Does SG&A Expenditure Create a Long-Lived Asset?

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Abstract

In this paper we investigate whether selling, general and administrative (SG&A) expenditure (excluding R&D and advertising expenditure) creates a long-lived asset. GAAP requires SG&A expenditure to be expensed immediately as a period cost to recognize using up of economic benefits. We hypothesize and find that SG&A expenditure generates future economic benefits and consequently current SG&A expenditure has a positive multi-period impact on subsequent earnings. Analyzing contemporaneous stock returns, we infer that investors do not view all of SG&A expenditure as an expense in the current period, but rather seem to recognize some of the asset value implicit in SG&A by differentiating it from the remaining components of earnings. We also document that no excess returns can be earned in subsequent periods by investment strategies that are based on publicly available SG&A information, suggesting that the contemporaneous stock prices may already fully value the intangible asset created by contemporaneous SG&A expenditure. Our analysis of executive compensation indicates that the changes in bonus and equity compensation are negatively associated with the change in SG&A expenditure, but the negative association decreases when current SG&A expenditure has a relatively greater impact on future profitability. Overall, the evidence suggests that the capital market and the executive labor market recognize the asset value created by SG&A expenditure despite its expensing for financial reporting purposes.

Keywords: **SG&A expenditure, advertising expenditure, R&D expenditure, intangible assets, valuation, executive compensation.**

I. Introduction

Selling, general and administrative (SG&A) costs, excluding R&D and advertising costs, constitute a substantial component of the total expenses for most companies, from an average of 17% of total expenses for construction industries to 50% of total expenses for music service industries. Selling expenditure includes costs of marketing, selling and distributing products and services. General and administrative expenditure includes costs of managing and developing the business. While the GAAP requirement of immediate expensing of SG&A expenditure as a period cost implies that all economic benefits generated by SG&A expenditure occur in the same time period,[1] we expect SG&A expenditure to have long-term impact on firm value as it supports activities such as marketing, information technology and human resource development. Investment in these activities is likely to create intangible assets such as customer loyalty and operating efficiency and consequently generate future economic benefits. While the prior literature has examined the future value of R&D and advertising expenditure, these costs comprise on average only 1.4% and 0.7% of total expenses, compared with 23% of total expenses for SG&A expenditure. Our objective in this paper therefore is to examine whether SG&A (excluding R&D and advertising) expenditure creates long-term value for a company, and whether the stock market and the executive labor market correctly recognize SG&A as a value-creating asset rather than simply treating it as a period expense.

[1] "Recognition of expenses and losses is intended when an entity's economic benefits are used up in delivering or producing goods, rendering services, or other activities that constitute its ongoing major or central operations….Selling and administrative salaries, are recognized during the period in which cash is spent or liabilities are incurred for goods and services that are used up either simultaneously with acquisition or soon after." (Statement of Financial Accounting Concepts No. 5, "Recognition and Measurement in Financial Statements of Business Enterprises", page 31.)

Prior research on the value of intangible assets has mainly focused on research and development (R&D) expenditure for the few industries where R&D expenditure is material. Long-term economic benefits of SG&A expenditure have not been examined although SG&A expenditure is more commonly reported than R&D across all industries and its magnitude is usually larger. In our sample covering 121,455 firm-year observations from 1970 to 2004, SG&A for the median firm is 27% of total assets, while R&D is only 3% of total assets. Some studies have also examined the role of advertising expenditure in creating an intangible asset. A large component of SG&A is selling expenditure other than advertising that includes sales promotion, customer development and distribution channel management. Both marketing and selling expenditure are capitalized as an adjustment to earnings in calculating EVA® (Biddle, Bowen and Wallace 1997). In this paper, we empirically document that SG&A expenditure on average has a six-year positive impact on current and future operating income before SG&A. The total impact is greater in industries such as retail, wholesale and consumer products for which selling costs are important.

Next we examine whether investors understand the asset implications of SG&A expenditure since GAAP requires SG&A expenditure be expensed immediately and investors may fixate on reported earnings numbers (Sloan 1996). We find the contemporaneous stock market reaction to SG&A expenditure information is not the same as it is to other current period expense items. Investors seem to differentiate SG&A expenditure from the other components in the extent of the value change corresponding to the change in these items reported in the income statement. The evidence is consistent with the notion that the asset implications of SG&A expenditure are value-relevant to investors. The evidence also indicates that investors fully recognize the value-relevance of SG&A information reported in financial statements. We find that no excess returns can be earned on SG&A portfolios in subsequent periods.

In addition to the capital market, we investigate whether the executive labor market recognizes the asset value created by SG&A expenditure. Agency problems associated with managerial investment decisions result in managers extracting higher wages by investing in projects that obfuscate a firm's current performance (Edlin and Stiglitz 1995) or by cutting discretionary expenditure to increase current performance (Bushee 1998). If the executive labor market recognizes situations where SG&A investments create intangible assets, we would expect that compensation contracts do not induce opportunistic reductions in SG&A to boost short-term earnings, but rather motivate higher investment in SG&A to increase the firm's long-term value. Consistent with this prediction, we find that the change in both bonus and equity compensation are less negatively associated with the change in SG&A expenditure when current SG&A expenditure has a greater impact on future profitability.

The remainder of this paper is structured as follows. Section II develops our main hypotheses on the value implications of SG&A expenditure. Section III describes the research design and sample selection procedures. Section IV presents a discussion of our empirical results on future value created by SG&A expenditure. Section V presents our analysis of the relation between executive compensation and SG&A expenditure. Finally, section VI concludes the paper.

II. Hypotheses development

Prior studies on the value relevance of intangible assets include Lev and Sougiannis (1996) who show that current operating income before R&D expense is positively impacted by R&D expenditure in the prior four to seven years in R&D intensive industries. Lev and Sougiannis (1996) and Chambers, Jennings and Thompson (1998) find that financial statements adjusted for R&D capitalization and amortization are more highly associated with stock prices than financial statements based on expensing current R&D. Hirschey and Weygandt (1985), Woolridge (1988) and Chan, Martin and Kensinger (1990) find that R&D expenditure has a positive impact on the market value of a firm, but investors do not seem to fully recognize the value-relevance of R&D expenditure when they are expensed immediately. Firms with high R&D spending earn large abnormal returns in subsequent periods (Lev and Sougiannis 1996, Chan, Lakonishok and Sougiannis 2001). These studies provide the economic rationale for capitalizing and amortizing R&D expenditure rather than immediately expensing it as required by SFAS No. 2.

Some studies on R&D expenditure also recognize that advertising expenditure for sales promotion and product development may create an additional intangible asset. However since relatively few R&D intensive firms separately report advertising expenditure, the evidence on its value relevance is at best limited. Lev and Sougiannis (1996) show that previous period advertising expenditure has a positive impact on current operating income. Chan, Lakonishok and Sougiannis (2001) find that firms with large advertising spending earn large abnormal returns in subsequent periods. Hirschey and

Weygandt (1985), Woolridge (1988) and Chan, Martin and Kensinger (1990) show that advertising expenditure has a positive impact on the market value of a firm.

We explore whether SG&A expenditure (excluding R&D and advertising expenditure) creates long-term value for a firm by studying the intertemporal relationship between current earnings and past SG&A spending. SG&A comprises expenditure to support several different activities. It contains both variable costs that change proportionately with sales volume and fixed costs that do not change with sales volume (Anderson, Banker and Janakiraman 2003, Anderson, Banker, Huang and Janakiraman 2006). Selling expenses include sales commissions, delivery expenses and promotion materials that usually vary with the level of sales. General and administrative expenses include top management's salaries and the cost of supporting staff departments such as information systems and legal services that tend not to vary with the level of sales (Stickney, Brown and Wahlen 2004). Marketing expenditure other than advertising included in SG&A may create intangible assets via product promotion, brand development and distribution channel management. Many items in general and administrative expenditure contained in SG&A are also shown to have long-run impact on a firm's future performance. For example, operating performance is positively associated with lagged IT spending (Brynjolfsson and Hitt 2000). Expenditure on employee training or customer satisfaction systems also creates intangible assets that may be associated with future financial performance (Cleland and Bruno 1996, Ittner and Larcker 1998).

There would be no intertemporal relationship between future income and current SG&A expenditure if the various components of SG&A expenditure impact only current income. Such expiration of SG&A expenditure in the current period would support the GAAP requirement of immediate expensing of SG&A expenditure. On the other hand, if a positive relation exists between future income and current SG&A expenditure, then SG&A expenditure creates a long-lived asset that should be capitalized and amortized over its life-time. Such a situation would be consistent with the EVA literature where marketing expenditure is capitalized and amortized to adjust GAAP earnings to EVA. Therefore, we state our first hypothesis in the alternative form as follows:

H1: There is a positive intertemporal relationship between future income and current SG&A expenditure.

Next we investigate whether investors correctly differentiate between current period expenses that do not create long-term assets and SG&A expenditure that creates long-term value. GAAP requires immediate expensing of SG&A in the income statement. Therefore if investors fixate on earnings (Hand 1990, Sloan 1996), they would not price SG&A differently from the remaining part of earnings. In other words, they would view SG&A as an expense and give the same pricing coefficients (albeit of different sign) to earnings before SG&A (i.e. investors penalize positive SG&A surprise as much as they penalize negative earnings surprise). However if investors conjecture SG&A conveys information about future profitability over and above current earnings, they would differentiate SG&A from the remaining components of earnings. The pricing coefficient on SG&A expenditure should be lower in magnitude than the pricing coefficient on earnings before SG&A if investors view a part of SG&A as an asset. In other words, investors would penalize positive unexpected SG&A less than they penalize negative unexpected earnings because they conjecture that the positive unexpected SG&A creates some long-term value for the firm. In a similar vein, an unexpected reduction in SG&A expense is not perceived to be as much of good news as reduction of a similar magnitude in other expense. Therefore, we state our second hypothesis in the alternative form as follows:

H2a: The magnitude of the pricing coefficient on SG&A expenditure is lower than the pricing coefficient on earnings before SG&A.

H2b: The negative association between price and SG&A expenditure is weaker when SG&A creates relatively greater future value.

A further question we examine is whether the stock market is efficient in pricing SG&A expenditure. If the market efficiently prices the information contained in SG&A, trading strategies based on publicly available SG&A information should not lead to systematic abnormal returns. Furthermore, if SG&A is a value-creating asset and the market fully recognizes the asset implication, we would not see any future abnormal returns associated with any trading rules that exploit the cross-sectional variation in future value creating ability of SG&A. Therefore we state our hypothesis 3 as follows:

H3: No significant abnormal returns can be earned using trading strategies that exploit publicly available SG&A information.

Prior research has examined how compensation contracts help mitigate the agency problem embedded in investment decisions pertaining to capital expenditure (Larcker 1983) and research and development expenditure (Gupta and Bailey 2001), but the implications for investment in SG&A expenditure have not yet been explored adequately. In this paper, we examine whether compensation committees recognize the intangible asset created by SG&A investments. Prior studies show that executive compensation contracts place different weights on various components of earnings because they provide differential information about managerial actions (Clinch and Magliolo 1993, Natarajan 1996, Dechow, Huson and Sloan 1994, Gaver and Gaver 1998). When accounting earnings is used as a performance measure, managers have an incentive to cut long-term investment in order to boost short-term earnings (Murphy 1999, Dechow and Skinner 2000). When stock price is also used as a performance measure, managers may still reduce spending in intangible assets (Cheng 2004) because investors may undervalue firms investing heavily in intangible assets as greater uncertainty and higher information asymmetry are associated with these investments (Kothari, Laguerre and Leone 2002, Clinch 1991). This implies that executives may sacrifice the firm's long-term value for short-term benefits by cutting investment in SG&A expenditure. As a performance measure, SG&A expenditure may provide additional information over and above earnings and stock price about executive actions in controlling current expenses and investing in future assets. If compensation committees appropriately differentiate between the expense and asset portions of SG&A expenditure, we would expect that compensation contracts would simultaneously discourage excess spending on SG&A from a cost control point of view while preventing opportunistic reduction of long-term investments in intangible SG&A assets. This leads to the following hypothesis:

H4: The change in executive compensation is negatively associated with the change in SG&A expenditure; however, this negative association is weaker when current SG&A expenditure creates relatively greater future value.

III. Research design

We specify the following relationship between earnings before SG&A and expenditure on SG&A (Lev and Sougiannis 1996):[2]

$$E_{it} = f(TA_{it}, SG\&A_{i,t-k};\ k = 1...k_S)$$

where E_{it} is earnings of firm i in period t, TA_{it} is total tangible assets, *SG&A* is selling, general and administrative expenditure excluding research and development expenditure and advertising expenditure, and k_S represents the life of SG&A assets in years.

Our measure for earnings E_{it} is operating income before depreciation and SG&A expenditure. We deflate the variables by total assets (TA) to mitigate a possible heteroscedasticity problem:[3]

$$\left(\frac{OI}{TA}\right)_{i,t} = \alpha_0 + \alpha_1\left(\frac{1}{TA}\right)_{i,t-1} + \sum_{k=0}^{n}\alpha_{2,k}\left(\frac{SG\&A}{TA}\right)_{i,t-k} + \sum_{d}\alpha_{3,d}\,Industrydummies + e_{i,t} \qquad (1)$$

Equation (1) suffers from a potential simultaneity problem if a shock to the residuals affects both the dependent variable and some of the independent variables. We apply the instrumental variable method using a two-stage least squares (2SLS) regression to mitigate the simultaneity problem (Lev and Sougiannis 1996). The instruments used in a 2SLS regression should be uncorrelated with regression residuals while correlated with the original independent variables. We choose industry SG&A as instruments since industry variables are correlated with original firm-level variables while being uncorrelated with firm-specific shocks contained in the residual. In the first stage, for each year and two-digit industry, SG&A expenditure (deflated by total assets) is

[2] We repeat our analysis by including current R&D, past four years of R&D, current advertising and past advertising and obtain similar results.
[3] Lev and Sougiannis (1996) use total sales as a deflator. We use total assets instead of total sales because SG&A can contribute to increasing sales and deflating by sales would eliminate some of this effect of SG&A on increasing income (e.g., Peles 1970, Leone and Schultz 1980).

regressed on the average SG&A expenditure (deflated by total assets) of the other firms in its four-digit SIC code:

$$\left(\frac{SG\&A}{TA}\right)_{i,t} = a + b\left(\frac{SG\&A}{TA}\_\_Industry\right)_{i,t} + u_{i,t} \qquad (2)$$

We use the predicted value of $(SG\&A/TA)_{i,t}$ from equation (2) as an instrument. In the second stage, we estimate model (1) with the instruments of $(SG\&A/TA)_{i,t}$, substituting for their actual values (Lev and Sougiannis 1996).

We estimate equation (1) cross-sectionally allowing industry fixed effects at two-digit SIC code level (Hanlon, Rajgopal and Shevlin 2003). Estimation of equation (1) involves estimating a stream of coefficients on current and past SG&A. We use an unrestricted finite distributed lag model to estimate the number of lags and the coefficient on each lag of SG&A. Our model selection is based on the Akaike Information Criterion (AIC) and the Schwartz Bayesian Criterion (SBC). An unrestricted distributed lag model has the advantage of not assuming any specific structure of coefficients compared with distributed lag models such as Almon lag and Koyck lag models. In general, an unrestricted distributed model may suffer from multicollinearity among different lags of independent variables, but this problem is much less severe with panel data estimation because more information is available for obtaining the average coefficients among firms (e.g., Greene 2001, p. 719). If, on average, SG&A expenditure creates long-term value as stated in hypothesis 1, we expect to see a positive series of $\alpha_{2,k}$ for several years before the current period.

Our second objective is to examine whether investors recognize the incremental information content of SG&A over and above current earnings before SG&A. If investors fixate on current earnings, the earnings response coefficients on current earnings before SG&A and on SG&A would mirror each other since SG&A is only an expense component of earnings. However if SG&A provides favorable information about future cash flows, investors will place a less negative coefficient on SG&A. The sum of the response coefficients on current earnings before SG&A and on SG&A will be positive to reflect SG&A's asset creation. We test our second hypothesis by estimating the relation between contemporaneous abnormal returns and the surprise component in SG&A and other earnings components assuming a random walk process for all earnings components (e.g.,Bowen, Burgstahler and Daley 1986, Rayburn 1986, Sloan 1996, Lev and Thiagarajan 1993). Specifically, we estimate the regression of the type:

$$R_{i,t} = \gamma_0 + \gamma_1 \frac{(OI_t - OI_{t-1})}{MV_{t-1}} + \gamma_2 \frac{(SG\&A_t - SG\&A_{t-1})}{MV_{t-1}} + e_{i,t} \qquad (3)$$

where R_{it} is the annual buy-and-hold size and book-to-market adjusted return from July of year t to June of year t+1. The independent variables decompose unexpected earnings into unexpected operating income before depreciation and SG&A and unexpected SG&A. In support of hypothesis 2a, we expect $\gamma_1 + \gamma_2$ to be positive since investors will not penalize a positive surprise of SG&A as much as they penalize a negative surprise in earnings if they believe SG&A is a value-creating asset.

To further examine whether the stock market places a higher pricing coefficient on SG&A when SG&A creates higher asset value, we estimate the following equation:

$$\begin{aligned} R_{i,t} = {} & \gamma_0 + \gamma_1 \frac{(OI_t - OI_{t-1})}{MV_{t-1}} + \gamma_2 \frac{(SG\&A_t - SG\&A_{t-1})}{MV_{t-1}} \\ & + \gamma_3 \frac{(SG\&A_t - SG\&A_{t-1})}{MV_{t-1}} * SG\&A\ future\ value + e_{i,t} \end{aligned} \qquad (4)$$

where *SG&A future value* is a measure of the future benefit-creating ability of SG&A expenditure. It is defined as the ratio of the sum of discounted coefficients on past SG&A over the sum of discounted coefficients on current and past SG&A ($\sum_{k=1}^{n}\frac{\alpha_{2,k}}{(1.1)^k} / \sum_{k=0}^{n}\frac{\alpha_{2,k}}{(1.1)^k}$). It gives the total impact of $1 current SG&A spending on future operating income before SG&A. To obtain the firm-year specific estimates of *SG&A future value*, we first estimate an optimal SG&A lag structure for each two-digit SIC industry using industry-specific time-series data starting from 1970. Based on the optimal lag structure of each two-digit SIC industry, we estimate firm-year specific *SG&A future value* using a rolling window time-series data starting from 1970. For example, to estimate *SG&A future value* for firm i of year 1992, we use the time-series data of firm i from 1970 to 1992. In support of hypothesis 2b, we expect γ_3 to be positive, indicating that the association between stock returns and SG&A expenditure is less negative when SG&A creates a relatively higher future value.

We test our third hypothesis by examining excess returns earned on SG&A portfolios for up to three years after portfolio formation (e.g., Sloan 1996, Abarbanell and Bushee 1998). We form portfolios based on change in SG&A (deflated by total assets) to capture the unexpected portion of SG&A (Eberhart, Maxwell and Siddique 2004). In support of hypothesis 3, we expect that no excess returns can be detected in the future periods since investors may have already priced the information contained in SG&A efficiently. However, if positive excess returns are earned by the highest SG&A (deflated by total assets) portfolio, it could be due to investors either not understanding that SG&A expenditure creates asset value or failing to adjust price fully to reflect the asset value of SG&A when information on SG&A investment is disclosed. On the other hand, if negative excess returns are earned by highest SG&A (deflated by total assets) portfolio, it could be due to investors evaluating SG&A as an asset when it is really an expense or investors not adequately penalizing firms with abnormal SG&A spending in the current period

To further examine whether investors fully recognize the asset value created by SG&A, we also form portfolios based on change in SG&A interacted with *SG&A future value*. When *SG&A future value* is high, SG&A contains higher asset value and vice versa. Once again, in hypothesis 3, we expect that no excess returns are earned on these portfolios.

We use the 2004 Compustat annual file covering firm-year observations from 1970 to 2004. Following Lev and Sougiannis (1996), we require at least four other firms in the four-digit SIC group to obtain the instruments for actual SG&A. If there are less than four other firms in the same four-digit SIC group, we re-define the industry at the three-digit SIC level. We also require at least 20 firms in each two-digit SIC and year combination. Finally, we remove those observations with operating income before depreciation (scaled by total assets) and SG&A (scaled by total assets) that lie in the top or the bottom 1% of yearly distributions to mitigate possible outlier problems (Chen and Dixon 1972). The final sample contains 121,445 observations from 1970 to 2004. Table 1 presents descriptive statistics on the characteristics of sample observations. Sales, operating income before depreciation, total assets and SG&A all exhibit a wide range of variation. We also provide R&D and advertising data for comparison purposes.[4] R&D and advertising are small in comparison with SG&A. The mean (median) value of

[4] R&D and advertising expenditure are set to zero if they are missing or reported as immaterial.

SG&A is \$150 (\$14) million, much higher than the \$22 (\$0) million mean (median) value of R&D, and the \$11 (\$0) million mean (median) value of advertising.

IV Empirical results

Table 2 shows the results of estimating the impact of a stream of past SG&A expenditure on current income. We present the mean coefficients from the second-stage estimation of year-by-year cross-sectional regression of equation (1) using instrumental variables. For each year between 1975 and 2004, we estimate equation (1) using all available data starting from 1970. We examine different lags of SG&A to identify the optimal unrestricted distributed lag model. In analysis not reported here, we compare AIC, SBC, adjusted R^2 and coefficients for different models ranging from no lags of SG&A (current SG&A) to seven lags of SG&A. We choose five lags of SG&A because all the coefficients are positive and significant ($\alpha_{2,0} = 0.326$, $\alpha_{2,1} = 0.187$, $\alpha_{2,2} = 0.155$, $\alpha_{2,3} = 0.101$, $\alpha_{2,4} = 0.144$, $\alpha_{2,5} = 0.252$), R^2 is the highest (0.38), and AIC and SBC are the lowest or close to the minumum (AIC = -3.23 and SBC = -3.13). If we include more lags as in a six-lag or a seven-lag model, some of the coefficients are not significant. The coefficient $\alpha_{2,k}$ means \$1 spending on SG&A in year t-k results in \$ $\alpha_{2,k}$ impact on current income. The sum of coefficients $\alpha_{2,k}$ is 1.165. Overall, table 2 provides support for hypothesis 1 by showing positive and significant coefficients on a series of current and past SG&A in equation (1). On average, SG&A is a value-creating asset that has a six-year life cycle.[5]

[5] This finding is consistent with the accounting treatment of marketing expenditure used by Stern Stewart in calculating EVA® that involves recognizing marketing expenditure as an asset and amortizing it over a five-year life cycle.

We also estimate the unrestricted distributed lag model separately for each two-digit SIC industry. Table 3 provides coefficient estimates from industry-by-industry pooled regressions of current operating income before depreciation and SG&A on lagged SG&A. We use industry-by-industry pooled specification with year dummies on intercept to ensure sufficient degrees of freedom for each regression. There is considerable variation in the total impact of lagged SG&A on current income. Observe that in the Oil and Gas Extraction industry (two-digit SIC code=13) the total impact of SG&A is low (0.014) and the lag structure does not persist into the earlier years. A similar pattern exists for some other industries such as the Fabricated Metal Products industry (two-digit SIC code =34; total impact of SG&A on income = 0.401) and Machinery (Except Electrical) industry (two-digit SIC code = 35; total impact of SG&A on income =0.117). These industries are not consumer oriented and require less marketing expenditure. In contrast, the Retail-Household industry (two-digit SIC code = 57) has a high total impact of SG&A on income (=2.171) and a long estimated lag structure persisting into 5 lags. This is possibly due to the importance of SG&A costs to sustain customer relationship. Similarly, the Cars industry (two-digit SIC code = 37; total impact of SG&A on income =1.121), the Restaurants industry (two-digit SIC code = 58; total impact of SG&A on income = 1.021) and the Service-Accounting, R&D industry (two-digit SIC code = 87; total impact of SG&A on income =1.864) all have high total impact of SG&A on income. This may be because brand reputation and distribution channels are important intangible assets in enhancing future profitability in these industries. Overall, table 3 provides additional support for hypothesis 1 by showing that the value creation of intangible assets generated by SG&A varies significantly and systematically in the cross-section.

We obtain firm-year estimates of SG&A future value based on industry-specific SG&A lag structure which assumes that all firms within the same two-digit SIC industry have the same SG&A lag structure. We use a rolling window time-series starting from 1970 to obtain the estimates. Table 4 presents some evidence on firm characteristics associated with estimates of *SG&A future value*. We regress *SG&A future value* on firm characteristics for the sample period from 1975 to 2004.

$$SG\&A\ future\ value_{i,t} = \theta_1 + \theta_2 \frac{PPE_{i,t}}{AVGTA_{i,t}} + \theta_3 \frac{GM_{i,t}}{SALES_{i,t}} + \theta_4 \frac{EMPLOYEE_{i,t}}{SALES_{i,t}} + \theta_5 \log(SALES)_{i,t} + \theta_6 \Delta \log(SALES)_{i,t} + \theta_7 HHI\ INDEX_{i,t} + \theta_8 STDROA_{i,t} + \varepsilon_{i,t} \quad (5)$$

PPE is property, plant and equipment (Compustat annual #8); AVGTA is the average of beginning-year and ending-year total assets. We expect the coefficient on PPE/AVGTA to be negative since firms that invest more in tangible assets tend to spend less on investments in intangible assets because of resource constraints. GM is gross margin (Compustat annual #12- #41). We expect the coefficient on GM/SALES to be positive since firms that command higher profit margins are likely to generate higher future benefits from current SG&A spending. EMPLOYEE is the number of employees (Compustat annual #29). We expect the coefficient on EMPLOYEE/SALES to be positive since firms with more employees tend to invest more in human capital that may generate future value. LOG (SALES) is the logarithm of total sales (Compustat annual #12) and captures size or life-cycle of the firm. We expect it to be positively associated with *SG&A future value* because large firms invest more in future benefit generating activities. ΔLOG(SALES) is the change in logarithm of total sales (Compustat annual #12) from the previous year, capturing sales growth. We expect it to be positively related to *SG&A future value* as firms with more growth opportunities are likely to have higher SG&A future value. HHI INDEX is the degree of industry concentration, measured by Herfindahl-Hirschman Index. We expect it to be negatively associated with *SG&A future value* since firms operating in a more competitive industry tend to spend more on future value creating SG&A activities. STDROA is the standard deviation of ROA over the five prior years divided by the mean of ROA over the five prior years, where ROA is defined as earnings before extraordinary items (Compustat annual #18) scaled by average total assets. We expect it to be positively related to *SG&A future value* as firms operating in uncertain environments characterized by high STDROA tend to spend more on future value creating SG&A activities. Table 4 shows that investment in tangible assets, number of employees, size, and industry competition have the predicted sign.

Table 5 presents the results of the test of hypothesis 2 about the relation between contemporaneous returns and unexpected SG&A. We regress annual buy-and-hold size and book-to-market adjusted returns on unexpected operating income (before depreciation and SG&A) and unexpected SG&A, assuming that SG&A expenditure (scaled by total assets) follows a random walk process. Our pooled regression estimation results show that the coefficient on the change in SG&A is negative and significant (coefficient = -0.343, t-statistic = -19.98), suggesting that the market, on average, prices SG&A as an expense. However, when we add together the coefficient on the change in operating income (before depreciation and SG&A) and the coefficient on the change in SG&A, we find evidence rejecting the sum to be zero (F-statistic = 34.41, p-value <0.01).

This suggests that the market does not treat SG&A expenditure entirely as an expense but rather recognizes it partially as a value-creating asset.

We also separate profit firms from loss firms since prior studies find that earnings response coefficients for loss firms are not as informative as coefficients for profit firms due to the existence of liquidation option for loss firms (Hayn 1995). When we focus on profit firms, we find that the coefficient on the change in SG&A is negative and significant (coefficient = -0.372, t-statistic= -14.74). The sum of the coefficient on operating income (before depreciation and SG&A) and the coefficient on SG&A is significantly greater than zero (F-statistic=7.52, p-value<0.01) indicating that investors do not view SG&A in the same way as the other components of earnings for profit firms. For loss firms, we find that the coefficient on the change in SG&A is also negative and significant (coefficient = -0.268, t-statistic = -11.87). In contrast to profit firms, the sum of the coefficient on operating income (before depreciation and SG&A) and the coefficient on SG&A is significantly less than zero (F-statistic=12.46, p-value <0.01), indicating that the stock market places a higher pricing coefficient on SG&A expenditure than the pricing coefficient it places on earnings before SG&A for loss firms. It appears that investors reward SG&A cost control activities significantly in "loss" firms and discourage investments that may create intangible assets. In summary, panel A of table 5 supports hypothesis 2a that the stock market differentiates SG&A from the remaining components of earnings and recognizes that SG&A has properties of a value-creating asset.

To further examine whether the market values SG&A expenditure based on its ability to create future value, we regress annual buy-and-hold size and book-to-market adjusted returns on unexpected operating income (before depreciation and SG&A), unexpected SG&A, and unexpected SG&A interacted with *SG&A future value*. Results in panel B of table 5 show evidence that the stock market does differentiate between high and low future value SG&A expenditure. The negative relationship between contemporaneous returns and change in SG&A expenditure is weaker when SG&A expenditure creates relatively greater future value. The coefficient on change in SG&A is still negative and significant (coefficient = -0.526, t-statistic = -8.57). However, the coefficient on change in SG&A interacted with SG&A future value is positive and significant (coefficient = 0.276, t-statistic = 3.03). Overall, the results in table 5 support hypothesis 2b that the stock market recognizes the asset value created by SG&A expenditure. The stock market places a lower pricing coefficient on SG&A expenditure than the pricing coefficient it places on earnings before SG&A, and the negative association between price and SG&A expenditure is weaker when SG&A creates relatively greater future value.

To test whether stock price fully incorporates a firm's intangible assets created by SG&A, we check returns in the subsequent three-year periods on portfolios formed based on publicly available SG&A information. We obtain the long-term excess returns using the Fama and French (1993) three-factor model:

$$R_{pt} - R_{ft} = a + b(R_{mt} - R_{ft}) + sSMB_t + hHML_t + \varepsilon_{pt} \quad (6)$$

where R_{pt} is the monthly return on portfolio p in calendar month t, R_{ft} is 1-month T-bill return, R_{mt} is the CRSP value-weighted market index return, SMB_t is the return on a portfolio of small stocks minus the return on a portfolio of large stocks, and HML_t is the return on a portfolio of stocks with high book-to-market ratios minus the return on a portfolio of stocks with low book-to-market ratios. At the end of June each year from 1975 to 2004, we form portfolios by assigning firms into quintiles based on the change in SG&A (deflated by total assets). We only keep observations with positive change in SG&A to focus on firms that increase their expenditure (Eberhart, Maxwell, Siddique 2004). We estimate the model using monthly returns from each of the first three years following portfolio formation. The intercept (*a*) in the above equation is the abnormal return measure. We obtain data for R_m- R_f, *SMB*, and *HML* from Kenneth French's website: http://mba.tuck.dartmouth.edu/pages/faculty/ken.french. We document in panel A of table 6 the mean excess returns earned on portfolios formed annually based on change in SG&A (deflated by total assets). In support of hypothesis 3, we do not find significant excess returns earned on any portfolio in the subsequent three years after portfolio formation. The mean excess return earned on the highest SG&A portfolio is 0.31% per month in the first year after portfolio formation and it is not statistically different from zero (t-value = 1.56). The mean excess return earned on the lowest SG&A portfolio is -0.11% per month in the first year after portfolio formation. It is also statistically insignificant with a t-value of -0.79. Mean excess returns exhibit a similar pattern in the second and the third years after portfolio formation.

We extend our analysis further by forming portfolios on change in SG&A interacted with SG&A future value and report the results in panel B of table 6. In support of hypothesis 3, we again do not find high excess returns earned on high or low SG&A portfolios. The mean excess return earned on the highest SG&A interacted with SG&A future value portfolios is 0.03% per month and statistically insignificant (t-value = 0.14) in the first year after portfolio formation. The mean excess return earned on the lowest

SG&A interacted with SG&A future value portfolios is 0.03% per month and statistically insignificant (t-value = 0.18) in the first year after portfolio formation. Mean excess returns exhibit a similar pattern in the second and the third years after portfolio formation. Overall the results in table 6 support hypothesis 3 that the market fully prices the asset value of SG&A and consequently no excess returns can be earned using trading strategies based on publicly available SG&A information in subsequent periods.

V Executive compensation

In this section, we investigate the extent to which the executive labor market recognizes the asset value created by SG&A expenditure. We obtain data from Compustat 2004, CRSP 2004 and ExecuComp 2004. We impose the following restrictions on the sample: (1) No change in the CEO during the year and (2) the CEO served in the same company for at least two consecutive years. We winsorize all variables at the top and bottom 1% level of yearly distributions. The final sample contains 5,261 CEO-year observations from 1993 to 2004. Table 7 shows descriptive statistics of compensation measures. The distributions of cash and total compensation measures are consistent with prior studies (Lambert and Larcker 1987, Sloan 1993, Core, Guay and Verrecchia 2003). We consider two performance measures: the change in operating income before depreciation and SG&A (deflated by total assets), and the change in SG&A (deflated by total assets) (Sloan 1993).

To evaluate whether the executive labor market recognizes the asset value created by SG&A, we use the following model:

$$\Delta \log (COMP)_{i,t} = \gamma_0 + \gamma_1\left(\frac{OI_{i,t}}{TA_{i,t}} - \frac{OI_{i,t-1}}{TA_{i,t-1}}\right) + \gamma_2\left(\frac{SG\&A_{i,t}}{TA_{i,t}} - \frac{SG\&A_{i,t-1}}{TA_{i,t-1}}\right) + \gamma_3\left(\frac{SG\&A_{i,t}}{TA_{i,t}} - \frac{SG\&A_{i,t-1}}{TA_{i,t-1}}\right) * SG\&A\ future\ value_{i,t} + \gamma_4 RET_{i,t} + e_{i,t} \quad (7)$$

For firms with low future value created by SG&A, it is important to reward cost control activities and therefore, we expect executive compensation to be negatively related to SG&A ($\gamma_2 < 0$). Depending on the importance of these cost control activities, the magnitude of the coefficient (γ_1) may be more or less than the coefficient on the operating income before SG&A. When future benefits from SG&A investments are high, we expect contracts to reward asset-creating activities and, therefore, we expect γ_3 to be positive.

We consider salary, bonus, equity compensation and total compensation to estimate equation (7). Equity compensation is the total value of restricted stock granted and the total value of stock options granted (valued using the Black-Scholes model adjusted for dividends). Total compensation comprises salary, bonus, other annual payments, the total value of restricted stock granted, the total value of stock options granted (valued using the Black-Scholes model adjusted for dividends), long-term incentives and all other payouts.

We show the results of estimating equation (7) using different components of compensation and total compensation in table 8. The first column shows the results when using salary as the compensation measure. We do not find any evidence that SG&A is used as a performance measure in determining salary compensation. The coefficient on change in SG&A (γ_2 = -0.405) is insignificant (t-statistic = -1.11). Similarly, the coefficient on change in SG&A interacted with *SG&A future value* ($\gamma_3 = 0.271$) is also insignificant (t-statistic = 0.47). This is consistent with the notion that salary is not used as incentive compensation to link executive pay to company performance measures (Core, Guay and Larcker 2003).

In the second column for bonus compensation, we find that the coefficient on the change in SG&A ($\gamma_2 = -8.316$, t-statistic = -5.60) is significantly negative. This supports the notion that bonus compensation penalizes high spending on SG&A when SG&A asset creation value is low. On the other hand, we find that the coefficient on the change in SG&A interacted with *SG&A future value* is positive and significant ($\gamma_3 = 4.443$, t-statistic = 2.19). This evidence supports hypothesis 4 that the negative association between executive compensation and the change in SG&A is weaker when the SG&A future value creation is greater. The positive pay-for-performance sensitivity on the future value portion of SG&A suggests that compensation committees recognize and reward the asset-creating activities related to SG&A.

Core, Guay and Verrecchia (2003) observe that predictions from standard agency theory find support when CEO cash compensation is examined, but not when total compensation is examined. To explore this possibility, we repeat our analysis using equity compensation and total compensation and report the results in the third and fourth columns of table 8. For equity compensation, the coefficient on the change in SG&A expenditure is negative and significant ($\gamma_2 = -6.112$, t-statistic = -3.03). The coefficient on the change in SG&A interacted with *SG&A future value* is again positive and significant ($\gamma_3 = 7.694$, t-statistic = 2.51). This supports hypothesis 4 that compensation committees recognize and reward SG&A expenditure that creates future value. For total compensation as well, the coefficient on the change in SG&A is negative and significant

(γ_2 = -5.125, t-statistic = -4.00) while the coefficient on the change in SG&A expenditure interacted with SG&A future value is positive and significant ($\gamma_3 =$ 4.119, t-statistic = 2.10). Overall, the results in table 8 indicate that compensation committees seem to understand the dual nature of SG&A expenditure and differentiate between its expense and asset-creating components.

VI. Conclusion

In this paper, we investigate whether SG&A expenditure creates a long-lived asset for a firm although GAAP mandates that all SG&A expenditure be expensed immediately. We find that, on average, the current income (before depreciation and SG&A) is positively associated with current SG&A and the past one to five years of spending on SG&A. The length and the magnitude of the impact of SG&A on income are greater for the wholesale and retail industries than for the primary goods industries. The evidence is consistent with the notion that SG&A generates future economic benefits by enhancing brand reputation and operating efficiency.

To evaluate whether the market recognizes that SG&A has asset value, we compare the response coefficient on change in SG&A with the response coefficient on change in earnings before SG&A. We find that the contemporaneous response of the stock market does not view all SG&A expenditure as expense in the current period. The market seems to recognize that SG&A has some asset value and differentiates SG&A expenditure from the remaining components of earnings. We also document that no excess returns are earned on portfolios formed on the basis of publicly available SG&A

information. The evidence suggests that capital market participants recognize and incorporate into stock prices the ability of SG&A expenditure to create future value.

We also investigate whether the executive labor market recognizes the asset value created by SG&A expenditure. We find that the change in bonus and equity compensation is negatively associated with the change in SG&A expenditure, but this negative association is weaker when the current SG&A expenditure has higher asset creation value. This supports the notion that executive incentive contracts also recognize the ability of SG&A expenditure to create future value.

Overall, our results suggest that to compute economic income we need to adjust reported earnings. Such adjustments must recognize that SG&A creates a long-lived intangible asset that is amortized over several years, as is reportedly done in EVA® by consulting firms such as Stern Stewart. Our results, however, caution against a uniform accounting treatment of SG&A across all industries as there are wide differences in the magnitude of future value created by SG&A. We also find that investors are not fixated with reported earnings and do differentiate SG&A from other components of earnings, consistent with the efficient market hypothesis. Our analysis of the executive labor market suggests that compensation committees do seem to recognize the asset creation implication of SG&A expenditure. Looking forward, this initial inquiry into the intangible asset creation by SG&A expenditure suggests several promising avenues for research on the role of SG&A expenditure including areas such as incentive compensation contracts for mid-level managers, capital project investment decisions by executives and valuation of acquisition targets by companies.

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Table 1 Descriptive statistics on sample firms

	Mean	STD	Q1	Median	Q3
Total sales ($million)	1,023	5,451	20	80	356
Operating income before depreciation ($million)	145	796	1	8	43
Total assets ($million)	1,837	15,749	20	84	429
SG&A ($million)	150	731	4	14	57
R&D ($million)	22	201	0	0	2
Advertising ($million)	11	97	0	0	0
Operating income before depreciation, SG&A, R&D and advertising/Total assets	38%	27%	18%	34%	52%
SG&A/Total assets	27%	58%	9%	20%	35%
R&D/Total assets	3%	11%	0%	0%	3%
Advertising/Total assets	2%	13%	0%	0%	1%

Notes:

The above table shows characteristics of 121,445 firm-year observations from 1970 to 2004. Total sales is defined as Compustat annual #12, Operating income before depreciation is defined as Compustat annual # 13, Total assets is defined as Compustat annual #6, SG&A is defined as Compustat annual # 189-#45-#46, R&D is defined as Compustat annual #46, and Advertising is defined as Compustat annual #45. If R&D is missing, it is set to zero. If Advertising is missing, it is set to zero.

Table 2 Impact of lagged SG&A on return on assets
(Mean coefficients of year-by-year cross-sectional regressions over the years 1975-2004, using unrestricted distributed lag model with instrumental variables)

$$\left(\frac{OI}{TA}\right)_{i,t} = \alpha_0 + \alpha_1\left(\frac{1}{TA}\right)_{i,t-1} + \sum_{k=0}^{n}\alpha_{2,k}\left(\frac{SG\&A}{TA}\right)_{i,t-k} + \alpha_{3,d} Industrydummies + e_{i,t} \quad (1)$$

	Mean coefficient (Fama-MacBeth t-statistic)
α_0	0.066 (12.39)
α_1	0.033 (2.14)
Lagged impact of SG&A	
$\alpha_{2,0}$	0.326 (9.99)
$\alpha_{2,1}$	0.187 (4.93)
$\alpha_{2,2}$	0.155 (3.96)
$\alpha_{2,3}$	0.101 (2.89)
$\alpha_{2,4}$	0.144 (4.17)
$\alpha_{2,5}$	0.252 (7.07)
Total impact of SG&A ($\sum\alpha_{2,k}$)	1.165
Adjusted R^2	0.38

Notes:
OI is operating income before depreciation and SG&A (Compustat annual item #13+ #189 - #46 - #45). TA is total assets (Compustat annual item #6). SG&A is selling, general and administrative expenditure excluding R&D and advertising expenditure (Compustat annual #189-#46-#45). We apply the instrumental variable method by using a two-stage least squares regression. In the first stage, for each year and two-digit industry, SG&A (deflated by assets) is regressed on the average SG&A (deflated by assets) of the other firms in the same industry defined using four-digit SIC code:

$$\left(\frac{SG\&A}{TA}\right)_{i,t} = a + b\left(\frac{SG\&A\_Industry}{TA}\right)_{i,t} + u_{i,t} \quad (2)$$

In the second stage, model (1) is estimated with the predicted value of $(SG\&A/TA)_{i,t}$ from equation (2), substituting for the actual value of $(SG\&A/TA)_{i,t}$. Coefficient estimates on two-digit SIC industry dummies in equation (1) are suppressed.

Table 3 Industry-specific impact of lagged SG&A on return on assets
(Industry-by-industry pooled coefficients based on two-digit SIC code over the years 1975-2004, using unrestricted distributed lag model with instrumental variables)

Two-digit SIC code	Industry	$\alpha_{2,0}$	$\alpha_{2,1}$	$\alpha_{2,2}$	$\alpha_{2,3}$	$\alpha_{2,4}$	$\alpha_{2,5}$	$\alpha_{2,6}$	$\alpha_{2,7}$	$\sum_{k=0}^{n}\frac{\alpha_{2,k}}{(1.1)^k}$	Adj R^2
13	Oil	0.014								0.014	0.07
17	Constr	0.879	0.455							1.293	0.29
20	Food	0.338	0.564							0.850	0.05
22	Textile	0.377	0.595							0.917	0.06
23	Apparel	0.501	0.288							0.763	0.02
24	Wood	0.444	0.348	0.204						0.929	0.11
25	Chair	0.489	0.507							0.950	0.03
26	Paper	1.068								1.068	0.29
27	Printing	0.455	0.135	0.229	0.250	0.406				1.232	0.10
28	Chems	0.637	0.232	0.347	0.488					1.502	0.32
30	Rubber	0.500	0.255	0.379						1.045	0.04
31	Leather	0.879	0.506							1.340	0.25
32	Glass	0.348	0.475	0.231						0.971	0.09
33	Metal	0.452	0.298	0.280						0.954	0.14
34	Mtlpr	0.401								0.401	0.04
35	Machn	0.117								0.117	0.04
36	Elctr	0.140	0.148	0.142	0.189	0.204	0.219			0.808	0.09
37	Cars	0.368	0.309	0.414	0.172					1.121	0.05
38	Instr	0.399	0.272							0.646	0.06
39	Manuf	0.535	0.571	0.646	0.500	0.589	0.487	0.384		2.885	0.04
44	WaterTrans	0.848	0.384							1.197	0.44
45	AirTrans	0.222	0.230	0.339	0.440	0.254	0.270			1.383	0.32
48	Phone	0.189	0.110							0.288	0.02

Table 3 Continued

Two-digit SIC code	Industry	$\alpha_{2,0}$	$\alpha_{2,1}$	$\alpha_{2,2}$	$\alpha_{2,3}$	$\alpha_{2,4}$	$\alpha_{2,5}$	$\alpha_{2,6}$	$\alpha_{2,7}$	$\sum_{k=0}^{n}\frac{\alpha_{2,k}}{(1.1)^k}$	$AdjR^2$
49	Utils	0.376	0.260							0.612	0.14
50	Wholesale-durable	0.562	0.256	0.453						1.169	0.05
51	Wholesale-nondurable	0.328	0.293	0.209	0.290					0.986	0.08
52	Retail-hardware	0.745	0.338							1.053	0.17
53	Retail-variety	0.563	0.329	0.325						1.131	0.16
54	Retail-food	0.752	0.355							1.074	0.22
56	Retail-apparel	0.600	0.326	0.382						1.212	0.06
57	Retail-household	0.593	0.354	0.564	0.531	0.300	0.301			2.171	0.08
58	Restaurants	0.317	0.315	0.112	0.134	0.328				1.021	0.30
59	Retail-drugstore	0.297	0.173	0.266	0.234					0.850	0.05
73	Business service	0.286	0.231	0.172	0.204					0.792	0.03
78	Motion picture	0.200								0.200	0.00
79	Entertainment	0.417	0.391	0.181						0.922	0.03
80	Healthcare	0.616	0.312							0.900	0.11
82	Education service	0.746	0.428							1.135	0.63
83	Social service	0.463								0.463	0.01
87	Accounting, R&D service	0.630	0.353	0.370	0.808					1.864	0.15

Notes:
The above table shows coefficients on industry-by-industry pooled regressions from 1975 to 2004 of the following regression:

$$(OI/TA)_{i,t} = \alpha_0 + \alpha_1 (1/TA)_{i,t-1} + \sum_{k=0}^{n} \alpha_{2,k} (SG\&A/TA)_{i,t-k} + \sum_k Yearcontrol_k + e_{i,t} \quad (1)$$

Table 3 Continued

All variables are defined as in Table 2. Sum of discounted coefficients $= \sum_{k=0}^{n} \frac{\alpha_{2,k}}{(1.1)^k}$

Industry definition (Fama and French 1997):

Agric	Agriculture production-crops: 0100-0199
Coal	Mining-coal: 1200-1299
Oil	Oil and gas extraction: 1300-1399
Cnstr	Construction-special contractors: 1700-1799
Food	Food and kindred products: 2000-2099
Smoke	Tobacco Products: 2100-2199
Textile	Textile mill products: 2200-2299
Apparel	Apparel and other finished products: 2300-2390
Wood	Lumber and Wood Products: 2400-2499
Chair	Furniture and Fixtures: 2500-2599
Paper	Paper and allied products: 2600-2661
Printing	Printing and publishing: 2700-2799
Chems	Chemicals and drugs: 2800-2899
Rubber	Rubber and miscellaneous plastics products: 3000-3099
Leather	Apparel-leather goods: 3100-3199
Glass	Stone, Clay and Glass Products: 3200-3299
Metal	Primary metal industries: 3300-3399
Mtlpr	Fabricated metal products: 3400-3499
Machn	Machinery, except electrical: 3500-3599
Elctr	Electrical and electronic equipment: 3600-3699
Cars	Transportation Equipment: 3700-3799
Instr	Instruments and related products: 3800-3879
Manuf	Miscellaneous manufacturing industries: 3900-3999
MotorTrans	Motor freight transportation, trucking: 4200-4299
WaterTrans	Water transportation: 4400-4499
AirTrans	Air transportation: 4500-4599
Phone	Telephone and telegraph communication: 4800-4829
Utils	Electric, Gas, and Water Supply: 4900-4999
Wholesale-durable	Wholesale-durable goods: 5000-5099
Wholesale-nondurable	Wholesale-durable goods: 5100-5199
Retail-hardware	Retail-paint, glass, hardware stores: 5200-5299
Retail-variety	Retail-general merchandise stores, variety stores: 5300-5399
Retail-food	Retail-food stores: 5400-5499
Retail-apparel	Retail-apparel, accessory: 5600-5699
Retail-household	Retail-home furnishings stores, household appliance stores: 5700-5799
Restaurants	Restaurants, hotels, motels: 5800-5899
Retail-drugstore	Retail-drugstore, bookstore: 5900-5999
Business service	Business services, advertising, computer programming: 7300-7399
Motion picture	Services - motion picture production and distribution: 7800-7899
Entertainment	Amusement and recreation services: 7900-7999
Healthcare	Services-health: 8000-8099
Education service	Services-educational: 8200-8299
Social service	Services-social services: 8300-8399
Accounting, R&D service	Services-accounting, engineering: 8700-8799

Table 4 SG&A future value and firm characteristics

Dependent variable		*SG&A future value*
Independent variables	Predicted sign	Coefficient (t-statistic)
INTERCEPT		0.442 (19.93)
PPE/AVGTA	-	-0.221 (-17.61)
GM/SALES	+	-0.022 (-1.12)
EMPLOYEE/SALES	+	4.087 (5.91)
LOG(SALES)	+	0.009 (4.99)
ΔLOG(SALES)	+	-0.013 (-0.92)
HHI INDEX	-	-0.009 (-2.30)
STDROA	+	-0.092 (-0.77)
Adjusted R^2		3.6%
Mean (*SG&A future value*)		0.531
STD (*SG&A future value*)		0.258
Q1 (*SG&A future value*)		0.335
Median (*SG&A future value*)		0.543
Q3 (*SG&A future value*)		0.740

Notes:
The above table shows OLS estimation of *SG&A future value* on various firm characteristics. . *SG&A future value* ($\sum_{k=1}^{n}\frac{\alpha_{2,k}}{(1.1)^k} / \sum_{k=0}^{n}\frac{\alpha_{2,k}}{(1.1)^k}$) is estimated from rolling time-series regression of equation (1) starting from 1970. The optimal lag structure of *SG&A future value* for each firm is determined based on industry pooled regression of equation (1). We keep firm-year observations where *SG&A future value* is between 0 and 1. PPE is property, plant and equipment (Compustat annual #8); AVGTA is the average of beginning-year and ending-year total assets; GM is gross margin (Compustat annual #12- #41); EMPLOYEE is number of employees (Compustat annual #29); ΔLOG(SALES) is the change in logarithm of total sales (Compustat annual #12) from last year, capturing sales growth; LOG(SALES) is logarithm of total sales (Compustat annual #12), HHI INDEX is the degree of industry concentration, measured by Herfindahl-Hirschman Index; STDROA is the standard deviation of ROA over the five years prior to the event year divided by the mean of ROA over the five years prior to the event year, where ROA is defined as earnings before extraordinary items (Compustat annual #18) scaled by average total assets.

Table 5 Contemporaneous returns and valuation of SG&A expenditure (Pooled regression from 1975 to 2004)

Panel A Contemporaneous returns and change in SG&A expenditure

$$R_{i,t} = \gamma_0 + \gamma_1 \frac{(OI_{i,t} - OI_{i,t-1})}{MV_{i,t-1}} + \gamma_2 \frac{(SG\&A_{i,t} - SG\&A_{i,t-1})}{MV_{i,t-1}} + Industry\_dummies + Year\_dummies + e_{i,t} \quad (3)$$

	Full Sample		Profit-firm Sample		Loss-Firm Sample	
	Coefficient	(t-statistic)	Coefficient	(t-statistic)	Coefficient	(t-statistic)
γ_0	-0.028	(-2.11)	0.067	(4.85)	-0.254	(-8.30)
γ_1	0.430	(44.91)	0.426	(31.73)	0.194	(13.10)
γ_2	-0.343	(-19.98)	-0.372	(-14.74)	-0.268	(-11.87)
F-test of equality						
$\gamma_1 = -\gamma_2$	34.41	($p<0.01$)	7.52	($p<0.01$)	12.46	($p<0.01$)
Adj R^2	4.9%		5.1%		3.7%	
N	70,622		51,691		18,931	

Panel B Contemporaneous returns and change in SG&A expenditure conditional on SG&A future value

$$R_{i,t} = \gamma_0 + \gamma_1 \frac{(OI_{i,t} - OI_{i,t-1})}{MV_{i,t-1}} + \gamma_2 \frac{(SG\&A_{i,t} - SG\&A_{i,t-1})}{MV_{i,t-1}} + \gamma_3 \frac{(SG\&A_{i,t} - SG\&A_{i,t-1})}{MV_{i,t-1}} * SG\&A\ future\ value_i + Industry\_dummies + Year\_dummies + e_{i,t} \quad (4)$$

	Full Sample		Profit-firm Sample		Loss-Firm Sample	
	Coefficient	(t-statistic)	Coefficient	(t-statistic)	Coefficient	(t-statistic)
γ_0	0.014	(0.58)	0.066	(2.73)	-0.158	(-1.77)
γ_1	0.471	(19.43)	0.402	(12.31)	0.339	(8.97)
γ_2	-0.526	(-8.57)	-0.584	(-7.33)	-0.472	(-5.26)
γ_3	0.276	(3.03)	0.238	(2.14)	0.038	(0.29)
Adj R^2	8.1%		7.7%		8.0%	
N	11,005		9,265		1,740	

Notes:
R_{it} is annual buy-and-hold size and book-to-market adjusted return starting from July of year t to June of year t+1. OI is operating income before depreciation and SG&A. Profit-firm is defined as one whose earnings before extraordinary items (Compustat annual item #18) for year t are nonnegative, and loss-firm is defined as one whose earnings before extraordinary items for year t are negative. $MV_{i,t-1}$ is market value of equity at the end of year t-1

Table 6 Factor model regressions for monthly stock returns on SG&A portfolios (Sample period: 1975-2004)

At the end of June each year from 1975 to 2004, we form portfolios by assigning firms into quintiles based on the change in SG&A (deflated by total assets) (Panel A) and change in SG&A interacted with *SG&A future value*. We obtain estimated coefficients, t-statistics and adjusted R^2 from the Fama and French (1993) three-factor model:

$$R_{pt} - R_{ft} = a + b(R_{mt} - R_{ft}) + sSMB_t + hHML_t + \varepsilon_{pt} \quad (5)$$

where R_{pt} is the monthly return on portfolio p in calendar month t, R_{ft} is 1-month T-bill return, R_{mt} is the CRSP value-weighted market index return, SMB_t is the return a portfolio of small stocks minus the return a portfolio of large stocks, and HML_t is the return on a portfolio of stocks with high book-to-market ratios minus the return on a portfolio of stocks with low book-to-market ratios. We estimate the model using monthly returns from each of the first three years following portfolio formation. The intercept (*a*) in the above equation is the abnormal return measure.

Panel A Factor model regressions on portfolios formed on ΔSG&A/TA

	(ΔSG&A/TA) Portfolio	a	t(a)	b	t(b)	s	t(s)	h	t(h)	Adj. R^2
First year after portfolio formation	0 (Low)	-0.107	-0.79	1.051	31.02	0.997	22.75	0.074	1.43	0.86
	1	-0.017	-0.20	1.003	47.53	0.705	25.87	0.329	10.24	0.91
	2	0.024	0.30	0.962	48.19	0.525	20.37	0.533	17.55	0.90
	3	0.170	1.68	1.008	39.57	0.813	24.71	0.338	8.72	0.89
	4(High)	0.305	1.56	1.015	20.49	1.206	18.86	0.014	0.18	0.77
Second year after portfolio formation	0 (Low)	-0.047	-0.33	1.050	29.81	0.954	20.93	0.145	2.71	0.85
	1	-0.019	-0.22	1.008	45.23	0.682	23.63	0.353	10.40	0.90
	2	0.109	1.34	0.965	47.16	0.530	20.01	0.534	17.12	0.90
	3	0.120	1.27	0.991	41.97	0.822	26.89	0.315	8.76	0.90
	4(High)	0.287	1.57	1.005	21.97	1.195	20.18	0.021	0.30	0.80
Third year after portfolio formation	0 (Low)	0.083	0.58	1.033	28.84	0.965	20.84	0.163	3.00	0.85
	1	0.044	0.49	1.005	45.10	0.694	24.09	0.377	11.13	0.91
	2	0.029	0.34	0.972	45.55	0.518	18.75	0.528	16.27	0.89
	3	0.111	1.13	1.002	40.96	0.778	24.59	0.345	9.28	0.90
	4(High)	0.168	0.98	1.005	23.54	1.111	20.12	0.044	0.68	0.82

Table 6 Continued

Panel B Factor model regressions on portfolios formed on (ΔSG&A/TA)* SG&A future value

	(ΔSG&A/TA) *SG&A future value Portfolio	a	t(a)	b	t(b)	s	t(s)	h	t(h)	Adj. R^2
First year	0 (Low)	0.027	0.18	0.866	20.09	0.474	9.47	0.530	9.28	0.74
after	1	-0.016	-0.12	0.886	23.11	0.408	9.19	0.638	12.62	0.78
portfolio	2	0.077	0.62	0.952	26.79	0.407	9.86	0.515	10.97	0.82
formation	3	-0.080	-0.56	0.985	24.39	0.625	13.25	0.556	10.32	0.82
	4(High)	0.025	0.14	0.974	19.76	0.700	12.22	0.438	6.72	0.77
Second	0 (Low)	0.127	0.81	0.786	17.81	0.501	9.92	0.445	7.67	0.73
year after	1	-0.063	-0.43	0.881	21.29	0.379	8.06	0.626	11.59	0.75
portfolio	2	-0.196	-1.58	0.984	27.99	0.408	10.15	0.565	12.29	0.84
formation	3	-0.050	-0.31	0.930	20.28	0.537	10.29	0.482	8.07	0.77
	4(High)	-0.174	-0.98	0.986	19.73	0.682	11.56	0.519	7.80	0.77
Third	0 (Low)	0.054	0.32	0.828	16.99	0.391	7.25	0.509	8.33	0.68
year after	1	0.002	0.01	0.857	18.90	0.435	8.73	0.654	11.52	0.73
portfolio	2	0.017	0.13	0.898	23.51	0.341	8.04	0.469	9.71	0.80
formation	3	-0.108	-0.74	0.916	21.79	0.521	11.13	0.455	8.57	0.80
	4(High)	-0.195	-1.09	0.886	17.36	0.500	8.53	0.379	5.80	0.72

Table 7 Sample statistics on executive compensation and performance measures

	Mean	STD	Q1	Median	Q3
Salary ($thousands)	656	320	453	611	802
Bonus($thousands)	647	900	152	407	852
Equity Compensation ($thousands)	2,258	4,199	239	900	2,435
Total Compensation ($thousands)	3,561	4,780	1,072	2,051	4,065
Δlog(Salary)	0.050	0.355	-0.014	0.033	0.077
Δlog(Bonus)	0.092	0.761	-0.208	0.084	0.405
Δlog(Equity Compensation)	0.152	1.559	-0.323	0.125	0.675
Δlog(Total Compensation)	0.090	0.580	-0.172	0.083	0.385
ΔOI	-0.005	0.047	-0.023	-0.002	0.018
ΔSG&A	-0.002	0.025	-0.008	0.000	0.005
SG&A future value	0.535	0.255	0.339	0.549	0.746

Notes:
Equity compensation is the total value of restricted stock granted and the total value of stock options granted (valued using the Black-Scholes model adjusted for dividends). *Total Compensation* is CEO's total compensation for the individual year, comprised of salary, bonus, other annual, total value of restricted stock granted, total value of stock options granted (using Black-Scholes), long-term incentive payouts, and all other total.

Table 8 Estimated relation between executive compensation and SG&A components (Pooled regression from 1993 to 2004 with industry and year dummies)

$$\Delta \log(COMP)_{i,t} = \gamma_0 + \gamma_1\left(\frac{OI_{i,t}}{AVGTA_{i,t}} - \frac{OI_{i,t-1}}{AVGTA_{i,t-1}}\right) + \gamma_2\left(\frac{SG\&A_{i,t}}{AVGTA_{i,t}} - \frac{SG\&A_{i,t-1}}{AVGTA_{i,t-1}}\right) + \gamma_3\left(\frac{SG\&A_{i,t}}{AVGTA_{i,t}} - \frac{SG\&A_{i,t-1}}{AVGTA_{i,t-1}}\right) * SG\&A future\ value_{i,t} + \gamma_4 RET_{i,t} + e_{i,t} \quad (7)$$

	Predicted sign	Salary	Bonus	Equity Compensation	Total Compensation
		Coefficient (t-statistic)	Coefficient (t-statistic)	Coefficient (t-statistic)	Coefficient (t-statistic)
γ_0		0.013 (4.42)	-0.004 (-0.26)	0.130 (6.80)	0.082 (5.40)
γ_1	+	0.249 (1.78)	4.980 (7.07)	1.397 (2.32)	2.097 (5.00)
γ_2	-	-0.405 (-1.11)	-8.316 (-5.60)	-6.112 (-3.03)	-5.125 (-4.00)
γ_3	+	0.271 (0.47)	4.443 (2.19)	7.694 (2.51)	4.119 (2.10)
γ_4	+	0.007 (0.57)	0.429 (8.45)	0.146 (1.92)	0.253 (5.63)
Adj R^2		4.2%	13.6%	4.2%	7.2%

Notes:
All variables are defined in Table 7. Coefficients on industry dummies and year dummies are not shown. T-statistics are based on Huber-White robust standard errors that are robust to both serial correlation and heteroscedasticity (Rogers 1993).