_1 \Delta S_{i,t}$$

(2)

$$\text{ERFS}_{i,t} = \Delta Y_{i,t} - a_0 - a_1 \Delta S_{i,t}$$

(3)

Finally, we run the following regression of annual stock returns ($R_{i,t}$) on SMAR and ERFS:

$$R_{i,t} = b_0 + b_1 \text{SMAR}_{i,t} + b_2 \text{ERFS}_{i,t} + \eta_{i,t}$$

(4)
Our interest is in $b$, or what we label the margin capitalization rate (MC), which is how much shareholder returns rise from a dollar of sales-supported profits. Essentially, it is an estimate of how the financial market capitalizes one dollar of profits that were sales driven. We want to point out that Equation 4 is a return-based model specification for investigating the relation between the market value of equity and accounting numbers, and it is why we standardize the independent variable by the market value of equity following Christie (1987).

Finally, the sales capitalization rate (SC or $c_1$ in Equation 5) shows how much returns to shareholders are generated from a one-dollar increase in sales.

$$R_{i,t} = c_0 + c_1 S_{i,t} + \zeta_{i,t}$$  \hspace{1cm} (5)

The Appendix shows algebraically that the sales capitalization rate (SC) or $c_1$ in Equation 5 can be obtained by multiplying SM or the sales margin ($a_1$) by MC or the margin capitalization rate ($b_1$).

Some, and most likely a large proportion of SC, comes from the lifetime value of existing customers, but it can also include how the financial markets believe a firm can attract new customers by penetrating existing markets or market segments or entering new markets. We argue that this is logical because: (1) shareholder returns represent the change in the present value of all undistributed past and current cash flows and future cash flows, and (2) sales capitalization (SC) picks only the part of the cash flows, and thus the part of shareholder return, that are due to current and future sales to customers (existing and new) implied by the current change in sales. Thus, the portion of shareholder returns that change with sales gains can, in part, be considered as a demonstration of the link between marketing (which is used to retain and attract customers) and shareholder returns. Undoubtedly, to the extent that equity price reflects the information and perception of investors, our results depend on the efficiency of the market (i.e., the assumption that investors are sufficiently well informed and rational), and there is plenty of evidence that the equity market is largely efficient in incorporating public information about expected future cash flows. Of course, there are arguments to the contrary and these include studies done in marketing that deal with valuing customers. For instance, Gupta, Lehmann, and Stuart (2004) show that for some firms, such as Amazon.com, during the dot.com or Internet boom of the mid- to late-90s, their market valuation was substantially higher than the valuation determined by their customer equity method. However, they also found that for traditional firms, standard financial valuation methods worked well and test results were robust. In this study, we focus on firms with a long history of being publicly traded and thus exclude the dot.com glamour firms, which substantially crashed when the bubble of speculation was burst. As we will also see later, we exclude firms where the $R^2$ is negative between earnings and stock prices. Importantly, even if the market is inefficient to a degree, the proposed approach at least tells us how the equity market values sales gains, which is by itself relevant to managers and marketing researchers.

Because the method developed is intended for macro-level aggregate firm strategic planning, it cannot be used to isolate where an increase in sales arises. As others have shown, changes in sales can come from such factors as the overall market growing, the churn rate or the percent of customers leaving the market, the retention rate of customers, more frequent and larger transactions by customers, attraction of new customers, and a host of other factors (Bolton, Lehmann, and Verhoef 2004; Gupta et al. 2006; Reinartz, Thomas, and Kumar 2005; Rust, Zahorik, and Keiningham 1995).

Hypotheses
Ideally, firms strive to have a high sales margin (SM), which suggests that, for each dollar of sales, a good return to the bottom line is being
produced (i.e., a good short-run result) and a high-margin capitalization rate (MC), which suggests that the firm is taking actions today to enhance customer value and satisfaction so that existing customers will return in the future and purchase more from the firm and new customers will be attracted to the firm (i.e., a good long-run result). Also, as previously discussed and shown in the Appendix, the SM, when multiplied by MC, yields SC or sales capitalization. Gupta, Lehmann, and Stuart (2004) show that the lifetime value of the customer is a function of the margin each customer produces per period; the discount rate for future cash flows; and the retention rate, the latter which determines how long customers return in future periods. In our analysis, we have separately captured the margin and can assume a certain discount rate. If SC is high, then what is being captured is the ability to retain customers over time and/or attract new customers. The central point is that when SC is high, the financial markets believe the firm has the demonstrated ability to sustain sales gains (either through existing or new customers) long into the future.

A firm should also not ignore how non-sales–induced earnings influence investor returns ($b_2$). However, on a relative basis, one would expect the financial markets to reward sales–induced earnings ($b_1$) more than non-sales–induced earnings ($b_2$) simply because customers can, in principle, continue to return and purchase indefinitely, whereas continuing to increase earnings indefinitely via cost cutting would reach some natural limit. Indeed, the cost-cutting strategy may be viewed by the financial markets as doing long-term harm, in addition to which previous marketing research has shown that revenue gains are more important than expense reductions (Rust, Moorman, and Dickson 2002).

The first hypothesis is:

H1: Sales-induced earnings influence stock returns substantially more than non-sales–induced earnings. Or, stated alternatively: $b_1 > b_2$.

Prior studies have focused on total customer equity or lifetime value. However, for managerial decision-making and resource allocation, a “marginal” (or incremental) approach is useful because most marketing resource allocation decisions deal with marginal benefits and costs. It is, therefore, helpful to theorize on the determinants of the sales capitalization rate (SC). This not only can provide important managerial insights but also is a way of providing a predictive validity test of the method that we develop. In short, if SC is not influenced by what are traditionally viewed and empirically tested means of enhancing customer equity and/or attracting customers, then the overall framework being presented should be suspect.

There is a long history of work in marketing, accounting, finance, and meta-analysis that demonstrates that, generally, advertising and research and development expenditures by a firm have a positive but sometimes mixed impact on the financial performance of the firm in terms of profitability, growth, and reduced variability in performance (Eberhart, Maxwell, and Siddique 2004; Erickson and Jacobson 1992; Capon, Farley, and Hoenig 1990). Mizik and Jacobson (2003) refer to research and development expenditures as value-creation strategies and advertising as value-appropriation strategies. Thus, two additional hypotheses are:

H2a: Sales capitalization (SC) is positively influenced by value appropriation or advertising expenditures.

H2b: Sales capitalization (SC) is positively influenced by value creation or research and development expenditures.

We also believe there are a host of other factors, which would seem to have a logical connection to the sales capitalization rate and also have face validity.
Consider, for example, the cash cycle, which reflects how quickly a firm can convert purchased resource inputs into cash by sales to customers. If a firm wanted to have a quick cash cycle, then it would employ some combination or both of these actions: (1) sell on cash and not finance customers (i.e., lower accounts receivables) or (2) lower investments in inventory. In principle, this appears to be a strategy that would not treat customers very well because cash was demanded for payment and choice was low due to low inventory, and thus, relationships with customers would be damaged or efforts at relationship marketing harmed. This predicts a positive relation between the cash cycle and sales capitalization.

An alternative logic suggests that the customers of companies with strong customer equity would pay on a timely basis and those firms don’t need to offer extended terms of trade. In addition, if a firm was close to its customers and knew them well, it may actually need less inventory because of producing what the customer needs and thus selling it quickly vs. building up unwanted inventory that later needs to be dumped at reduced promotional prices. This predicts a negative relation between the cash cycle and sales capitalization.

This is an especially interesting hypothesis to bridge marketing theory and finance and accounting theory. Importantly, it is generally believed in accounting and finance that having a short cash cycle or operating cycle is good, or is a positive strategy for enhancing firm performance. However, the relational marketing perspective predicts both positive and negative correlation between cash cycle and sales capitalization. Therefore, our next prediction is presented as a two-sided test.

H2c: Sales capitalization (SC) is associated with the cash cycle.

If a firm already has a high degree of either market-based (Srivastava, Shervani, and Fahey 1999) or intangible assets (Lusch and Harvey 1994), then it has generated considerable goodwill and respect among many stakeholders but probably, most importantly, among its customers. In fact, as Bolton (2006) suggests, customer assets and relationships might be divided into the length or duration of a relationship, the depth or usage of the firm’s offerings by the customer, and the breadth or cross-buying across different offerings by the firm. Stated alternatively, if the firm has already considerable customer assets, this can be expected to provide a halo effect and further stimulate the sales rate. Thus we suggest:

H2d: Sales capitalization (SC) is positively influenced by the intensity of intangible assets.

In addition, a firm that has a high gross margin has significant funds to spend, beyond the cost of goods or merchandise sold, to enhance its value proposition. Some of these expenditures include advertising and research and development expenditures, which we have already discussed, but there can be many other general and administrative expenses that can be used to make more compelling value propositions to customers. We, therefore, hypothesize that:

H2e: Sales capitalization (SC) is positively influenced by gross margin.

Sample Selection

Our sample consists of firms with accounting data in the annual Compustat and stock returns data in monthly CRSP during the period of 1990 through 2006. We select all Compustat firms (excluding financial institutions) with annual changes in earnings, annual changes in sales, and the market value of equity available. The maximum number of observations per firm is 16 years because the first year observation (1990) is used for computing changes in earnings and changes in sales. Annual stock return is computed starting on the ninth month prior to the
fiscal year-end and ending on the third month after the fiscal year-end. The initial sample is 2,301 firms when we required companies to have data available at least 10 years out of 16 years. The sample is further reduced to 1,513 firms when we require that each firm has non-negative adjusted $R^2$-squares in the firm-specific regression (Equation 1) and again is further reduced from 1,513 firms to 949 firms when we require that each firm has non-negative adjusted $R^2$-squares in the firm-specific regression (Equation 4). Prior studies document that some firms have negative adjusted $R^2$-squares and/or negative earnings response coefficient (ERC) when they regress stock returns on scaled earnings or earnings changes. For example, Hayn (1995) runs the same regression as Equation 4 without splitting the independent variable into SMAR and ERFS and reports the sample median value. She does not mention the negative values of ERC or adjusted $R^2$-squares (p. 135). Kothari and Zimmerman (1995) report negative values for ERC and explanatory power of the model. However, they don’t report what percentage of their sample firms has negative values (p. 176).

Table 2 reports the firm-specific regression results of Equation 1. It shows that the sales margin ($a_1$) or how much one dollar change in sales boosts earnings, is around 17.6 cents for the average firm and around 13.5 cents for the median firm. The standard deviation (0.419) of $a_1$ shows that there is a wide variation in

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### Table 1

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Median</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales (millions)</td>
<td>2,710</td>
<td>4,719</td>
<td>335</td>
</tr>
<tr>
<td>Income (millions)</td>
<td>152</td>
<td>519</td>
<td>15</td>
</tr>
<tr>
<td>Market value of equity (millions)</td>
<td>3,956</td>
<td>10,253</td>
<td>341</td>
</tr>
<tr>
<td>Cumulative return</td>
<td>22.95%</td>
<td>46.13%</td>
<td>11.15%</td>
</tr>
<tr>
<td>Sales growth (simple)</td>
<td>15.63%</td>
<td>97.18%</td>
<td>9.45%</td>
</tr>
<tr>
<td>Income growth (simple)</td>
<td>52.53%</td>
<td>2,729.00%</td>
<td>6.49%</td>
</tr>
</tbody>
</table>

Note: Cumulative return is the annual stock return starting at the ninth month prior to the fiscal year-end and ending at the third month after the fiscal year-end.
the sensitivity of earnings to sales changes across sample companies.

Q1 (Q3) means the bottom (third) quartile and the Observation row presents the number of years used in each company’s firm-specific time series regression. For example, 14 observations in the Median column of Table 2 means that the median firm in the 1,513 sample companies has used 14 years’ data in estimating Equation 1. Note that the minimum number of years in Table 2 was 10, even after we deleted firm/year observations if any of the three variables (annual stock return, sales changes, and income changes) was greater or less than the three standard deviations from its mean value at the company level to minimize the impact of outliers in our firm-specific regressions.

Table 2 (bottom half) reports the test results on Equation 4. The mean and median columns allow us to test our first hypothesis: that sales-supported earnings influence stock returns substantially more than non-sales-supported earnings. In brief, we expect that $b_1$ is greater than $b_2$. The first hypothesis suggests that, for an average firm, the stock return is more sensitive to the earnings change component supported by sales change (SMAR) than the earnings change component supported by other factors (ERFS).

We find that the mean value across the 949 firms in our sample for $b_1$ is 7.339 and the mean value for $b_2$ is 3.451. Furthermore, we find that 582 firms (61.3%) have $b_1$ greater than $b_2$ and 367 firms (38.7%) have $b_1$ less than $b_2$. However, the statistical significance at the .05 level was observed for 175 firms (30.1%) in the first group and 78 firms (21.2%) in the second group. A pooled time-series and cross-sectional regression on 11,852 firm/yearsof949 firms shows $b_1$ coefficient of 2.205 and $b_2$ coefficient of 1.548 and $b_1$ is greater than $b_2$ at less than the 1 percent level of significance (F-value of 58.21). The adjusted $R^2$ was 9.02%. When we regress the annual stock returns on standardized annual changes in income (before the decomposition into SMAR and ERFS) on the same pooled data set, the slope coefficient was 1.782 with $t$-value of 33.38. The adjusted $R^2$ was 8.59%. Importantly, this shows that there is unique information being communicated by the separate components of earnings (SMAR and ERFS) because the regression coefficient on SMAR was almost twice the size of regression coefficient on ERFS.

In general, we find support for Hypothesis 1. In addition, it should be noted that prior studies in accounting document that the sales-supported component of earnings is valued at a higher rate than the other component of
earnings in the capital market at the aggregate level (pooled time-series and cross-section analysis). Examples include Kim, Lim, and Park (2008), Ghosh, Gu, and Jain (2005), and Ertimur, Livnat, and Martikainen (2003). This evidence is consistent with the intuition that an efficient capital market won’t value these two components of earnings equally because there is a limit to cost-cutting activities and no or less limit to sales increases. However, we are the first to document this differential pricing evidence on the two components of earnings at the individual company level.

Hypothesis 2 dealt with five variables as potential drivers of sales capitalization (SC or $c_1$ in Equation 5). Before we report the results, we review our operational measures:

1. Value creation activities were measured by R&D expenditure scaled by sales revenue.
2. Value extraction activities were measured by advertising expenses scaled by sales revenue.
3. Cash conversion cycle was measured (Natarajan, 1996) as
   \[
   \frac{360 \times \text{Average Receivables}}{\text{Sales}} - \frac{360 \times \text{Average Inventory}}{\text{Cost of Goods Sold}} - \frac{360 \times \text{Average Payables}}{\text{Purchases}}
   \]
4. Intangible intensity was measured by the market value to book value ratio.
5. Gross margin percent was measured as gross profit divided by sales revenue.

Five dummy variables are created from those variables above. For example, if a company’s value creation activity is above the sample median value, then the first dummy variable takes the value of 1 and 0 otherwise. First, we compute the median values of five drivers of sales capitalization at the company level. Second, we compute the median of those firm-specific medians as the sample median.

The sample median values are .029 (value creation or R&D as a percent of sales), .014 (value extraction or advertising as a percent of sales), 2.232 (intangible intensity or market-to-book value), 82.41 (days in the cash cycle), and 35.052 (gross margin percent).

We regress sales capitalization ($c_1$ in Equation 5) on five dummy variables using a median split. The analysis is based on a cross-sectional analysis of 949 companies. All of the hypothesized drivers of sales capitalization are statistically significant at the 1% or 5% level except the cash cycle and the equation had an adjusted $R^2$ of 10.4%. A firm increases its sales capitalization rate by $1.683$ (statistically significant at the .01 level) when the firm is in the upper-half of expenditures, compared to all other firms in the sample, on value-creation activities (relative R&D expenditures). In addition, a firm increases its sales capitalization rate by $.574$ (statistically significant at the .01 level) when the firm is in the upper-half of expenditures, compared to other firms in the sample, on value-appropriation activities (relative advertising expenditures).

We find that firms with substantial intangible assets have significantly higher sales capitalization rates. In this situation, the sales capitalization rate increases by $1.373$ (statistically significant at the .01 level) when a firm has a market-to-book ratio that is in the upper-half of the firms sampled. An additional factor that increases sales capitalization is gross margin percent. We find that the sales capitalization is improved by $.521$ (statistically significant at the .05 level) when the firm operates with a gross margin in the upper-half compared to other firms in the sample. Finally, we find the cash cycle is not significant at the 10% level.

Discussion

The empirical results of this research not only confirm our hypotheses but also have interesting and managerially relevant implications. As expected, the research also leaves even more
questions unanswered which we will suggest as future research topics.

One way to interpret the estimated margin capitalization (MC) in Equation 4 is to consider the annuity payments that would justify it. Since the estimate of MC includes an annuity payment at the beginning of the period, one should subtract one dollar from the estimate of $b_1$. Consequently, the value of discounted future cash flows is $b_1 - 1$ or, in our pooled regression case, $(2.205 - 1)$ or $1.205$. If one views future sales as an infinitely continuing and even flow of cash for an infinite future, then we can use the formula for an annuity with the first payment occurring immediately, or in our case, $b_1 - 1 = a_i$ where $(a)$ is the annual annuity payment or cash flow or sales supported earnings and $(i)$ is the firm’s discount rate.\(^8\) We will further illustrate by assuming an annual discount rate of 12.5% because many security analysts estimated the debt-equivalent value of operating leases by multiplying the annual rent by a factor of 8 (AAA Financial Accounting Standards Committee, 2001), which suggests a discount rate of 12.5%. In the current situation, we would have $1.205 = a/.125$ or $a = .1506$, which suggests that one dollar in earnings today supported by sales will produce an additional $.1506$ cash flows each year into the future.

If one looks at the coefficient on SMAR ($b_1$) when we compute the results based on 949 individual firms (vs. a pooled cross-sectional time series of 949 firms), we get a somewhat different result. In this case, the mean coefficient is $7.339$ and the annuity that arises each year from one dollar of sales-supported earnings is equal to $7.339 - 1 = a/.125$, meaning the annual annuity $(a)$ is equal to $.793$. A dollar today in sales-supported margin results in repeat business that yields $.793$ for an infinite period of years.\(^9\)

Insights are also obtained by examining for both the cross-sectional time series and the firm-specific time series empirical estimates on ERFS ($b_2$). In the case of the pooled cross-sectional time series of 949 firms, this estimate was 1.548. If we repeat the same analysis, we find that earnings that are not supported by sales result in repeat cost reductions or savings that yield $.0685$ for an infinite period of time. In general, what this suggests is that the financial markets believe that earnings not supported by sales have much less long-term impact on future earnings. However, for firm-specific results (see Table 2), the mean estimate of $b_2$ is $3.451$, which tells a somewhat different story. In this case, the financial markets are expecting a continuing stream of earnings based on non-sales events. Using the perpetuity formula from above, it can be computed as $3.451 - 1 = a/.125$, meaning $a = .306$ or approximately 31 cents of non-sales-supported earnings would be expected to continue for an infinite period. Future research might attempt to use other data the firm has or that can be obtained to determine the actual expected length of this annuity (vs. assuming it is infinite). Using data such as average retention levels and projected purchase frequency might assist in this process.

As discussed above, in estimating the association between stock returns and earnings components using either pooled data or firm-specific data, one of the important findings is that earnings supported by sales ($b_1$) are significantly more valuable to shareholders than the other component of earnings ($b_2$). Chief marketing officers (CMO) and other senior marketers should use this finding and, ideally, their firm-specific results in negotiations with the CEO and CFO for the financial resources to support well thought out and planned marketing programs. Research that demonstrates how these more objective measures vs. subjective measures might increase the influence the CMO has on the CFO and CEO would be informative.

With the emphasis over the last two decades on intangible assets and capital, it is reassuring
to find that this is one of the largest drivers of the sales capitalization rate after value-creation activities. Intangible capital can capture a host of things, which can include intellectual property, quality of human resources, relations with suppliers and customers, and core competencies that provide competitive advantage. We find that firms that already have a large storehouse of intangible capital actually create significantly higher sales capitalization. Given the large influence of intangible assets on sales capitalization, it would be helpful to conduct research that details more of the precise and specific empirical relationships. For instance, can the separate elements of intangible capital be modeled separately to determine their impact on sales capitalization?

As expected, we also find that value-creation activities (research and development) have almost three times the influence of value-extraction activities (advertising) on sales capitalization. Increasingly, there is a mandate for all countries to be more innovative, and this occurs in part if firms invest more in research and development. The National Science Foundation (2003) reports that R&D spending in the U.S. tripled (in real dollars) between 1975 and 2000, and it is reassuring to find that the payoff from R&D spending was close to three times the payoff on advertising activities from a public policy point of view. Nonetheless, the payoff on advertising activities was positive and significant. This is highly supportive of the large investment that firms put into advertising, which helps to build brand awareness and image. Future research might estimate the relative strategic and investment emphasis in value-creation and value-appropriation activities and the tradeoff between them, as Mizik and Jacobson (2003) have made some initial attempts to assess.

We also find that firms with high gross margin ratios excel at producing higher sales capitalization. When one considers many of the highly visible brands, where the cost of production is a relatively small portion of total sales, this finding is reinforced. Consider firms like Coca-Cola, Nike, Apple Computer, Intel, Starbucks, etc. and we find that a significant part of the value proposition is not the tangible offering per se but the intangible meaning of the brand in the customer’s mind and life. More research is needed on how high gross margins can be used to produce better value propositions and intangible capital. Finally, although we found that the cash cycle was not statistically related to sales capitalization, we continue to believe this area needs further research. Accounting, finance, and marketing have generally not placed much emphasis on the current section of the balance sheet, and perhaps the time is now right to further investigate these areas of inquiry.

We conclude by suggesting a framework that might be used to integrate marketing, accounting, and finance in a manner that can offer some prescriptions for managers. The technique developed has embedded in it a long-term perspective because we require that the model be empirically estimated with financial and accounting data over one or more decades. This avoids some of the obvious surprises and uncontrollable events that occur in the normal course of operating a business—for instance, when a firm reports a rise in earnings per share yet the stock price drops or when earnings decline but stock prices rise.

Any executive can tell countless stories about how disturbing and frustrating these experiences are for both management team and shareholders, let alone financial analysts. What the technique proposed focuses on is the long-term average behavior, which allows us to isolate signals and reduce the noise that occurs during short time frames.

In Figure 1, we argue that the CMO’s attempt is to focus CFOs and CEOs on two key planning parameters, and these are the sales margin (a) and the margin capitalization rate (b). Note that this implicitly focuses them also on sales capitalization (c), since it is the product of sales margin (a) and the margin capitaliza-
For simplicity, we divide each of these into two levels: below the median or average and above the median or average, or alternatively, on either low or high performance.

Each of the cells in Figure 1 is labeled to reflect the major mandate that CMOs, CFOs, and CEOs face. In the upper-right quadrant (high sales margin and high-margin capitalization), we have the Nirvana Position, where the central mandate is to keep up the good work (which is no easy task in a competitive world). The firm needs to continue its investments in value creation, value extraction, and intangible capital, as well as maintain its gross margins. Moving down to the lower-right quadrant, the central mandate is Relationship Building. Luckily, the firm has a high sales margin but an insufficient margin capitalization rate and thus, it must increase its investment in value-creation and value-extraction activities, build its intangible capital, and seek better gross margins which can support the prior investments. All of this needs to be done to build strong customer relationships with existing and new customers. The upper-left quadrant represents a Margin Management mandate. These firms have good margin capitalization rate; unfortunately, sales margins are not attractive. Striving to improve and better manage margins requires re-engineering processes, deciding what processes to outsource or bring back and insource, and focusing on overall strategic cost management to improve sales margins. Finally, in the lower-left quadrant are firms that are in the disquieting and disheartening position of having low sales margins and low margin capitalization. The imperative these firms face is Business Reframing or drastic strategic renewal. These firms need to examine their current competencies and capabilities and how they need to change; they need to consider if their value
proposition is competitively compelling and can be delivered cost efficiently; they need to look at all aspects of the business and consider reframing to improve performance.

Concluding Comments

Marketing has too often been relegated to the role of short-term sales stimulation in the firm. However, it is suggested that marketing should be at the core of the firm’s activities that integratively creates new customers and manages relationships with existing customers over a longer time frame. Marketing should not be an isolated function in the firm but, rather, the function of the entire firm. In fact, it is suggested that marketing should be central to linking customer value with shareholder value. Our approach, which estimates sales margins, margin capitalization, and sales capitalization, obtained good initial empirical results. It may provide the CMO, CFO, and CEO with a framework for setting a long-term strategic agenda to propel the firm to both higher customer value and shareholder value.

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Appendix

How Sales Capitalization (c1) Equals the Sales Margin (a1) Multiplied by the Margin Capitalization Rate (b1)

We want to show that c1 = a1b1, where c1 is the coefficient in the regression of R on ∅S, a1 is the coefficient in the regression of ∅Y on ∅S, and b1 is the coefficient of SMAR in the regression of R on SMAR and ERFS. SMAR is the portion of ∅Y that moves with ∅S. More specifically:

\[ c_1 = \frac{\text{Cov}(R, ∅S)}{\text{Var}(∅S)} \quad \text{and} \quad a_1 = \frac{\text{Cov}(∅Y, ∅S)}{\text{Var}(∅S)}. \]

We can verify that SMAR and ERFS are orthogonal to each other, i.e.,

\[ \text{Cov}(\text{SMAR}, \text{ERFS}) = a_1 \text{Cov}(∅Y, ∅S) - a_1^2 \text{Var}(∅S) = 0. \]

Given the zero correlation between the two independent variables,

\[ b_1 = a_1 \frac{\text{Cov}(R, ∅S)}{a_1^2 \text{Var}(∅S)} = \frac{\text{Cov}(R, ∅S)}{a_1 \text{Var}(∅S)}. \]

Thus,

\[ a_1 b_1 = \frac{\text{Cov}(R, ∅S)}{\text{Var}(∅S)} = c_1^{10}. \]

Meanwhile,

\[ \text{SMAR} = a_0 + a_1 ∅S \quad \text{and} \quad \text{ERFS} = ∅Y - (a_0 + a_1 ∅S). \]

Notes

1. We thank Professor Fred Webster for this insight.

2. Rust, et al. (2004) define customer equity as “the sum of the lifetime value of all the firm’s current and future customers, where the lifetime value is the discounted profit stream obtained from the customer” (p. 78). We define the marginal sales capitalization as “the incremental lifetime value from current or new customers.” We use the annual sales increase as a proxy for sales gains from both current and additional customers.

3. Christie (1987) concludes that the market value of equity at the beginning of the returns period is the correct deflator in returns or change studies to control the effect of scale differences. In level studies where the dependent variable is the market value of equity, though, Barth and Kallapur (1996) suggest that including a scale
proxy as an independent variable is more effective than deflation at mitigating coefficient bias.

4. The cash cycle also involves trade payables to suppliers, which we ignore in this discussion, since our focus is on customers; however, we do include trade or accounts payable in how the cash cycle is measured.

5. We use other Compustat variables for identifying drivers of market impact of sales-supported earnings. The following lists all Compustat variables we used with numbers in the parenthesis representing data item numbers in annual Compustat. Sales (#12), income (#18), market value of equity (#25 x #199), research and development expense (#46), advertising expense (#45), cost of goods sold (#41), accounts receivable (#2), inventories (#3), accounts payable (#70), current assets (#4), and current liabilities (#5). In addition, we delete firm/years when sales are less than $10 million or the stock price is less than $1 following Barth, Cram, and Nelson (2001). Finally, we delete observations when the book value of equity is negative, because the market-to-book ratio makes no sense in this case.

6. Test results were insensitive when we replaced the median values with the mean values of each company.

7. When we replaced the cash cycle with the working capital productivity (measured by sales over working capital), the working capital productivity was significant at the 1% level with t-value of -2.95 and the gross margin became insignificant with a t-value of 1.2. The adjusted R-square was 11.08%. One may interpret this finding as supporting the view that high working capital productivity hurts sales capitalization. One way of accomplishing the high working capital productivity is to minimize the current asset and/or maximize the current liability. The key variables for minimizing (maximizing) current assets (liability) would be accounts receivable and inventory (accounts payable). Our finding suggests that this strategy of keeping high productivity of working capital ends up hurting sales capitalization.

8. The analyst could, of course, make a different assumption if warranted. For instance, sales could be assumed to continue for t time periods and not an infinite time period and one could assume that the annuity of sales-supported margins are not even over time. Earnings response coefficients map earnings’ time-series properties and discount rates into changes in equity market values. For example, if earnings time-series properties are such that earnings changes are permanent, then assuming a one-to-one relation between earnings changes and net cash flow changes, the earnings response coefficient is the present value of the perpetuity of the earnings change. The present value of a $1 permanent change in annual earnings is (1+1/i), where i is the annual risk-adjusted discount rate for equity and 1/i is the present value of the revision in expectations of all future periods’ earnings (Kothari, 2001, p. 124).

9. Teets and Wasley (1996) compare mean earnings response coefficients (ERC) from linear time-series regressions to earnings response coefficients from pooled linear regressions and argue that firm-specific regressions are superior to pooled regressions. Freeman, Koch, and Li (2002) provide an alternative interpretation on the findings of Teets and Wasley (1996) and report the average ERC of 2.71 from the firm-specific linear regression and ERC of 0.43 from the pooled linear regression.

10. This relationship holds for any three variables.

References


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