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The Buffering Effect of Brands for Companies Facing Legislative Homogenization: Evidence from the Introduction of Sarbanes-Oxley

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Abstract

Brands not only enhance the positive impact of marketing initiatives, but also buffer the firm from the full consequences of unexpected and negative market shifts. While this protective effect has been demonstrated for firm-specific events (e.g., product recalls, public relations crises), its impact has not been observed in response to market-wide environmental shifts. Our study demonstrates the buffering properties of strong brands in exactly such a context: the passing of new legislation. By examining responses to the introduction of the Sarbanes-Oxley Act of 2002, we show that (1) firms exhibit a rapid and homogeneous response as they comply and adjust strategy to a new environmental incentive/cost structure; (2) from a marketing perspective, this homogeneity in competitive responses leads to a systemic decrease in marketing efficiency; and (3) stronger brands existing prior to this environmental shift help buffer their companies from this loss in efficiency. We further show that this advantage only holds for the strongest of brands in the market.

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**The Buffering Effect of Brands for Companies Facing Legislative Homogenization:
Evidence from the Introduction of Sarbanes-Oxley**

Felipe Thomaz, Leonce Barger, John Hulland, and Chad Zutter¹

Strong brands have been shown to often be catalytic in nature, enhancing the positive effects of other marketing initiatives. Furthermore, brands can ameliorate the negative impact of undesirable situations, such as service failures (Zboja and Vorhees 2006), negative publicity (Ahluwalia, Burnkrant, and Unnava 2000), and product recalls (Cleeren, Dekimpe, and Helsen 2008; Kalaignanam, Kushwaha, and Meike Eilert 2013). Given this joint benefit of both reinforcing positive and dampening negative firm consequences, as well as their own direct positive effects on firm outcomes, it is not at all surprising that “building strong brands has become a top priority for many organizations” (Keller 2001, p. 1). Moreover, since many managers are risk averse, understanding when brands can be expected to attenuate the effects of negative outcomes is particularly important.

The vast majority of past research attempting to understand the buffering role played by brands in the face of negative events has been firm-specific (e.g., a firm’s recalled products, a firm’s service failures). While this work is important, it does not assess the potential power of brands to soften the negative consequences of broader environmental shifts (i.e., systematic rather than firm-specific effects). Notably, studies considering the role of marketing assets in protecting the firm and investors from systematic equity risk have led to diverging findings. While Rego, Billet, and Morgan (2009) find that strong brands can protect the firm from

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downside systematic equity risk, Bharadwaj, Tuli, and Bonfrer (2011) conclude instead that gains in brand quality may increase systematic risk. While restricted to the firm's economic environment, these studies are evidence that brands can alter the firm's exposure to market-wide environmental shifts, for better or worse. In this paper, we examine the impact of a different environment's systematic shift on firms' marketing performance—the introduction of the Sarbanes-Oxley Act in the United States in 2002—highlighting how this type of systematic shock impacts the firm's marketing efficiency.

It is difficult to overstate the impact of the environment on the firm. First, the firm's ability to adapt and respond to its external environment has been considered as equivalent to the process of strategic management itself (Chakravarthy 1982). Second, depending on the theoretical perspective, the environment has been said to either influence or totally determine firm conduct (Hunt and Morgan 1995). In this context, Hunt and Morgan (1995, p. 12) emphasize that “a firm's comparative advantage in resources can be neutralized by the actions of consumers, government, or competitors . . . governmental action can destroy the value-creating potential of a resource through law or regulation.” Ironically, legislative change is the environmental change factor most likely to be met with minimal resistance from managers—and thus result in the fastest behavioral adjustment (DiMaggio and Powell 1983; Scott 1997). Given the frictionless, systemic (rather than targeted), and potentially negative nature of governmental action, as well as the general importance of environmental factors for firm conduct, our review leads us to consider the following question: Can a strong brand buffer the firm from negative consequences arising from government-driven environmental change?

In this paper, we aim to answer this question by showing that (1) governmental action through new legislation elicits a rapid and homogeneous response from firms as they comply and

adjust strategy to a new environmental incentive/cost structure; (2) from a marketing perspective, this homogeneity in competitive responses leads to a systemic decrease in marketing efficiency; and (3) stronger brands existing prior to this environmental shift help buffer companies from this loss in efficiency. Specifically, we examine how the introduction of the 2002 Sarbanes-Oxley Act (SOX) and the associated effects on firms' costs and incentive structures led to a shift in the relative emphasis that firms place on two critical marketing activities: value creation (e.g., developing and delivering new products) and value appropriation (e.g., extracting profits from existing products). Consistent with existing evidence in the finance and accounting literatures that SOX has diminished risk-taking within firms, we hypothesize and then identify a shift away from riskier investments in value-creating activities and toward less risky value appropriation. In light of this shift, we predict—and show—that firms experienced a decrease in marketing efficiency in response to this systemic incentive to engage in value appropriation activities. Finally, we provide evidence demonstrating that previous marketing investments in brand equity undertaken by the firm can help protect it from this negative consequence.

We begin with a discussion of SOX and related research that finds decreased risk-taking in US firms resulting from this legislation, followed by an examination of the resulting resource allocation decision in which firms engaged (made evident by shifts in their strategic emphasis trajectories). We then introduce our methodology for this study, taking advantage of a naturally occurring quasi-experimental interrupted time series empirical design (Nunnally 1960), with the introduction of SOX serving as our “treatment.” Finally, we present our results followed by a discussion of their implications for marketing.

Sarbanes-Oxley

The Sarbanes-Oxley Act of 2002 was introduced in the wake of a series of accounting scandals involving companies such as Enron, WorldCom, and Adelphia. The apparent intent of this law was to prevent such scandals in the future and to restore investor confidence in the veracity of US financial markets by making firms' directors personally responsible for corporate misdeeds and by requiring firms to establish, disclose, and assess internal control systems. However, its introduction has not gone without criticism. One recurring concern is that the combined requirements of compliance, along with potential criminal charges for noncompliance, have led to an environment that discourages investment in new projects, innovation, and risk-taking (Michaels 2003; Greenspan 2003). In a 2006 interview, economist and Nobel Prize winner Milton Friedman highlighted this concern, stating, "Sarbanes-Oxley says to every entrepreneur, 'For God's sake don't innovate. Don't take chances because down will come the hatchet. We're going to knock your head off'" (Gerstein 2006).

A number of studies in accounting and finance have examined whether the introduction of SOX has increased the cost of risk and, therefore, decreased risk-taking by publicly traded US firms (Cohen, Dey, and Lys 2007; Shadab 2008; Barger, Lehn, and Zutter 2009). Their findings suggest that risk-taking has decreased in the period following SOX, as manifested by (1) decreased investment, (2) reduced standard deviations of stock returns (a measure of equity risk), and (3) increased levels of cash holdings.

Two key clauses in the Sarbanes-Oxley legislation support this prediction of reduced risk-taking behavior by US firms. First, at the firm board level, SOX increases the role of independent directors while simultaneously introducing potential criminal charges for corporate misdeeds. Furthermore, both the chief executive and chief financial officers must certify the

veracity of their firm's financial statements, once again facing potential criminal charges for any knowing or willful violation. These changes directly discourage the approval of risky activities, such as new product development and R&D, which entail specialized, project-specific knowledge that necessitates a greater investment of time throughout the corporate hierarchy to evaluate and monitor.

Second, Section 404 of the legislation and the resulting SEC rules require firms to evaluate and disclose the adequacy of their internal controls and provide reasonable assurance that misstatements will be avoided or identified. Riskier investments entail greater uncertainty. Therefore, insofar as greater uncertainty requires more extensive testing and evaluation and is more likely to result in misstatements, these requirements impose greater costs on riskier investments. As a result, risky investments—already discouraged by boardroom composition and the criminalization of misdeeds—are further discouraged by Section 404.

It is important to recognize that SOX legislation does not directly impose regulation on the marketing function. Thus, any shifts in efficiency that result from the introduction of the new law should reflect the homogeneous strategic use of marketing discussed below, rather than any direct change in allowable marketing initiatives. Obviously, it is not always the case that legislation has no direct bearing on marketing operation. For example, the Robinson-Patman Act of 1936 (Pub. L. No. 74-692, 49 Stat. 1526; Luchs et al. 2010), as well as the Public Health Cigarette Smoking Act of 1969 (Bates 1969), had direct implications for marketing management by amending antitrust law to include provisions against discriminatory pricing and by prohibiting firms from advertising tobacco products on television and the radio (respectively). In these latter situations, it would be necessary to also consider shifts in the marketing mix. However, such is not the case for examining the effects of SOX.

Hypotheses

Strategic marketing emphasis

The trade-off between exploration (identifying and developing innovative products) and exploitation (extracting profits from the market) has a long history in the strategic management domain (March 1991). An extreme emphasis on either activity at the expense of the other can be suboptimal: excessive exploration can lead to an accrual of too many costs without the realization of accompanying benefits, while too much focus on exploitation leads to a shallow position of underdeveloped ideas and a lack of competitive distinction in the longer run.

More recently, this tension has evolved into a contrast between “value creation” and “value appropriation” (Mizik and Jacobson 2003), serving as mechanisms through which marketing brings value to the firm. Value creation represents a strategy of innovation, where a steady flow of innovative products maintains a long term firm advantage, but also entails more risk. Value appropriation represents a lower risk strategy of extracting profits while maintaining the firm’s current advantage by introducing competitive barriers (e.g., strong brands). The concept of strategic marketing emphasis, as introduced by Mizik and Jacobson (2003, p. 65), describes the relative interplay between these two alternatives as “complements and imperfect substitutes.” They further note that while “value creation influences the potential magnitude of [an] advantage; value appropriation influences the amount of the advantage the firm is able to capture and the length of time the advantage persists.” Most firms combine value creation and value appropriation activities; a firm’s strategic marketing emphasis reflects its *relative* emphasis on value creation versus value appropriation.

It is important to note that new product launches—typically attended by large commercialization expenditures—are part of value appropriation, not value creation. When firms focus on the latter, they invest in asset creation (generally in the form of R&D) *prior* to introducing those assets (products) into the market. In doing so, these firms are following a strategy of innovation with an eye toward the development of a strong portfolio of future products. Once marketing investments (e.g., demand creation, branding) for a specific product begin, however, the firm has shifted its emphasis for this product from value creation to value appropriation.

While previous research has shown that strategic marketing emphasis varies by firm and industry (Mizik and Jacobson 2003), our contention is that a shift in the amount of institutionally induced environmental risk has a systematic effect on the relative strategic marketing emphasis of all firms. The introduction of SOX increased perceived environmental risk (both at the personal and corporate levels). This increased risk affected both financial and marketing decision-making within firms. From the financial perspective, firms reduced their investment in riskier R&D activities and increased their cash holdings (e.g., Barger, Lehn, and Zutter 2009). What we are proposing here is that SOX also shifted firms' relative marketing emphases away from value creation (i.e., R&D investment) and toward value appropriation (e.g., advertising). Thus, both the financial and marketing decisions undertaken by firms in the post-SOX period demonstrate a desire to shift away from riskier R&D investment and toward lower risk alternatives (e.g., cash, value appropriation). Empirical evidence for the financial shift away from R&D has already been provided (Cohen, Dey, and Lys 2007; Shadab 2008; Barger, Lehn, and Zutter 2009). In contrast, the corresponding marketing shift has not been previously

studied. We argue that firms, in fact, increase investment in the form of increased value appropriation.

Using a cost-benefit framework, and recognizing that SOX did not materially change the benefits received by firms, it follows that the perceived cost increases introduced by SOX likely drove shifts in both firm- and individual-level behaviors. At the firm level, SOX increased the relative cost of risky investment without increasing the relative benefit.² This shift was exacerbated by the personal cost-benefit analysis of executives and directors who now face increased criminal liability. Thus, firms' managers likely shifted their relative emphases away from value creation in response to the higher cost of risk it entails, and toward value appropriation initiatives with lower attendant risks. In other words, although legislation attempting to increase transparency and oversight of firms may not necessarily increase the relative cost of risk, the specific structure of the regulations and penalties legislated in SOX does decrease incentives for risk-taking. As such, SOX increased the perceived cost of value creation relative to value appropriation, and we expect to see that firms shifted their strategic marketing emphases toward value appropriation and away from value creation following the introduction of SOX. Thus:

H1 Firms will on average shift to a greater strategic marketing emphasis on value appropriation (versus value creation) following the introduction of SOX.

² Although a decrease in risky investment by other firms as a result of the increased cost of risky investment from SOX might increase the marginal benefit of risk-taking for a focal firm in an equilibrium analysis, aggregate risk-taking would still be lower after SOX. We do not hypothesize that every US firm will decrease risk-taking, but that on average US firms will do so. Similarly, we do not hypothesize that multisegment firms will pursue the same pattern across all segments. Managers will determine how to spread the adjustments to risk-taking across segments depending on the relative costs and benefits of risk within each segment's industry.

Marketing efficiency

For firms with set or constrained marketing budgets, the increased risk associated with value creation, as described above, will shift resources toward value appropriation. As a result, investment in marketing actions increases, with brand-building advertising being a foremost example (Mizik and Jacobson 2003). One potential consequence of increased marketing spending, however, is a decline in marketing efficiency. Marketing efficiency is the ratio of a firm's marketing performance (outputs) to the inputs consumed in its generation (Vorhies and Morgan 2003). Thus, marketing efficiency is maximized when the firm realizes greater gains (usually in terms of revenues) with the minimum necessary amount of associated costs.

If we consider an individual firm, the shock provided by SOX should lead it to increase its relative level of marketing spending, as argued earlier. Further, due to the separation of finance and marketing decisions within the firm, total expenditures on marketing (R&D plus marketing expense) are likely to be somewhat “sticky” from one year to the next. (“Stickiness” refers to the resistance on the part of marketing managers to decrease marketing expenditures. This resistance stems from any private information they have about the effectiveness of marketing expenditures as well as self-interest in keeping their budgets large.) As a result of this stickiness, a decrease in R&D spending coupled with a desire on the part of a firm's marketing department to retain as large a budget as possible for next year will lead to an increase in marketing expense (e.g., more advertising).³ The firm might anticipate that this will lead to an

³ For our main result, we do not require stickiness because we examine relative—rather than absolute—marketing expenditure. Given our main result, stickiness is only one way to ensure increased marketing spending after SOX. In fact, so long as capital rationing exists within the firm, then spending on marketing will increase after SOX. For example, if before SOX the firm is capital rationed, then the marginal utility of R&D spending > 0 and the marginal utility of marketing spending > 0 [$MU(R\&D) = MU(\text{Marketing}) > 0$ in equilibrium]. After the SOX shock, which increases the marginal cost of R&D, R&D spending will go down and marketing spending will increase until, in equilibrium, the new marginal utilities are once again equal. The marginal utilities of each will be lower after SOX than before SOX.

increase in the revenues it generates, leaving the firm's marketing efficiency at some new level that is dependent on firm, market, and industry idiosyncrasies. However, this shift in marketing spending is not happening in isolation. As a broad-based legislative change, SOX can be expected to have a systematic impact on all firms, regardless of industry. What, then, is the net impact on an individual firm's marketing efficiency?

To more concretely illustrate this effect of SOX, we focus the following discussion on advertising expenditures, but our arguments apply equally to other forms of marketing expenditures as well. Previous research has shown that increasing the number of competing brands advertising in a market and/or the amount they spend on advertising will decrease a focal firm's share of voice, thereby undermining consumers' ability to recall information from ads (Keller 1987; Burke and Srull 1988). This results in reduced effectiveness of the focal firm's advertising, ultimately diminishing its revenues. Furthermore, competitive advertisement has been argued to "provide information that serves to dissipate [a firm's] isolating mechanisms," or its ability to appropriate value through activities like brand-based advertising (Mizik and Jacobson 2003, p. 66).

In response, marketing managers typically adjust their advertising expenditures so that "their messages can be heard through the noise" (Little 1979, p. 1). Thus, as competitive advertising increases, the focal firm must also increase its advertising expenditures in order to maintain an equal amount of "above noise" exposure (i.e., to maintain a parity share of voice in its market).

Taken together, these observations suggest that with the introduction of SOX, firms are likely to increase their advertising spending, both as a direct response to SOX and as a

competitive response.⁴ The result of this, however, will be a reduction in advertising effectiveness. Of course, this loss of effectiveness does not need to be restricted to the advertising domain. Competitive reaction can also happen as a result of changes in other marketing instruments, such as price, product features, and promotions (e.g., Leeflang and Wittink 1992, 1996). More generally:

H2 Firms will, on average, experience lower levels of marketing efficiency following the introduction of SOX versus the preceding period.

Although H2 represents our overall prediction for firms in general, previous research also indicates that brand familiarity plays a crucial role in improving brand and advertising recall in cluttered advertising environments (Kent and Allen 1993). For example, Keller (1993) argues that customer-based brand equity represents the differential effect of brand knowledge on consumer responses to brand-related marketing expenditures. This advantage has been noted in past research on responses to advertising, demonstrating that consumers with positive predispositions toward a brand require fewer exposures to a marketing message, and less reinforcement, in order to meet the brand's communication objectives (Ray 1982; Rossiter and Percy 1987). From this perspective, it follows that for strong brands (i.e., those with strong, positive brand equity), brand-based advertising (and other marketing investments) will be more effective than the advertising of weaker competitors who do not have the same levels of brand awareness and image.

⁴ In fact, observations on American firms around the introduction of SOX corroborate this notion. While the average reported advertising expense decreased by 2.3 percent from 2000 to 2001 (or \$0.83 million less for the average firm in those years), it increased by 11.76 percent from 2001 to 2002 (or an additional \$4 million on average), the year that SOX was introduced. In a longer window, examining the decade preceding and following SOX, we observe that the average firm advertising expense reported in the post-SOX era was 52 percent higher than those reported in the pre-SOX period (this is \$17 million more per year for the average firm).

This differential efficacy of advertising suggests that an ongoing firm strategy of investing in brand equity could serve as a protective measure against an eventual risk-increasing legislative change, such as the introduction of SOX. As argued earlier, the introduction of SOX provides a systematic incentive for firms to advertise as a means to appropriate value, thus increasing the clutter of advertising and ultimately reducing the efficiency of marketing investment. However, a firm that enters into this environment with higher brand equity should expect a greater “probability of brand choice, as well as greater consumer loyalty, and decreased vulnerability to competitive marketing actions” (Keller 1993, p. 8). The benefit of greater a priori investment in brand equity for marketing efficiency, then, should be double-barreled: first through the increased efficacy of the brand’s own advertising, and second through a reduction in the effectiveness of competitive advertising spending. Thus:

H3 Firms that invested in brand-building activities prior to the introduction of SOX will have higher levels of marketing efficiency than other firms following the introduction of SOX.

Method

Data Sources and Firm Sample

Financial accounting and stock data were gathered from Compustat and CRSP, respectively, while data on annual growth rate in gross domestic product (GDP) were collected for each year from the International Monetary Fund’s website.

The sample used in this study is in the form of a panel consisting of 17 annual observations per firm, running from 1994 to 2010 (inclusive) and providing nine years of observations prior to the enactment of SOX in 2002 plus an additional eight years of post-SOX enactment observations. We use this time frame to capture both firms’ pre-SOX investment tendencies and firms’ adjustments to the enactment of SOX. A total of 1,441 firms (939 in the

United States and 502 in the United Kingdom), representing 52 different industries (as determined by two-digit SIC codes, excluding financials and utilities due to their highly regulated behavior) are included in our study.⁵ By virtue of falling outside of SOX jurisdiction, the UK-based firms serve as our control group for the analyses that follow.

Measures

Dependent Variables

Strategic Marketing Emphasis. Our first dependent variable is a measure of the firm's strategic marketing emphasis, representing the firm's strategic choice between the creation and the appropriation of value (Mizik and Jacobson 2003; Swaminathan, Murshed, and Hulland 2009). This conceptualization has the advantage of capturing actual (rather than declared) firm strategy (Harrison, Hall, and Nargundkar 1993). Furthermore, it can be assessed using secondary data, rather than requiring primary data collection. Specifically, we calculate strategic marketing emphasis (for firm i at time t) as follows:

$$SME_{ti} = (\text{Marketing Spending Intensity}_{ti} - R\&D_{ti}) / \text{Assets}_{ti}$$

(1)

Following previous research (Mizik and Jacobson 2007; Luo 2008; Chakravarty and Grewal 2012), we use a firm's selling and general administrative (SGA) expenses minus its R&D expenses as a proxy for the firm's marketing spending intensity. While this initially may seem odd, by removing the R&D component of SGA, we are left with a more complete measure of marketing investment, which includes items such as promotions and sales force costs as well

⁵ This includes all US-based firms in Compustat that reported non-zero R&D investment for the time frame of interest. Firms with no R&D expenditures across the entire 17-year time period were excluded. Firms reporting fewer than 12 years of data or less than \$75 million in assets (to which SOX does not apply) were also excluded.

as advertising. While SGA has been used in past research as the sole and unmodified proxy for marketing expenditure, this purified version of SGA also allows us to examine the strategic trade-off between marketing and R&D investments.⁶ As per Mizik and Jacobson's (2003) original conceptualization, marketing spending intensity and R&D correspond to the firm's use of a value appropriation and value creation emphasis, respectively.

Marketing Efficiency. Our second dependent variable is a measure of the firm's marketing efficiency, or its ability to convert marketing spending into revenues. Defined as the ratio of marketing performance outcomes to the resources consumed (Vorhies and Morgan 2003), we calculate marketing efficiency as:

$$\text{Marketing Efficiency}_{ti} = \text{Sales}_{ti} / \text{Marketing Spending Intensity}_{ti} \quad (2)$$

The use of sales as a marketing performance indicator is appropriate as it reflects "enhanced values of the firm's products in the minds of current and potential customers . . . [as well as being] crucial to building market share" (Dutta, Narasimhan, and Rajiv 1999, p. 552). Marketing spending intensity, as described previously, provides a holistic view of marketing effort by accounting for advertising, promotional, and selling efforts, representing the sales revenue value to the firm of a dollar spent on its marketing.

Independent Variables

Time-based SOX-related trend variables. Our main independent variables of interest are two trend variables created to indicate the period preceding the introduction of the Sarbanes-Oxley

⁶ Compustat includes R&D expense (XRD, item 46) as one of the components of the reported SGA (XSGA, item 132). Thus, the former must be removed from SGA for the constructed marketing emphasis measure to be meaningful in capturing the intended trade-off between value creation and value appropriation.

legislation (1994–2001) and the period following its introduction (2003–2010). These variables are coded according to the scheme presented in table 1, which allows for the interpretation of the resulting coefficients as a linear rate of change in strategic emphasis for each of these periods (see Raudenbush and Bryk 2002, pp. 178–80). The advantage of this approach is that it allows for the existence of a single trend in strategic marketing emphasis behavior spanning the entire period of our study (1994–2010), but also for the possibility of a fundamental shift in strategic marketing emphasis between the pre- and post-SOX periods. We use 2002—the year that Sarbanes-Oxley was introduced as law—as the reference point. This facilitates our discussion of legislative interference as a potential source of disruption resulting in shifts in strategic emphasis. Furthermore, because SOX was passed in late July 2002, we define each year as August to July (e.g., the 2002 year begins on August 1, 2001, and ends on July 31, 2002).⁷

Table 1: Coding Scheme for Piece-Wise Linear Model

Year	'94	'95	'96	'97	'98	'99	'00	'01	'02	'03	'04	'05	'06	'07	'08	'09	'10
Pre-Sox	-8	-7	-6	-5	-4	-3	-2	-1	0	0	0	0	0	0	0	0	0
Post-Sox	0	0	0	0	0	0	0	0	0	1	2	3	4	5	6	7	8

Notes: Interpretation of coefficients (π_s):

- The intercept reflects the firm's strategic marketing emphasis (SME) in 2002, the year SOX was introduced (π_{0i}).
- The coefficient for the **pre-SOX period** shows the linear rate of change (growth rate) in SME for the period preceding SOX (π_{1i}).
- The coefficient for the **post-SOX period** shows the linear rate of change (growth rate) in SME for the period following SOX (π_{2i}).

Control Variables

⁷ As a robustness check, we have also used 2000, 2001, 2003, and 2004 as alternative reference years. We find that based on BIC and Pseudo-R², models using 2002 and 2003 as the reference provide the best fit. The goodness of fit for models using 2003 as a reference year is not surprising given the long-term nature of the investments being discussed, such that some of the changes taking place in the firm spill over into the following year. For sake of brevity, and given that SOX was introduced in 2002, we discuss only the results from models using the 2002 reference year. However, the 2003 reference year results are very similar.

Because H1 is based on risk-related arguments, it is important to control for other known variables that might also influence a firm's risk-taking posture in order to isolate the effects of the SOX legislation. Consistent with previous studies looking at the effects of SOX (Cohen, Dey, and Lys 2007; Bargeron, Lehn, and Zutter 2009), we account for the following time-specific factors: the health of the economy; the levels of risk and opportunity in the financial markets; and the firm's size, debt, and profitability. Each of these variables is mean-centered by firm.

Firm Size. We use the number of employees (Compustat) as our measure of the firm's size for each year the firm is present in the dataset.

Debt. This measure is the ratio of a firm's total debt to the average market value of assets. It serves as an additional indicator of the firm's existing risk profile. The values of DEBT used in the model are both time- and firm-specific.

EBIT. We use the ratio of earnings before interest and taxes to average book value of debt as our measure of the firm's profitability, a factor that we expect to influence the firm's resource allocation decisions, and that therefore could explicitly affect SME. The values of EBIT used in the model are both time- and firm-specific.

Lagged Change in Gross Domestic Product. Measured as the percentage change in the country's GDP for each year in the panel, we use this variable to control for the health of the economy, lagging the measure one and two years in order to capture its lingering effects. Each lagged version of this variable is a time-varying predictor; however, all firms in the US sample share the same values in any given period (and the same is true for all of the UK firms).

Index Returns. We utilize a stock index return of the S&P 500 for American firms and the FTSE 100 for UK-based firms to account for existing levels of risk and opportunity in the financial markets, as well as a possible alternative explanation for strategic shifts, such as the economic recession of 2001. This is again a common value that varies by year across all firms within the US or UK markets.

USA. This is an indicator variable with a value of 1 for companies that are based in the United States and, as such, potentially affected by SOX when the legislation was introduced in 2002. The reference value of zero is reserved for UK-based companies, which are unaffected by SOX.

Marketing Intensity HHI. We use a Herfindahl index of marketing intensity to control for changing levels in competitive marketing spending. This industry-level value is calculated as the sum of the squares of the shares of marketing intensity by firms i belonging to the same industry k (two-digit SIC code) such that:

$$MARKETING\ INTENSITY\ HHI_{tk} = \sum_{i=1}^K \left(\frac{Marketing\ Intensity_{ti}}{Marketing\ Intensity_{tk}} \right)^2$$

Brand Equity. We rely on adjusted revenue premiums as a measure of the firm's brand equity, adapted from the work by Ailawadi, Lehmann, and Neslin (2003). We calculate brand equity as follows:

$$BE_{ti} = \left[\frac{(Sales_{ti} - COGS_{ti})}{COGS_{ti}} \right]_{ti} - MIN \left[\frac{(Sales_{ti} - COGS_{ti})}{COGS_{ti}} \right]_{tk}$$

where i is the focal firm, t is time, and k is the industry in which the focal firm operates. Our measure of firm i 's brand equity captures the extent to which that firm is able to extract a price premium above the lowest performing firm in the same industry, assuming that the firm with the lowest price premium is an appropriate stand-in for generic or unbranded products (Ailawadi, Lehmann, and Neslin 2003). The introduction of cost of goods sold in the above formula allows us to capture the supplier-side benefits of strong brands (Ailawadi, Lehmann, and Neslin 2003; Leone et al. 2006) as well as account for strong brands that might rely on an overall low-cost strategy by emphasizing a volume advantage in our calculation.⁸

Model Development

Strategic Marketing Emphasis

We employ a piecewise linear growth model with time-varying covariates using a hierarchical multivariate linear modeling (HMLM) approach (Raudenbush and Bryk 2002). This technique is appropriate due to (1) its ability to handle nested data, which we make use of by applying our final model to a reported 17 years of history for each of the 1,441 firms in our sample (i.e., repeated measures for both the IVs and the DV are nested within firm); (2) its ability to function in the presence of unbalanced data (not all firms are present for the full 17-year panel); and (3) its known application in studies of individual change.

The piecewise linear model is advantageous in this situation as a tool for structural break analysis, allowing us to confirm whether firms altered their investment trajectories as a result of the introduction of SOX. In most applications, this approach would lead to the identification of

⁸ While our overall analysis is restricted to firms with assets above \$75 million, as described in the data discussion above, this measure was constructed with all firms available in Compustat, such that the MIN value of revenue premiums can belong to firms under the \$75 million threshold (where SOX is not applicable).

firm-specific change points (i.e., time intervals that mark a departure for the firm through new data generating processes, changes in regimes, etc.). However, given our interest in a naturally occurring quasi-experimental shock to our time series, and knowledge of the specific time interval for the introduction of SOX (i.e., fiscal year 2002), we can instead check whether the 1,441 firms in our dataset suffered a structural break in this specific time interval.

Because strategic marketing emphasis is a time series measure in a panel structure, we check whether each firm's time series in the panel is stationary or evolving using a Fisher-type panel unit-root test based on augmented Dickey-Fuller lags (0, 1, and 2) in order to account for potentially different autoregressive processes across firms and to handle the unbalanced nature of our panel. If the time series is stationary, strategic marketing emphasis can be modeled under its natural distribution. However, if it is an evolving time series, it must be first-differenced in order to make it stationary, altering the distribution being modeled. Empirically examining this issue, our results indicate that all time series in our data demonstrate stationary strategic marketing emphasis and follow a normal distribution, meaning that no transformation is necessary.

The basic form of our model—ignoring controls and moderators—is as follows:

$$Y_{it} = \pi_{0i} + \pi_{1i} (\text{Pre-SOX}_t) + \pi_{2i} (\text{Post-SOX}_t) + e_{it} \quad (3)$$

where Y_{it} is the value of the strategic marketing emphasis (SME) measure for firm i at time t , π_{0i} represents the firm-specific value of SME at time 0 (which we define as 2002, the year SOX was introduced), π_{1i} captures the firm-specific linear annual rate of change in SME over the pre-SOX period, and π_{2i} captures the firm-specific post-SOX linear annual rate of change in SME. Last, e_{it} is the error component with distribution $\sim N(0, \sigma^2)$.

When the control variables are included, we obtain the following equations:

Level 1

Level 1 represents the time-specific nature of the relationship between SME and the IVs given firm i and expanded to account for industry k , with the control variables now included.

$$\begin{aligned} \text{Strategic Marketing Emphasis}_{itk} = & \pi_{0ik} + \pi_{1ik} (\text{Pre-SOX}_t) + \pi_{2ik} (\text{Post-SOX}_t) + \pi_{3ik} (\text{Pre-} \\ & \text{SOX}_t * \text{USA}) + \pi_{4ik} (\text{Post-SOX}_t * \text{USA}) + \pi_{5ik} (\text{Firm Size}_{ti}) + \pi_{6ik} (\text{Debt}_{ti}) + \pi_{7ik} \\ & (\text{EBIT}_{ti}) + \pi_8 (\text{Change in GDP Lagged } 1\text{yr}_t) + \pi_9 (\text{Change in GDP Lagged } 2\text{yrs}_t) + \\ & \pi_{10} (\text{Index Return Lagged } 1\text{yr}_t) + \pi_{11} (\text{Index Return Lagged } 2\text{yrs}_t) + \pi_{12} (\text{USA}) + e_{tik} \end{aligned} \quad (4)$$

where each variable is given at time t for firm i in industry k , and e_{tik} is the level 1 error component with distribution $\sim N(0, \sigma^2)$.

Level 2

Level 2 represents the firm level. We model the firm-specific (but time-independent) effects for firm i as a combination (for π_{0ik}) of an overall, across-firm average (β_{00k}) plus a random effect (r_{0ik}) that represents a firm-specific deviation from its industry average. This firm-specific effect on strategic emphasis is partially explained by an autoregressive component of strategic emphasis, for $t - 1$ and $t - 2$ (β_{01k} and β_{02k} , respectively):

$$\pi_{0ik} = \beta_{00k} + \beta_{01k} (\text{SME}_{t-1ik}) + \beta_{02k} (\text{SME}_{t-2ik}) + r_{0ik} \quad (5a)$$

$$\pi_{qik} = \beta_{q0k} \quad \text{for } q = 1, \dots, 12 \quad (5b)$$

The inclusion of autoregressive components for strategic emphasis allows us to capture the path dependency in strategic emphasis and budget allocation within a firm. An average firm cannot make immediate adjustments; therefore, leftover investment commitments are partially explained by previous levels of investment and allocation priorities. These values are lagged twice in order to match the periodicity of our other lagged variables (e.g., Change in GDP and Index Returns).

Level 3

Level 3 represents the industry level. We model the industry-specific (but time- and firm-independent) effects for industry k (on β_{00k}) as a combination of an overall, across-industry average (γ_{000}) plus a random effect (u_{00k}) that represents an industry-specific deviation from the overall average:

$$\beta_{00k} = \gamma_{000} + u_{00k} \quad (6a)$$

$$\beta_{q0k} = \gamma_{q0k} \quad \text{for } q = 1, \dots, 12 \quad (6b)$$

Marketing Efficiency

In constructing a model for marketing efficiency, we must take into consideration a number of characteristics present in our data, which still conform to the panel structure we presented earlier, as well as the distributional characteristics of marketing efficiency. First, and similar to our previous model, we account for firm and industry unobserved heterogeneity by using an HMLM approach (Raudenbush and Bryk 2002). Second, we check whether marketing efficiency is stationary using a panel unit-root test based on augmented Dickey-Fuller (0, 1, and 2) lags. Results indicate that all panels in our data have stationary marketing efficiency ($p < 0.001$), meaning that no transformation is necessary.

However, while marketing efficiency is a continuous, nondiscrete variable, its distribution is not normal. Initial analysis revealed that a lognormal transformation of marketing efficiency would properly normalize the data. Thus, we have log transformed the marketing efficiency dependent variable as the log of Market Efficiency presented earlier. The model for marketing efficiency itself follows a similar form to the one presented for strategic marketing emphasis, but with some important changes (as noted below, following the equations):

Level 1

$$\begin{aligned} \text{Marketing Efficiency}_{itk} = & \pi_{0ik} + \pi_{1ik} (\text{Pre-SOX}_t) + \pi_{2ik} (\text{Post-SOX}_t) + \pi_{3ik} (\text{Pre-SOX}_t * \text{USA}) \\ & + \pi_{4ik} (\text{Post-SOX}_t * \text{USA}) + \pi_{5ik} (\text{Marketing Intensity HHI}) + \pi_{6ik} (\text{Marketing} \\ & \text{Intensity HHI} * \text{Post-SOX}_t) + \pi_{7ik} (\text{Brand Equity}) + \pi_8 (\text{Brand Equity} * \text{USA}) + \pi_9 \\ & (\text{Brand Equity} * \text{Post-SOX}) + \pi_{10} (\text{Brand Equity} * \text{Post-SOX} * \text{USA}) + \pi_{11ik} (\text{Brand} \\ & \text{Equity}^2) + \pi_{12} (\text{Brand Equity}^2 * \text{USA}) + \pi_{13} (\text{Brand Equity}^2 * \text{Post-SOX}) + \pi_{14} (\text{Brand} \\ & \text{Equity}^2 * \text{Post-SOX} * \text{USA}) + \pi_{15ik} (\text{Sales Lagged } 1yr_{it}) + \pi_{16ik} (\text{Sales Lagged } 2yrs_{it}) \\ & + \pi_{17} (\text{Change in GDP Lagged } 2yrs_t) + \pi_{18} (\text{Index Return Lagged } 1yr_t) + \pi_{19} (\text{Index} \\ & \text{Return Lagged } 2yrs_t) + \pi_{20ik} (\text{Marketing Intensity}) + \pi_{21} (\text{USA}) + e_{itk} \end{aligned} \quad (7)$$

Level 2

$$\pi_{0ik} = \beta_{00k} + \beta_{01k} (\text{Pre-SOX}_t) + \beta_{02k} (\text{Post-SOX}_t) + \beta_{03k} (\text{Brand Equity}) + \beta_{04k} (\text{Marketing Intensity}) + r_{0ik} \quad (8a)$$

$$\pi_{qik} = \beta_{q0k} \quad \text{for } q = 1, \dots, 9, 14, 15, 16 \quad (8b)$$

Level 3

$$\beta_{00k} = \gamma_{000} + \gamma_{001} (\text{Marketing Intensity HHI}) + u_{00k} \quad (9a)$$

$$\beta_{qik} = \gamma_{q0k} \quad \text{for } q = 1, \dots, 9, 14, 15, 16 \quad (9b)$$

The model for marketing efficiency described in equation (7) incorporates a number of new independent variables and controls. First, we include terms for Brand Equity and Brand Equity squared as key independent variables. Because firms with greater brand equity may be at least partially shielded from the impact of SOX, adding the squared term allows us to capture any nonlinearities in this relationship. While we do not formally hypothesize a differential impact for very large brands, Luo, Raithel, and Wiles (2013) have shown that increasing brand

ratings are also accompanied by a lower dispersion of brand ratings (or higher agreement in ratings across consumers) and that this combination increases the “risk-mitigating” effect of strong brands. As such, these very large brands might have a multiplicative edge (through higher and more consistent value) in buffering the firm from the impact of SOX.

New controls include the industry-level concentration of marketing intensity in order to account for the fact that the efficiency of a firm’s marketing dollars is conditional on competitive activity. The lagged values of the firm’s sales are also included because efficiency is a sales-based measure, and therefore susceptible to inertia-like effects not directly related to the marketing efforts we study.

We also include the firm’s own marketing intensity in the model, since the logic presented so far describes the relationship wherein the introduction of SOX alters marketing strategic emphasis, causing shifts in the firm’s marketing intensity, and consequently its marketing efficiency. However, this is a problematic inclusion for two reasons: (1) marketing intensity is used in the construction of our DV, Marketing Efficiency; and (2) intensity is endogenous, being that firms could adjust marketing activity as a function of observed or expected efficiency of that investment.

In order to address this issue, we rely on Wooldridge’s (2002) instrumentation approach, instrumenting marketing intensity in our model with the residuals of a first-stage regression of marketing intensity as a function of all endogenous and exogenous variables present in equation (7) as well as two lagged periods of intensity itself. After this instrumentation, a series of Durbin-Wu-Hausman tests indicates that no variables are endogenous.

Several interactions are also included in the marketing efficiency model. The interaction between Brand Equity, the Post-SOX period, and the USA indicator variable is of particular

interest, as it provides a specific contrast of the post-SOX marketing efficiency of firms with increasing brand equity, allowing a direct test of H3.

Finally, new variables are included in the second and third levels of our hierarchical model. At the second level, the difference in marketing efficiency between firms is partially explained by the introduction of SOX, brand equity, and marketing intensity. Similarly, at the third level, the difference in marketing efficiency across industries is partially explained by the concentration of marketing intensity in the industry. Note that these variables are also present in the first level of the model, as they explain not only differences between firms and industries, but also some of the differences in marketing efficiency across time intervals.

Results

Table 2 reports correlations between the variables in our study. While a number of the IVs are correlated at a relatively high level, this is not a major concern, since we are not particularly interested in the precise coefficient values, but instead simply want to account for their effects. (For example, the Pre-SOX and Post-SOX trend variables are moderately correlated by construction. This is a mechanical result of the fact that when $\text{Post-SOX} = 0$, then Pre-SOX will generally have a negative value, whereas when $\text{Pre-SOX} = 0$, Post-SOX will generally be positive.)

Table 2: Correlations between Variables

	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12
1. Strategic Marketing Emphasis	0.16	0.17												
2. Marketing Efficiency	8.40	45.08	-0.08											
3. Pre-SOX	-1.71	2.47	-0.07	-0.01										
4. Post-SOX	2.17	2.64	-0.04	-0.01	0.57									
5. Debt	349.42	1896	-0.06	0.01	0.05	0.06								
6. EBIT	541.02	2333	-0.07	0.02	0.05	0.07	0.34							
7. Firm Size (Employees in Thousands)	12.71	38.40	-0.06	0.01	-0.01	0.00	0.43	0.43						
8. Δ GDP 1yr	13.26	220	0.01	0.01	-0.11	-0.08	-0.01	0.00	-0.01					
9. Δ GDP 2yr	19.30	211	0.01	0.00	-0.06	-0.05	-0.01	0.00	-0.02	0.63				
10. Index Return 1yr	3015.43	12794	0.09	0.01	0.00	-0.13	-0.04	0.01	-0.08	0.41	0.42			
11. Index Return 2yr	3481.53	11543	0.11	0.02	0.08	-0.01	-0.06	0.01	-0.10	0.16	0.34	0.86		
12. Brand Equity	1.40	2.45	0.03	-0.09	0.00	-0.03	-0.02	0.02	-0.04	-0.03	-0.03	-0.06	-0.08	
13. Marketing Intensity HHI	0.08	0.16	0.10	0.03	-0.02	0.01	-0.01	0.03	-0.01	0.04	0.07	0.26	0.34	-0.18

Strategic Marketing Emphasis

We used Stata's mixed models procedure to estimate our models. The coefficient estimates for the strategic marketing emphasis models are presented in table 3, along with *t*-values and associated significance levels.

The null model (model 1) shown in table 3 is a baseline for comparison with more complex models. Model 2 adds our five main independent variables, representing the pre- and post-SOX growth rates and their interaction with the USA indicator variable. Model 3 adds the control variables and represents a significant improvement over model 2 ($\chi^2(7) = 992.26, p < 0.001$).⁹ This model shows a nonsignificant pre-SOX growth rate in strategic marketing emphasis for UK-based firms ($\pi_1 = -0.0006, n.s.$), while their post-SOX growth rate is negative and significant ($\pi_2 = -0.0022, p < 0.05$), highlighting a shift toward increasing R&D investments around the introduction of SOX. For American firms, we see a similarly nonsignificant ($\pi_3 = -0.0015, n.s.$) pre-SOX growth rate in strategic marketing emphasis; however, this is followed by a positive and significant ($\pi_4 = 0.0024, p < 0.05$) post-SOX growth rate, indicating an increasing relative investment in marketing activities and value appropriation. This represents a significant shift in the trend in strategic marketing emphasis between the pre- and post-SOX periods relative to the UK control group ($\chi^2(1) = 28.46, p < 0.001$).

A few of the control variables are also significant. Larger firms appear to invest more heavily in R&D ($\pi_5 = -0.0001, p < 0.10$), although the impact of size given the remainder of our controls is small and only marginally significant. Furthermore, American firms on average invest more in R&D than their UK counterparts ($\pi_{12} = -0.0561, p < 0.0001$).

⁹ When one model is a restricted version of another, the reduction in deviance-based criterion (e.g., AIC, BIC) that is associated with an increase in the number of independent predictors (reflected in an increase in *df*) is chi-square distributed. We use the difference in the Bayes Information Criterion (BIC) for our tests of model improvement.

Table 3: Strategic Marketing Emphasis as a Function of SOX Factors and Controls (N = 17,619)

Variable	Model 1: Null		Model 2: Rates of Change		Model 3: Full	
	Parameter	t-value	Parameter	t-value	Parameter	t-value
Intercept	0.1339 ***	17.54	0.1665 ***	18.18	0.1799 ***	15.97
Rate of Change Pre-SOX			0.0015	1.59	-0.0006	-0.45
Rate of Change Post-SOX			-0.0031 ***	-5.08	-0.0022 *	-2.39
Rate of Change Pre-SOX in the USA			-0.0037 ***	-3.67	-0.0015	-1.09
Rate of Change Post-SOX in the USA			0.0032 ***	5.08	0.0024 *	2.53
Company Size					-0.0001 #	-1.94
Debt					-0.0000 ***	-4.04
EBIT					-0.0000	-1.38
GDP Change Lag 1					-0.0000 ***	-4.39
GDP Change Lag 2					0.0000 *	2.13
Index Return Lag 1					0.0000 *	2.13
Index Return Lag 2					-0.0000 ***	-3.28
USA			-0.0452 ***	-7.31	-0.0561 ***	-6.20
<i>Random Effects</i>						
Residual (level 1) (e_{tik})	0.0020 ***	76.06	0.0020 ***	3.49	0.0020 ***	3.49
Firm (level 2) (r_{0ik})	0.0068 ***	12.36	0.0062 ***	12.42	0.0058 ***	16.54
SME – Lag 1 (r_{1ik})	0.3267 ***	16.66	0.3127 ***	16.51	0.3097 ***	7.57
SME – Lag 2 (r_{2ik})	0.0304 ***	8.31	0.0292 ***	8.24	0.0267 ***	12.23
Industry (level 3) (u_{00k})	0.0022 ***	3.54	0.0022 ***	76.11	0.0021 **	74.52
AIC		-42353.26		-42338.46		-41448.51
BIC		-42285.06		-42282.37		-41290.11
DF		9		14		21

Notes: *** $p < .001$, ** $p < .01$, * $p < .05$, # $p < .10$.

All of the included random effects shown near the bottom of table 3 for all three models are significant, reinforcing the appropriateness of using a hierarchical modeling structure, since these significant effects indicate unexplained variance at all three levels. Furthermore, by splitting the error term into temporal, firm, and industry components, we are able to determine how much of the variance in strategic marketing emphasis is explained by each level. According to model 3, strategic marketing emphasis variance is split into 19.8 percent temporal (level 1, e_{itk}), 57.09 percent firm-specific (level 2, r_{0ik}), and 23.1 percent industry-specific variance components (level 3, u_{00k}). Finally, the inclusion of lagged values for strategic emphasis is also validated by the results in table 3, as both the first and second lags are positive and significant across all of our models, meaning that the differences in strategic emphasis across firms in any given time are largely explained by each firm's previous strategic emphasis (i.e., we are correctly accounting for path dependency: the fact that firms cannot shift immediately, but are instead constrained somewhat by previous decisions).

As noted earlier, the pre-SOX period exhibits a null rate of change in strategic marketing emphasis for both US- and UK-based firms, indicating that prior to the introduction of the Sarbanes-Oxley law, firms were stable in their allocation decision between value creation (research and development) and value appropriation (marketing spending intensity) investments. In contrast, during the post-SOX period, the American annual rate of change is significant, indicating that the average American firm shifted its strategic emphasis toward increasing marketing investments and value appropriation. (As the United Kingdom serves as our control group, we must account for this main effect, -0.0022 plus the differential provided by American firms, $.0024$, which gives us a post-SOX net effect for American firms of $.0002$, $\chi^2(1) = 13.09$, $p < 0.01$). This post-SOX shift supports H1. It is important to note that those firms that were not

subject to SOX (i.e., the UK-based firms) exhibited an opposite behavior by increasingly emphasizing value creation, something that we argued as being riskier and discouraged by the SOX legislation, perhaps as an opportunistic move against the more restricted American counterparts that now face a higher relative cost for risky investments.

Marketing Efficiency

Table 4 shows the results of our model of marketing efficiency. First, the rate of change in the pre-SOX period for UK firms is negative and significant ($\pi_1 = -0.0148, p < 0.01$) but is followed by a positive and significant rate of change in efficiency in the post-SOX period ($\pi_2 = 0.0141, p < 0.01$). This is consistent with the results seen in strategic emphasis, where an average shift in emphasis toward value creation should mean less pressure and competition in the marketing arena and subsequently a greater return to marketing investments. Conversely, for American firms, we see a positive but nonsignificant change in efficiency in the pre-SOX period ($\pi_3 = 0.0086, n.s.$), followed by a negative and significant rate of change in marketing efficiency in the post-SOX period ($\pi_4 = -0.0140, p < 0.01$). Once again, this represents a significant shift in the trend between the pre- and post-SOX periods relative to the UK control group ($\chi^2(1) = 4.39, p < 0.05$), providing empirical support for H2. The overall effect of SOX on the firm's marketing efficiency will also depend on the firm's brand equity, marketing intensity, and industry-wide marketing conditions, as described below.

Looking at the impact of brand equity, we see that there is a differential relative to the country in question, with UK firms having less efficient marketing with increasing brand equity ($\pi_7 = -0.0799, p < 0.001$) as measured by price premiums, and their American counterparts observing no advantage in efficiency due to brand equity ($\pi_8 = 0.0729, p < 0.001$, and relative to

Table 4: Model of Marketing Efficiency

Variable	Parameter	<i>t</i> -value
Intercept	1.8457 ***	28.00
Rate of Change Pre-SOX	-0.0148 **	-2.64
Rate of Change Post-SOX	0.0141 **	2.96
Rate of Change Pre-SOX in the USA	0.0086	1.43
Rate of Change Post-SOX in the USA	-0.0140 **	-2.86
Marketing Intensity HHI	0.4341 ***	5.07
Marketing Intensity HHI Post-SOX	-0.0298 ***	-3.36
Brand Equity	-0.0799 ***	-4.61
Brand Equity in the USA	0.0729 ***	4.02
Brand Equity Post-SOX	0.0009	0.69
Brand Equity Post-SOX in the USA	-0.0059 ***	-3.52
Brand Equity ²	0.0002	1.09
Brand Equity ² in the USA	-0.0017	-0.79
Brand Equity ² Post-SOX in the USA	0.0002 **	2.98
Sales Lag 1	0.0000 ***	6.07
Sales Lag 2	-0.0000	-1.61
GDP Change Lag 1	0.0000#	1.51
GDP Change Lag 2	-0.0000	-0.80
Index Return Lag 1	0.0000	1.32
Index Return Lag 2	0.0000	0.76
Marketing Intensity (instrumented)	1.8793 ***	17.90
USA	-0.0579	-1.30
<i>Random Effects</i>		
Residual (level 1) (e_{tik})	0.0128 ***	59.51
Firm (level 2) (r_{0ik})	0.3541 ***	19.02
Pre-SOX (r_{1ik})	0.0022 ***	13.21
Post-SOX (r_{2ik})	0.0017 ***	15.94
Brand Equity (r_{3ik})	0.0076 ***	6.70
Marketing Intensity (r_{4ik})	9.0852 ***	18.85
Industry (level 3) (u_{00k})	0.0809 ***	3.03
Marketing Intensity HHI (u_{1ik})	0.1177 *	2.02
AIC	-6215	
BIC	-5920	
DF	40	

the reference group a $\chi^2(1) = 1.55$, $p = 0.21$. However, we have a greater interest in the impact of SOX on this relationship. In the post-SOX period, we see a negative impact of brand equity on

marketing efficiency for American firms ($\pi_{10} = -0.0059, p < 0.001$), indicating that SOX hurt the marketing efficiency of high equity brands even more, which is counter to what we predicted in hypothesis 3. The hypothesized protective effect of strong brands is actually only true for the larger values of brand equity, as shown in the quadratic term ($\pi_{11} = 0.0002, p < 0.001$), providing evidence that the relationship between a firm's brand equity and its ability to insulate itself from legislative shocks like SOX is more nuanced than expected, only partially supporting H3.

The model also suggests that functioning within an industry with a high concentration of marketing intensity (i.e., with the bulk of marketing investment coming from few members of the industry, and arguably low noise) provides a large improvement for a firm's marketing efficiency ($\pi_5 = 0.4341, p < 0.001$), but it further suggests that this advantage was reduced in the post-SOX period ($\pi_6 = -0.0298, p < 0.001$). This is consistent with the argument that new firms enter this marketing competition and increase their share of voice in the post-SOX period, thus decreasing the value of marketing concentration and the advantage garnered by it. In fact, a check in mean industry marketing intensity concentration before and after SOX does show a statistically significant decrease ($t = 2.008, p = 0.0223$). Furthermore, marketing intensity is positive and significant ($\pi_{10} = 1.8793, p < 0.001$), showing that firms investing the most heavily in marketing are likely the ones that can extract the greatest returns from this investment (i.e., they are more efficient users of their marketing budgets).

Robustness Checks

Alternative Control Group

In order to test whether the effects found so far in our study can be attributed to Sarbanes-Oxley, we make use of the law's selective application by replicating our study for US firms having less

than \$75 million in assets. Under the provisions of SOX, these firms are exempt from this specific regulation. The resulting growth rates are shown in figure 1, both for the original sample of SOX-compliant firms and this new sample of smaller firms. The exempt (small) firms have nonsignificant growth rates in strategic marketing emphasis for both periods surrounding the introduction of SOX (pre-SOX, $\pi_1 = 0.003$, $p = 0.242$; post-SOX, $\pi_2 = -0.001$, $p = 0.161$), indicating that the average small firm remained unchanged in its allocation of resources between R&D and marketing across the entire 17-year period (i.e., nonsignificant, or zero growth rate prior to, and following SOX). This is markedly different from the pattern for those firms required to comply with SOX legislation (as shown in our main study) and supports our contention that SOX itself has had a substantial impact on firms' strategic marketing emphases.

Figure 1: Strategic Marketing Emphasis Growth Rates for Firms Affected by SOX Compared to Those Not Affected by SOX

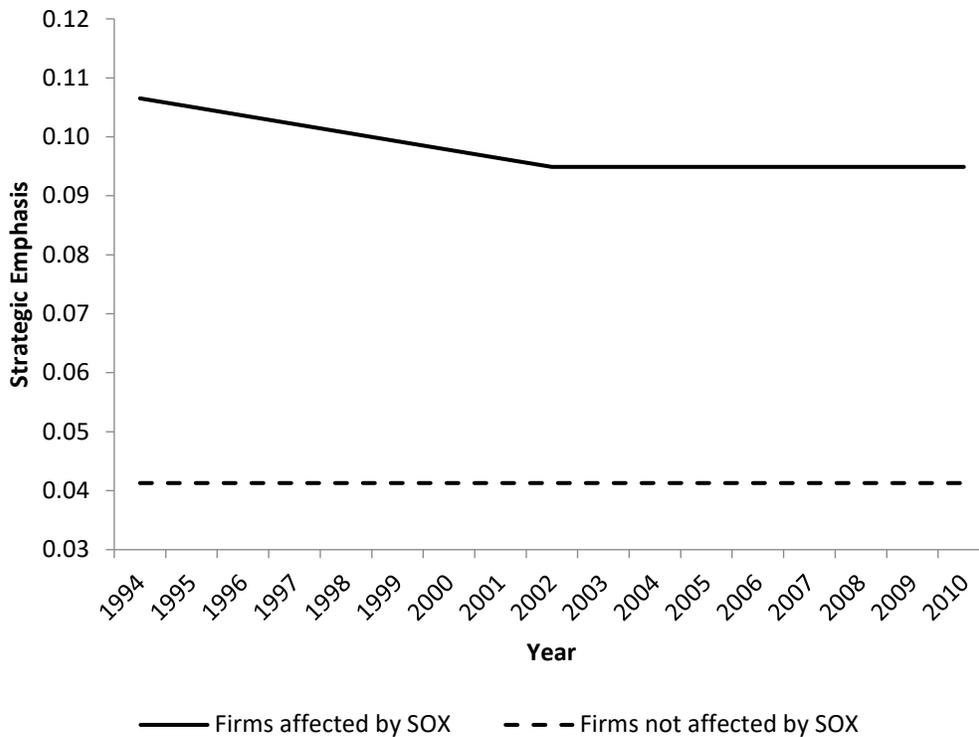
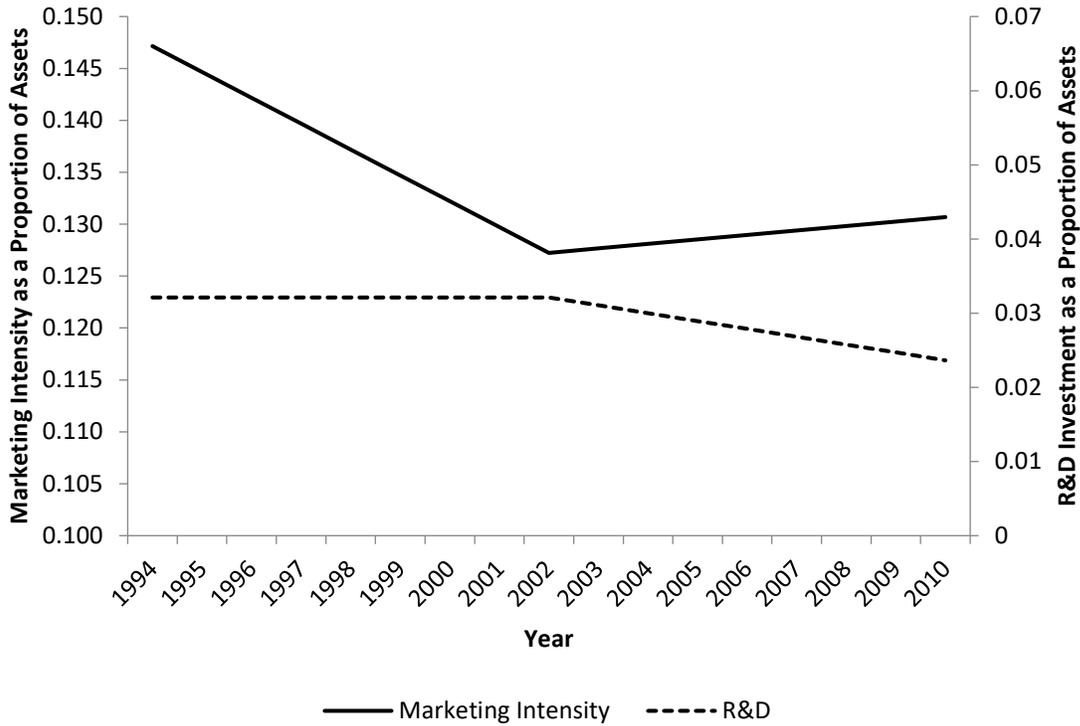


Figure 2: Marketing Intensity and R&D Growth Rates as Components of Strategic Marketing Emphasis, Surrounding the Introduction of SOX in 2002



Components of Strategic Marketing Emphasis

Strategic marketing emphasis measures the trade-off between investments in R&D (as a value creation activity) and marketing (as a value appropriation activity). Since previous research has shown that the increased environmental risk brought on by the introduction of SOX has reduced investments in R&D (Bargeron, Lehn, and Zutter 2009), the results shown thus far could be a direct reflection of this shift alone. In order to determine whether this known effect was the only factor driving firms’ strategic change, we applied our full model separately to the growth rates in firm marketing intensity and R&D expenses, each as a proportion of the firm’s total assets. The resulting growth rates are shown in figure 2. As the figure indicates, investment in marketing (relative to assets) had been declining in the period prior to the introduction of SOX (negative growth rate $\pi_{1ik} = -0.0024, p < 0.001$); following the introduction of SOX, firms reversed this

previous trend and began to invest in marketing more heavily (positive growth rate $\pi_{2ik} = 0.0004$, $p < 0.05$). Combining these findings with the results reported earlier, along with the effects of SOX reported in other published studies, we can conclude that firm strategy changed in response to SOX, not just due to risk-averse reductions in R&D, but also due to simultaneous increases in marketing investments.

Discussion

The purpose of our study is to examine the potential benefit of strong brands as a buffer against negative consequences of unanticipated environmental shifts. We do so by considering the imposition of new legislations as a systematic shock that significantly alters a firm's business environment, either by imposing new restrictions or by altering the cost/payoff structure that firms face. We then suggest that firms respond in a homogenous manner due to mandatory compliance and equal application of the law's incentives/disincentives for all firms falling under the new regulation. We hypothesize that this homogeneity in action reduces the efficiency of marketing investments, except for firms that have existing strong brands. We then test our hypotheses, focusing on the impact of the passage of the Sarbanes-Oxley Act of 2002, a significant piece of legislation with firm-level consequences but without marketing-specific provisions.

As predicted, we find that, on average, firms shifted their investment trajectories toward value appropriation activities and away from value creation following the introduction of SOX in 2002. Interestingly, our further analysis of the components of firms' strategic marketing emphasis indicates that while the relative intensity of marketing spending was fairly stable prior to the introduction of SOX, the introduction of additional risk into the environment immediately

changed this, leading to greater investment in marketing. This important insight highlights that changes in firm strategy after the introduction of Sarbanes-Oxley are not driven solely by already known and expected cuts to riskier R&D investments, but also by a growing reliance on marketing activity as a means to manage this increase in the firm's risk exposure.

We further show that the concentration of marketing investment across industries diminished after the introduction of SOX, as more firms entered the advertising space and/or increased their marketing budgets (in line with the overall shift toward increased marketing spending and greater value appropriation noted previously). This change in the landscape was accompanied by a decrease in firms' marketing efficiency, as they found their activities to be less effective. However, those firms that had created the largest values of brand equity prior to the introduction of SOX were found to maintain their marketing efficiency better than those firms that had made no such investment.

Thus, this study adds to the extensive literature on the advantages of strong brands. More specifically, it adds to the much smaller subset of studies highlighting the role of brands as a buffer against negative consequences, whether firm specific (e.g., a product recall or a service failure) or a broad-based environmental shift like the one examined here.

This is also the first study in marketing to consider the impact of the Sarbanes-Oxley Act of 2002 itself and its implications for US firms, both in terms of strategy-setting and the accompanying consequences to marketing performance (i.e., the efficiency of marketing investments). The discussion surrounding this event has been rich and contentious within the accounting and finance literatures, highlighting how the environment has become riskier since July 2002, but its implications for marketing have not previously been explored. Our study contributes to this growing domain by introducing marketing consequences, such as increased

marketing investment and loss of efficiency, to the implications of SOX for American firms. Furthermore, by considering legislative change as an influencing factor on firms' strategic marketing choice between value creation and value appropriation activities, we also answer the call set forth by Mizik and Jacobson (2003) to explore conditions leading firms to significantly shift their strategic emphases.

Managerial Implications

What do these findings mean for firms and their managers? First, managers need to be concerned about compliance with changing legislation and think strategically about its implications for both their own firms and for their key competitors. The importance of such legislation for marketing comes from three primary characteristics of this landscape-altering force: (1) it is coercive, in that all firms under its coverage must comply; (2) compliance is required in the short term; and (3) the applicability of new laws can be targeted rather than universal (e.g., SOX applies to a subset of American firms). Taken together, these characteristics mean that a firm facing new legislation will also observe rapid changes in competitor behavior, although not necessarily from every competing firm or across all markets where the firm operates.

For instance, the imposition of SOX has changed how managers think of the boundaries of their firms. Many directors have increasingly looked to outsource risky projects and shrink internal R&D operations (i.e., value-creation activities). Many have even considered going private (Engel, Hayes, and Wang 2007) or "going dark" (i.e., deregistering their stock; Leuz, Triantis, and Wang 2008). As a result, managers who have been able to manage outsourcing activities or who have been adept at managing merger and acquisition opportunities should thrive in this new environment as firms that limit internal R&D investments look for new ways to

benefit from value creation done externally. These conditions also provide one incentive toward the formation of networked entities, where a number of allied but independent firms coordinate toward a common goal. As such, the firm's ability to identify, manage, and leverage such value networks could be incrementally more valuable in a time of change due to legislative influence.

Furthermore, SOX exemplifies the potentially uneven application of the law since it targets larger firms (>\$75 million) in the United States. Our research shows that this targeting drives a shift in large firms from value creation to value appropriation. At the same time, it creates opportunities for both foreign (UK) and smaller (< \$75 million) firms that are willing to take on riskier projects, since these firms are not required to comply with SOX. In the longer term, niche firms may be able to tap into new growth opportunities because they are small and face less onerous regulation. As for large firms, R&D investment may dichotomize, with most firms deemphasizing internal R&D while other firms evolve into compliance specialists that are able to adapt to shifting institutional risks.

It is possible that in this new, post-SOX environment, US firms are trading away their future (R&D) for immediate gains (advertising), jeopardizing their future as well as the well-being of all of their stakeholders (suppliers, employees, customers) and shareholders (e.g., Rubera and Tellis 2014). SOX may also make US firms vulnerable to innovative foreign competitors that can leverage their size without having to comply with or face a riskier environment created by SOX.

It is also worth considering that the introduction of new legislation like SOX could function as a homogenizing force in the marketplace. In equilibrium, firms will seek to maximize their individual goals (e.g., profit, sales, market share, etc.) given their individual resources, capability constraints, and market conditions. And while the firm's individual resources and

capabilities allow it to differentiate itself, the market provides an opposite force, where specific conditions might call for similar strategic responses, thus forcing firms to move closer together. Our results conform to this view, given the movement of firms toward greater emphasis on value appropriation and heavier advertising spending in general in response to the riskier environment created by SOX. While individual differences between firms will still allow for differentiation in deployment and execution of similar strategies, managers need to be aware that the impact of this increased strategic competition will reduce their firms' return on marketing investment.

With the introduction of SOX, firms invested more heavily in marketing initiatives, and our results confirm that, on average, firms experienced a lower return on marketing spending following the introduction of SOX (i.e., reduced efficiency), primarily due to the increased competition for share of voice. Interestingly, this loss in efficiency was partially mitigated for firms able to leverage preexisting brand equity in order to fight off the incursion of increased advertising spending. This result highlights the power of brand-building strategies available to marketing managers and their ability to maintain firm differentiation in the face of homogenizing forces, allowing managers to make one additional argument for their often-threatened advertising budgets: the creation of brand equity through brand-based advertising can create a protective tool against unforeseen increases in environmental risk. However, it is also important to note that this protective effect may only exist for very strong brands.

Research Implications

Marketing researchers have traditionally focused primarily on industry-based competition and on how companies utilize their firm-specific resources, while largely neglecting the institutional conditions that firms face. However, our work shows that these conditions can have a profound

impact on firm strategy as well as on the value of brands as protective barriers to competitive actions. Furthermore, they have the potential to influence both the firm's competitive setting and the nature of the resources that provide it with advantage. Thus, more work is needed that looks at how marketing is affected by institutional constraints.

The strategic marketing emphasis of the firm, or the resource allocation decision between marketing efforts and R&D investments, is a key variable of interest for marketing researchers interested in exploring firm and marketing performance. The understanding that emphasis can be shifted due to institutional pressure rather than through agency alone can add nuance and further understanding to studies exploring the impact of firms' strategic emphases.

Furthermore, this institutional interference provides a serious challenge for firms attempting to achieve and maintain ambidexterity, or the simultaneous pursuit of both value creation and value appropriation. Ambidexterity has been shown to be important in the profitability of larger firms (Voss and Voss 2013)—that is, those specifically targeted by SOX. As noted in the managerial implications discussion, corporate responses to SOX will continue to evolve, and their strategic emphases will shift. At the same time, the differences between larger and smaller companies are likely to further diverge. It will therefore be important to track firms' responses over time.

On a positive note, the relative strategic emphasis on value appropriation has been shown to improve customer satisfaction (Song, Vadakkepatt, and Lehmann 2012), given the three roles of advertising identified in past research: persuasion, information, and prestige (Bagwell 2007) and the increased utility consumers derive from the prestige associated with the brands they use. As such, these institutional pressures might lead to greater short-term performance (both in terms

of marketing satisfaction and financial gains), but at a potential cost to long-term survival, as noted earlier.

Conclusion

Brands have been shown not only to enhance the outcome of positive marketing initiatives, but also to mitigate the downside consequences of negative forces. Hunt and Morgan (1995) suggest that new laws have the capacity to provide such a negative force on marketing practice, yet marketing scholars know surprisingly little about how major new legislation affects marketing. Institutional theory suggests that managers (and firms) will adapt quickly to the introduction of such laws (e.g., Scott 1997). However, few studies have examined marketing responses to new legislation, or discussed how marketing assets can help the firm navigate new environments.

In this paper, we have focused on how firms have responded to one such legislative imposition, the introduction of the Sarbanes-Oxley Act of 2002. SOX has influenced how boards evaluate and respond to the perceived risks of various business options, resulting in a systematic shift across firms away from value creation in favor of more value appropriation. This happened in a homogenous manner, thereby reducing firms' marketing efficiency, with the exception of those firms having the strongest of brands. What the legislation means exactly for everyday marketing practice (e.g., pricing, advertising) is not yet clear, but it seems likely that marketers will prefer to support and promote well-established brands over radical new products. In the short term, this preference will maximize cash flow (Srivastava, Shervani, and Fahey 1998), but the longer-term performance consequences of this stance are likely to be less satisfactory.

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