

From Finance to Marketing: The Impact of Financial Leverage on Customer Satisfaction

The authors examine how a firm's financial leverage affects marketing outcomes and consequent firm value. They find that leverage has a dual effect: it reduces customer satisfaction and moderates the relationship between satisfaction and firm value. The burden of making regular interest payments to debt holders pressures managers to generate adequate cash flows. The authors theorize that this may lead marketers to adopt short-term actions such as cutting advertising and research-and-development spending, which can hurt customer satisfaction by lowering perceived quality and perceived value. Furthermore, higher leverage reduces financial flexibility by constraining marketers from exploiting growth opportunities resulting from higher customer satisfaction. The authors empirically show that leverage leads to lower customer satisfaction, with advertising intensity mediating this effect. The negative impact of leverage on satisfaction is more pronounced for service firms and firms in competitive markets. Finally, leverage negatively moderates the customer satisfaction–firm value link. Increases in customer satisfaction are value enhancing at modest levels of leverage, but at very high levels of leverage, increases in satisfaction are value reducing.

Keywords: customer satisfaction, capital structure, leverage, marketing–finance interface

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The issues of what influences a firm's choice of debt and equity and how this choice affects its non-financial strategic decisions have been central to corporate finance research for more than half a century (for a review, see Graham and Leary 2011). The relative proportions of debt and equity constitute a firm's capital structure, typified by its financial leverage—the ratio of debt to firm value. Recently, marketers have begun to examine the interaction between marketing strategy and leverage by investigating both the role of marketing while raising equity (Luo 2008) and how these equity funds influence marketing strategy (Kurt and Hulland 2013).

Yet little research investigates the effects of debt on marketing. This is surprising for three reasons. First, debt,

and not equity, is the preferred method of external financing for U.S. firms, with debt accounting for approximately 80% of all new external financing (Baker and Wurgler 2002). Second, it is well documented in finance literature that firms with higher leverage tend to have lower investments in long-term, intangible assets (for a review, see Parsons and Titman 2008). For example, more leveraged firms tend to invest less in advertising and research and development (R&D) (Grullon, Kanatas, and Kumar 2006; Singh and Faircloth 2005), hire more part-time employees and pay lower wages (Hanka 1998), and have inferior product and service quality (Maksimovic and Titman 1991; Matsa 2011). These actions are likely to harm customer satisfaction by negatively influencing some of its key determinants such as perceived quality and perceived value. Because customer satisfaction is highly value relevant to investors (Anderson, Fornell, and Mazvancheryl 2004), understanding how higher leverage can affect it is important for both academicians and practitioners.

Third, higher debt makes it more difficult for firms to get new financing to fund their growth strategies. However, growth opportunities created by intangible assets, such as customer satisfaction, form a significant component of a firm's market value (Gupta 2009; Myers 1977; Srivastava, Shervani, and Fahey 1998). Therefore, it is likely that higher debt limits the firm's ability to exploit its base of satisfied customers in the future, potentially affecting its firm value adversely. To further our understanding of the dynamics between leverage, customer satisfaction, and firm value,

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we aim to answer two related questions: (1) Does leverage have a negative impact on customer satisfaction? and (2) Is the impact of customer satisfaction on firm value moderated by the firm's leverage?

Empirically, we test these research questions using a sample of 171 firms surveyed in the American Customer Satisfaction Index (ACSI) over 17 years. Estimating a system of five equations, we find that higher leverage leads to reductions in advertising, which in turn results in lower customer satisfaction. The impact of leverage on satisfaction is economically significant: a one-standard-deviation increase in leverage from the average level results in a .47 point decrease in customer satisfaction, which is equivalent to an estimated loss of \$26 million in net operating cash flows (Gruca and Rego 2005). The negative impact of leverage on customer satisfaction is more pronounced for service firms as well as firms in more competitive industries. We also find that leverage negatively moderates the satisfaction–firm value link. An increase in customer satisfaction contributes to firm value when leverage is less than approximately 50%. However, when firms are extremely highly leveraged, we find that increases in customer satisfaction may have a value-reducing effect. This is potentially due to the high risk of bankruptcy, which can make it difficult for firms to realize the full value of a satisfied customer base in the future.

We contribute to the marketing literature in several ways. First, although previous researchers have examined the impact of leverage changes resulting from equity offerings, we are among the first to study the impact of ongoing, more frequent, and more widely used debt sources on customer satisfaction and firm value. Moreover, we combine literature from both finance and marketing in the development of our conceptual framework. Second, we show that leverage reduces the value of growth options afforded by customer satisfaction and negatively affects firm value. The finding of this dual effect of leverage creates a double whammy for marketers: higher leverage can not only lead to lower satisfaction but also result in lower stock market valuation of the satisfied customer base. Thus, our research enhances understanding of the impact of financial decisions on marketing and answers the call for an increased understanding of marketing's interface with other business functions (Kumar 2015). Finally, we contribute to the customer satisfaction literature by showing that leverage moderates the link between satisfaction and firm value, which can explain some of the wide variation in the relationship reported by Anderson, Fornell, and Mazvancheryl (2004).

Our research has several managerial implications. First, we show that customer satisfaction is affected not only by the action of the marketing group but also by the firm's financing decision. We believe that this finding will enhance the ability of chief marketing officers (CMOs) and chief financial officers (CFOs) to cooperate on strategic decision making. Second, our research shows that increased financial leverage can constrain marketers from realizing the full value of strategic opportunities embedded in customer satisfaction. Without this understanding, CMOs are likely to overestimate the value implications of their marketing

expenditures that help maintain and increase customer satisfaction, especially in firms with high customer satisfaction. Similarly, CFOs are likely to underestimate the costs of higher leverage. Clearly, a better dialogue between CMOs and CFOs emerges in light of our results. This dialogue will allow them not only to better understand returns on investments in marketing but also to form a collaboration, which is important to practitioners (Gordon, Monier, and Ogren 2013).

The rest of the article proceeds as follows. First, we present the literature review and develop the conceptual background. Next, we present an empirical analysis to test the effect of leverage on customer satisfaction (as measured in the ACSI) and report the results from a system of equations. We conclude with a general discussion and directions for further research.

Literature Review and Conceptual Background

Typically, U.S. firms finance their current operations and capital investments primarily from internally generated retained earnings. When additional funds are needed, firms tend to prefer debt over equity (Berk and DeMarzo 2007). A significant majority (90%) of large public nonfinancial U.S. firms have some amount of debt (Strebulaev and Yang 2013). Early theorists have suggested that in perfect markets with no taxes, no bankruptcy or agency costs, and the ability to raise external funds without costs, the choice of debt or equity financing should make no difference to firms' operations and strategy (Modigliani and Miller 1958). Thereafter, a large body of research in finance and strategy has demonstrated that in imperfect markets, leverage has its benefits and costs, which affect firms' operational and strategic decisions and, consequently, firm value (Hackbarth, Mathews, and Robinson 2014; Jensen and Meckling 1976; Maksimovic and Titman 1991; Myers 1977). Firms balance the benefits and costs of debt and decide on an optimal level of leverage.

The finance literature has identified two major benefits of debt. First, the interest on debt is deductible from taxable income (Damodaran 2001), which reduces the firm's tax burden and increases firm value due to higher cash flows to the firm (for a comprehensive review, see Graham 2006). Second, increased leverage reduces free cash flows under managerial discretion and therefore may reduce wasteful investments, thus helping "discipline" the managers and reduce agency costs (Jensen 1986). However, debt has its costs as well. First, higher debt leads to an increased risk of financial distress (Parsons and Titman 2008). Second, firms with more financial leverage also face curtailed financial flexibility (Zingales 1998), defined as the firm's ability to respond in a timely manner to unexpected changes in the firm's cash flows or investment needs (Denis 2011). Finally, the pressures to meet recurring interest obligations can make the managers myopic—that is, emphasize investments that lead to high levels of current cash flow (Peyer and Shivdasani 2001).

Leverage can affect a firm's stakeholders in multiple ways. The dominant paradigm in corporate finance theory views the firm as a nexus of contracts between various financial and nonfinancial stakeholders (Bae, Kang, and Wang 2011). Whereas financial stakeholders, including shareholders and debt holders, are clearly affected by the firm's fiscal health, the firm's nonfinancial stakeholders (e.g., customers, suppliers, employees) can also be significantly influenced by the firm's financial condition (Titman 1984).

As firms take on debt, they commit to paying larger proportions of their cash flows toward interest payments. However, given the uncertain nature of future cash inflows and the certainty of cash outflows toward interest payments, higher leverage increases the chance of bankruptcy. This increased bankruptcy risk can weaken a firm's ability to enter into implicit or explicit contracts with nonfinancial stakeholders (Titman 1984). Higher debt can also change the firm's incentives to honor implicit contracts (Maksimovic and Titman 1991). Rational stakeholders, who recognize a firm's abilities and incentives to honor its contracts, will be more reluctant to do business with the firm. For example, buyers of automobiles need parts and services over a period of several years. While the warranty is an explicit contract with the customers, the implicit contract is that replacement parts will be available in the future. Buyers may avoid doing business with firms with high leverage, lest the firms not honor these contracts. Both General Motors and Chrysler lost a substantial number of customers when they went into bankruptcy in 2009 (Frank 2009). Similarly, firms' strategic business partners, such as suppliers, may be willing to invest less in relationship-specific assets (Kale and Shahrur 2007). Finally, because highly leveraged firms are likely to treat their employees less fairly (Bae, Kang, and Wang 2011), employees may be unwilling to work in more leveraged firms.

Higher leverage can also influence managers' incentives and actions. Jensen (1986) argues that managers of firms with large free cash flows¹ have incentives to overinvest beyond optimal levels, which may harm shareholder value. He theorizes that high leverage can provide a way to align the interests of a firm's managers and shareholders. Firms with high free cash flow are likely to have more resources to invest in marketing assets such as advertising, brand equity, and customer satisfaction. For example, Joseph and Richardson (2002) find that entrenched managers tend to overspend on advertising, which can reduce firm value. However, by reducing the free cash flow available to managers, leverage can "discipline" them to reduce wasteful investments, especially in firms with low growth opportunities (Aivazian, Ge, and Qiu 2005).

In a survey of 392 CFOs of U.S. firms, Graham and Harvey (2001) find that the most important factor in issuing debt is retaining financial flexibility. Higher leverage can lower a firm's financial flexibility and pressure managers to meet debt obligations (Zingales 1998). This in turn moti-

vates firms to keep more cash on hand (Almeida, Campello, and Weisbach 2011). Leveraged firms are also more likely to invest in assets that are liquid and that produce short-term cash flows (Campello 2003; Rauh 2009). Some leveraged firms tend to cut costs and maintain cash flow by hiring more part-time and seasonal employees, paying lower wages and pensions (Hanka 1998), and having lower pay raises. Peyer and Shivdasani (2001) show that higher leverage puts pressure on firms to generate enough cash flows to service debt. Specifically, they find that in leveraged multidivisional firms, cash flow pressure results in reallocation of internal funds to divisions that generate short-term cash flows at the expense of higher-growth divisions. Finally, Fresard (2010) shows that firms try to hold more cash on hand to implement aggressive competitive strategies. In summary, firms feel the pressure to maintain adequate cash flows to service debt, retain financial flexibility, and fund competitive strategies.

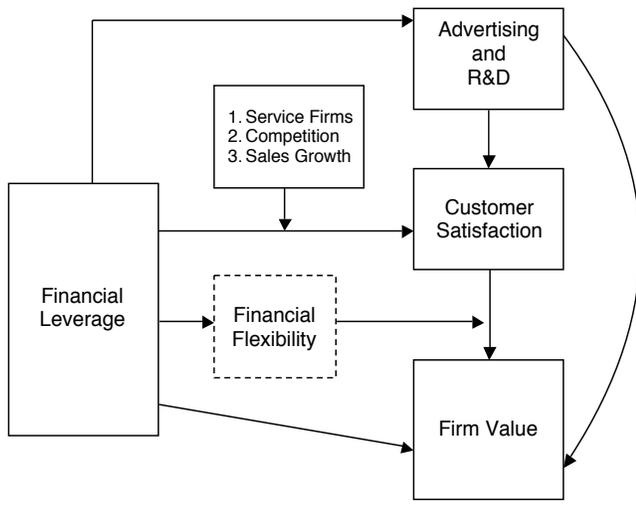
We argue that marketers of leveraged firms will respond to the pressure on the firm to conserve cash. For example, marketing managers may give more price discounts (Phillips and Sertsios 2013) rather than investing in long-term brand-building advertising. Grullon, Kanastas, and Kumar (2006) find that the firms that increase their leverage tend to reduce advertising expenses. Other marketers may cut product quality to save costs (Maksimovic and Titman 1991) and invest less in innovative products by lowering R&D (Singh and Faircloth 2005). Cost-cutting efforts by the marketers of leveraged companies can also affect product and service quality. Matsa (2011) reports higher stockouts among heavily leveraged supermarkets. Phillips and Sertsios (2013) report that more indebted airlines, which face a higher probability of bankruptcy, have a higher incidence of mishandled bags and poorer on-time performance. Thus, in response to pressures emanating from higher leverage, marketing managers are likely to take actions that ensure adequate cash flows and cash reserves for the firm, even if these actions are not beneficial to the firm in the long run.

Our argument is complementary to extant marketing and accounting literature that has documented that marketing managers are not immune to financial pressures faced by their firm (Mizik 2010). For example, Mizik and Jacobson (2007) show that firms reduce their marketing spending before new stock issuance so that they can report higher earnings and sell shares at a higher price, even though it hurts their long-term stock price. Similarly, Roychowdhury (2006) documents evidence suggesting real earnings management, whereby firms change their operational activities and give price discounts to boost sales and reduce discretionary expenses to inflate earnings. Cohen, Mashruwala, and Zach (2010) report that firms actively alter their advertising expenditures to meet earnings benchmarks. Correspondingly, we propose that the cash flow pressures faced by leveraged firms will also be transmitted to their marketing managers.

In this research, we focus on the influence of leverage on customer satisfaction and firm value through the relationships shown in Figure 1. We argue that leverage affects

¹Free cash flow is defined as the cash in excess of that required to fund all positive new present value projects.

FIGURE 1
Conceptual Framework



customer satisfaction through two mediating observable expenditures: R&D and advertising. There is also a direct link from leverage to customer satisfaction to account for other (unmeasured) impacts such as cost cutting, lower maintenance, and so on, as we discussed previously. We expect the leverage–customer satisfaction link to be moderated by three aspects: service versus manufacturing industries, competitive intensity in the industry, and the firm’s sales growth. Leverage moderates the link between customer satisfaction and firm value as a result of the firm’s reduced financial flexibility, which affects the “option value” of the opportunities provided by higher customer satisfaction. Research and development and advertising also have direct links with firm value in that these expenditures can have signaling impacts on investors. Finally, to capture the net effects of financial benefits and costs, we directly link leverage and firm value. We next discuss these relationships in more detail.

Leverage, R&D, Advertising, and Customer Satisfaction

Natural questions might arise regarding whether the financial leverage of a firm is important to a customer when making a buying decision and whether it can “directly” affect customer satisfaction. An assumption of some of the theoretical models is that customers are fully informed about the financial condition of the firms (Maksimovic and Titman 1991; Titman 1984). We anticipate that in business-to-business markets, firms will take the financial condition of their strategic partners (e.g., suppliers, distributors, customers) into account when making their choices. For example, Kale and Shahrur (2007) report that suppliers and business customers of more leveraged firms have lower R&D intensity, suggesting that firms do take the financial conditions of their partners into account.

However, it is not clear whether, in consumer product markets, customers will actively consider the financial con-

ditions of sellers while making purchase decisions. It is likely that in these markets, most consumers are unaware of the firm’s financial condition. Only when consumer firms are in financial distress and impending bankruptcy is discussed in the media are the consumers likely to take note. Therefore, we do not anticipate any direct effect of leverage on customer satisfaction in consumer markets. However, we posit that actions taken in the product markets due to cash flow pressures will affect marketing (and other relevant) decisions, which in turn can indirectly affect customer satisfaction.

Leverage, advertising, and R&D. We expect firms with higher leverage to have lower advertising and R&D expenditures for several reasons. First, advertising and R&D are discretionary expenditures and therefore tend to be cut when cash is needed immediately (Erickson and Jacobson 1992). For example, advertising and R&D are commonly the first line items to be cut to meet earnings expectations or when the economy is not growing (Cohen, Mashruwala, and Zach 2010; Deleersnyder et al. 2009; Graham, Harvey, and Rajgopal 2005; Osma and Young 2009). Second, advertising and R&D are investments in intangible assets (Barth and Kasznik 1999; Chauvin and Hirschey 1993; Graham and Frankenberger 2000). The returns to these assets are not fully known or predictable, leading to uncertainty about how much cash flow they will generate in the near term. Thus, the short-termism induced by higher leverage will lead to lower advertising and R&D expenditures. Third, the intangible assets created by advertising and R&D are usually firm specific, making them less redeployable by other firms. Thus, they tend to lose a substantial proportion of their market value when the firm is in financial distress. Because higher leverage increases a firm’s risk of financial distress, firms are less likely to invest in assets with limited marketability. Finally, very high levels of leverage can result in an “underinvestment problem” (Myers 1977). When firms are highly leveraged, the probability of bankruptcy is very high. In case of a bankruptcy, debt holders, not shareholders, have a priority in claiming the firm’s assets. Yet a firm’s managers have a fiduciary duty to act in the best interests of the firm’s shareholders, who own the firm’s assets. When the probability of bankruptcy is high, the future benefits of any new investments the firm makes will likely go to the debt holders. Therefore, managers acting in the shareholders’ best interest may underinvest in assets that generate longer-term benefits (Myers 1977). This argument suggests a negative relationship between leverage and advertising and R&D. Thus, taken together, we expect that firms with higher debt will have lower advertising and R&D expenditures.

Impact of advertising and R&D on customer satisfaction. Customer expectations, perceived quality, and perceived value are the main theoretical antecedents of customer satisfaction (Anderson and Fornell 2000; Fornell et al. 1996). Empirical research has positively linked customer satisfaction with expectations (Bearden and Teel 1983; Oliver and Linda 1981), perceived quality (Anderson and Sullivan 1993; Spreng and Mackoy 1996), and perceived

value (McDougall and Levesque 2000). Thus, if marketing actions affect any of these antecedents, they will consequently affect customer satisfaction.

Advertising can influence the antecedents of customer satisfaction in several ways. Advertising is positively related to perceived and expected quality (Kirmani and Wright 1989; Moorthy and Zhao 2000) because consumers draw inferences about the brand's quality from the amount that is spent on its advertising (Kirmani 1990; Milgrom and Roberts 1986). Advertising also reduces the perceived risk of products, especially for innovations (Dowling and Staelin 1994), which in turn increases perceived value (Sweeney, Soutar, and Johnson 1999). Anderson and Salisbury (2003) find that lower advertising expenditures decrease customer expectations, as measured in the ACSI. In a study of airlines, Grewal, Chandrashekar, and Citrin (2010) report a significant and positive impact of relative-to-industry advertising expenditures on satisfaction. Therefore, we expect advertising to affect customer satisfaction positively.

The link between R&D and customer satisfaction has not been empirically explored extensively. Research and development has been shown to positively affect firms' innovativeness (e.g., patents; Zachariadis 2002), which can be used to create new products and improve products/services, thus affecting both actual and perceived quality. Firm innovativeness is linked to customer satisfaction in supply chains in business-to-business markets (Kibbeling, Van Der Bij, and Van Wee 2013). We argue that consumers will similarly perceive higher quality for more innovative firms. Overall, we expect R&D to affect customer satisfaction positively.

Following this discussion, we propose that higher leverage is likely to reduce advertising and R&D, and this in turn will lower customer satisfaction due to diminished perceived quality, expectations, and perceived value of the firm's products.²

H₁: The (negative) impact of higher leverage on customer satisfaction is mediated by a firm's (a) advertising expenditures and (b) R&D expenditures.

Moderators of the Leverage–Customer Satisfaction Link

In this section, we propose three potential moderators that can influence the leverage–customer satisfaction link: (1) service versus manufacturing firms, (2) competitive intensity in the industry, and (3) sales growth. We expect a more negative effect of higher leverage on service firms, firms in more competitive industries, and firms with low sales growth; we discuss our reasons in the following subsections.

Service versus manufacturing firms. The leverage-induced cash flow pressure and disciplining effect can focus

²The beneficial disciplining effects can lead to reductions in wasteful expenditures in advertising, R&D, and other marketing expenditures. However, in these cases managers would reduce these expenses only if they anticipated no impacts on customer satisfaction. We do not expect that these cuts can lead to an increase in customer satisfaction. Thus, in general we expect the negative effects of higher leverage to dominate.

managers on reducing wasteful expenditures and making productivity gains (Jensen 1986). In support of this notion, Margaritis and Psillaki (2007) find strong evidence that higher leverage is associated with improved efficiency. However, Anderson, Fornell, and Rust (1997) propose that both customer satisfaction and productivity cannot be increased when customer satisfaction is relatively more dependent on customization. They find that there is a trade-off between customer satisfaction and productivity in the case of service firms because they typically rely less on standardization and more on customization. Rust, Moorman, and Dickson (2002) and Mittal et al. (2005) also emphasize the trade-off between efficiency and improving service performance. Leveraged service firms may improve productivity by encouraging customer participation and involvement (Fitzsimmons 1985) or by cutting costs and hiring part-time or seasonal employees (Hanka 1998). Yet given the trade-off between satisfaction and efficiency, we expect the following:

H_{2a}: The negative effect of leverage on customer satisfaction is more negative for service firms than for manufacturing firms.

Competitive intensity in the industry. Firms strive to increase customer satisfaction to gain competitive advantage in markets. However, in highly competitive markets, because customers have many options, they may treat various firms as substitutes and exhibit low brand loyalty; even satisfied customers may be difficult to retain (Anderson, Fornell, and Mazvancheryl 2004). In such markets, the marginal benefits to increasing customer satisfaction are likely to be lower. When leveraged firms operate in a competitive market, the cash flow pressure will likely make managers more prone to cutting costs from the activities that have lower marginal benefits, such as enhancing customer satisfaction. Accordingly, we posit the following:

H_{2b}: The negative impact of leverage on customer satisfaction is more pronounced for firms operating in competitive industries compared with concentrated industries.

Sales growth. Firms with lower sales growth are more likely to face cash flow pressures in the presence of stagnant or even declining sales. In such firms, leverage is likely to exacerbate the cash flow pressure because the cash outflow on interest remains the same even when cash inflow might be lower due to low sales growth. Lang, Ofek, and Stulz (1996) and Aivazian, Ge, and Qui (2005) demonstrate that leverage adversely affects long-term investments in firms with fewer growth opportunities. Along similar lines, we posit the following:

H_{2c}: Leverage affects customer satisfaction more negatively for firms with low sales growth.

Moderating Role of Leverage in the Customer Satisfaction–Firm Value Link

A large body of research in marketing has demonstrated that customer satisfaction leads to higher firm value (Aksoy et al. 2008; Anderson, Fornell, and Mazvancheryl 2004; Fornell et al. 2006; Gruca and Rego 2005). Customer satis-

faction can produce value for a firm in two ways: by increasing immediate cash flows and creating future strategic growth options. More satisfied customers are likely to have greater purchase intent (Bolton and Drew 1991), higher retention (Mittal and Kamakura 2001) and reduced defection (Anderson 1996) levels, and higher repeat purchase rates (Rust and Zahorik 1993). Thus, enhanced customer satisfaction can lead to increased positive cash flow and customer lifetime value (e.g., Ho, Park, and Zhou 2006) from the current assets in place, such as existing products, brands, and markets.

However, the value of assets in place does not account for all of the firm value³; firm value also contains the value of growth options. Marketing scholars have argued that intangible marketing assets such as satisfied customers provide firms with a greater capability to take advantage of future growth opportunities (Gupta 2009; Srivastava, Shervani, and Fahey 1998). These growth options are valuable because they give managers a choice in making strategic decisions in the future. For example, satisfied customers may enable companies to introduce new products and expand into newer markets with a better chance of success. We argue that stock market investors value growth options embedded in high levels of customer satisfaction and incorporate them into a firm's valuation. The value of such growth options can be estimated by treating them as "real options" (Black and Scholes 1973; Cox, Ross, and Rubinstein 1979; Haenlein, Kaplan, and Schoder 2006; for a review, see Merton 1998). Chief financial officers frequently use these methods while making capital budgeting decisions (Graham and Harvey 2001). Indeed, finance research has shown that growth options contribute significantly to firm value (Kulatilaka and Perotti 1998).

The value of the options depends on factors such as the firm's capability to successfully exploit growth opportunities, which partly depends on its financial flexibility (Trigeorgis 1993). If a firm has the ability to acquire the financial resources necessary to exploit growth options, the value of those options would be high. However, if the firm finds it difficult to acquire necessary funding, the value of the growth options would be lower. When firms increase their leverage, their ability to take on more debt in the future decreases. This reduces their financial flexibility in that they may not be able to borrow adequate funds when future conditions warrant opportune investments. Furthermore, higher leverage also increases the riskiness of the firm's stock returns, thereby increasing the cost of equity (Modigliani and Miller 1958). Thus, firms with higher leverage have limited financial flexibility to take advantage of the growth opportunities.

Second, with higher leverage, the marginal cost of total capital, comprising debt and equity, is also higher; thus, growth projects must have higher returns to be viable (Denis 2011), which reduces the number of possible growth options that can be exploited. For example, whereas low-leverage firms may have the option of launching several

brand extensions to take advantage of the higher trial rates of satisfied customers (Anderson, Fornell, and Mazvancheryl 2004), firms with higher leverage may have sufficient financial resources to choose only a few or even no brand extensions. Research in finance has confirmed that firms with higher financial flexibility make more and better-quality investments (Marchica and Mura 2010) and have higher firm value (Gamba and Triantis 2008). Thus, by reducing financial flexibility, leverage will negatively moderate the relationship between customer satisfaction and firm value.

H₃: The impact of customer satisfaction on firm value is higher (lower) for firms with lower (higher) leverage.

Methodology and Data

Model Specification

In our conceptual framework (Figure 1), we specify the links between leverage, R&D, advertising, customer satisfaction, and firm value. Next, we formulate the following system of five equations that detail the relationships between these variables and other relevant control variables necessary to estimate the coefficients accurately:

- (1) $CS_{i,t} = \alpha_0 + \alpha_1 LEV_{i,t-1} + \alpha_2 R \& D_{i,t-1} + \alpha_3 ADV_{i,t-1} + \alpha_4 LEV_{i,t-1} \times SERVICE_{i,t-1} + \alpha_5 SERVICE_{i,t-1} + \alpha_6 LEV_{i,t-1} \times COMPETITION_{i,t-1} + \alpha_7 COMPETITION_{i,t-1} + \alpha_8 LEV_{i,t-1} \times GROWTH_{i,t-1} + \alpha_9 GROWTH_{i,t-1} + \tilde{\alpha} CTRL_{i,t-1} + F_{1i} + \epsilon_{1i,t}$,
- (2) $ADV_{i,t} = \beta_0 + \beta_1 LEV_{i,t-1} + \tilde{\beta} CTRL_{2i,t-1} + F_{2i} + \epsilon_{2i,t}$,
- (3) $R\&D_{i,t} = \gamma_0 + \gamma LEV_{i,t-1} + \tilde{\gamma} CTRL_{3i,t-1} + F_{3i} + \epsilon_{3i,t}$,
- (4) $FV_{i,t} = \delta_0 + \delta_1 LEV_{i,t-1} + \delta_2 CS_{i,t-1} + \delta_3 LEV_{i,t-1} \times CS_{i,t-1} + \tilde{\delta} CTRL_{4i,t-1} + F_{4i} + \epsilon_{4i,t}$, and
- (5) $Lev_{i,t} = \theta_0 + \theta_1 CS_{i,t-1} + \theta_2 ADV_{i,t-1} + \theta_3 R\&D_{i,t-1} + \tilde{\theta} CTRL_{5i,t-1} + F_{5i} + \epsilon_{5i,t}$,

where, for each firm *i* and year *t*, $CS_{i,t}$ is customer satisfaction, $ADV_{i,t}$ is advertising intensity, $R\&D_{i,t}$ is R&D intensity, $FV_{i,t}$ is the natural log of Tobin's *q*, $LEV_{i,t}$ is market leverage ratio, $SERVICE_{i,t}$ is a contrast-coded variable indicating service or manufacturing firms, $COMPETITION_{i,t}$ is industry competition, and $GROWTH_{i,t}$ is the firm's one-year sales growth. $CTRL_{1i,t}$ – $CTRL_{5i,t}$ are the vectors of control variables for each of the five equations. F_{1i} – F_{5i} are firm-specific fixed-effect parameters, and $\tilde{\alpha}$, $\tilde{\beta}$, $\tilde{\gamma}$, $\tilde{\delta}$, and $\tilde{\theta}$ are vectors of estimated slope parameters for the control variables. The error terms $\epsilon_{1i,t}$ – $\epsilon_{5i,t}$ are distributed $MVN(0, \Sigma)$.

We added Equation 5 to account for the notion that the anticipated need for funds can influence firms' leverage decisions. Firms can fund their increased marketing spending to improve customer satisfaction (e.g., more staff in customer support, training expenses) from their internal

³Using a procedure similar to that outlined in Cao, Simin, and Zhao (2008), we find in our sample that, on average, 20% of the shareholder value is due to growth options.

sources, debt, or equity. For example, Fee, Hadlock, and Pierce (2009) show that firms use their internal cash flows to finance advertising expenditures. A stream of finance literature has argued that the firms with more intangible assets (such as marketing and R&D assets) will tend to use less debt because intangible assets have low collateral values, which make debt financing more expensive (Garmaise 2009; Hall 2010; Titman and Wessels 1988). Along the same lines, strategy literature has argued, for example, that firms in need of uninterrupted funding for R&D will want a lower leverage, which provides greater “slack” to the firm (O’Brien 2003). Thus, anticipated fund needs can affect decisions about leverage. To account for these potential effects, we include lagged advertising, R&D, and customer satisfaction as predictor variables.

Data and Variables

To test our hypotheses, we need data on customer satisfaction, advertising, R&D, firm value, leverage, and control

variables. To this end, we assemble a data set using multiple sources, including the ACSI, Standard and Poor’s (S&P’s) Compustat and ExecuComp, University of Chicago’s Center for Research in Security Prices, and Thomson Reuters. Table 1 provides a description of these variables and the source of the specific data items.

We obtained firms’ financial information on balance sheets, income statements, and cash flow statements from S&P’s Compustat database. Because there is no common firm-level identifier between the ACSI and Compustat, we manually matched ACSI brands belonging to corresponding Compustat firms. Because one of our research questions pertains to shareholder value, we retained only those firms that are listed on the U.S. stock markets at any time during our sample period. We obtained stock market-related data from the Center for Research in Security Prices database. Finally, we obtained chief executive officer (CEO) ownership from S&P’s ExecuComp and derived institutional investor ownership from the Thomson Reuters database.

TABLE 1
Variables, Data Sets, and Rationale

Constructs/Variables	Purpose	Appears in Equation(s)	Data Set	Supporting Literature
Customer satisfaction (ACSI)	Principal dependent variable	1, 4, 5	ACSI	Anderson, Fornell, and Mazavancheryl (2004)
Market leverage	Principal independent variable	1–5	Compustat	Jensen (1986); Titman (1984)
R&D intensity	Mediating variables in Equation 1; control variables in Equations 4 and 5	1, 3, 4, 5	Compustat	Kirmani and Wright (1989); Moorthy and Zhao (2000)
Advertising intensity		1, 2, 4, 5		Chauvin and Hirschey (1993)
Service dummy	Moderating variable	1	Compustat	Anderson, Fornell, and Rust (1997)
Competition	Moderating variable	1	Compustat	Anderson, Fornell, and Mazavancheryl (2004)
Sales growth	Moderating variable	1	Compustat	Lang, Ofek, and Stulz (1996)
	Control variable	4		Rao, Agarwal, and Dahloff (2004)
Cash flow	Control variable	2, 3	Compustat	Hambrick, MacMillan, and Barbosa (1983)
Profit margin	Control variable	4	Compustat	Rao, Agarwal, and Dahloff (2004)
		5		Frank and Goyal (2009)
Industry median R&D and advertising intensity	Control variables in the R&D and advertising equations, respectively	2	Compustat	Lee (2002), Cohen and Klepper (1992)
		3		Balasubramaniam and Kumar (1990)
CEO ownership	Control variable	1, 2, 3	ExecuComp	Morck, Shleifer, and Vishny (1988)
Institutional investors ownership	Control variable	1, 2, 3	Thomson Reuters	Bushee (1998, 2001)
Total assets	Known determinants of leverage	5	Compustat	Frank and Goyal (2009)
Asset tangibility				Campello (2006)
Market share	Control variable	4	Compustat	Anderson, Fornell, and Mazavancheryl (2004); Varaiya, Kerin, and Weeks (1987)

Measuring customer satisfaction. For close to two decades, marketing scholars have used the ACSI as a measure of customer satisfaction (e.g., Fornell et al. 2006; Tuli and Bharadwaj 2009). The ACSI annually reports customer satisfaction scores for approximately 200 brands on a scale ranging from 0 to 100. We used the data available over a 17-year period from 1994 to 2010. A firm may have multiple brands that are included in the ACSI. In such cases, following prior literature (e.g., Tuli and Bharadwaj 2009), we took the brands' average customer satisfaction scores as the overall satisfaction for the firm.

Measuring advertising and R&D intensities. We measured advertising and R&D intensities as the respective expenditures divided by sales. To impute missing values of advertising and R&D variables reported on Compustat, we used a combination of the estimates used in prior literature. For each firm reporting advertising, we computed the ratio of advertising to sales, general, and administrative (SG&A) expenses each fiscal year. Next, we obtained the yearly average advertising-to-SG&A ratio for every industry. To estimate advertising for a firm that did not report it, we multiplied the firm's SG&A by the average advertising-to-SG&A ratio of the corresponding industry and year. We followed a parallel strategy for estimating missing R&D expenses. More details of these imputations are available in the Web Appendix.

Measuring shareholder value. Following prior literature, we used Tobin's q as a measure of shareholder value (Anderson, Fornell, and Mazvancheryl 2004; Rao, Agarwal, and Dahlhoff 2004). Grewal, Chandrashekar, and Citrin (2010) note that as a performance metric and a measure of firm value, Tobin's q has several advantages over other measures of performance, such as market-to-book value and return on investment. Specifically, Tobin's q reflects a firm's stock of tangible and intangible assets by capturing the relationship between the replacement cost of a firm's tangible assets and the market value of the firm. We used the log of Tobin's q following the theoretical and empirical justifications provided by Hirsch and Seaks (1993).⁴

Measuring financial leverage. We operationalized leverage as the ratio of a firm's total debt to the sum of total debt and market value of equity. The total debt is composed of long-term and short-term debt. Using the market value of equity rather than the book value of equity in the formulation has a critical benefit. Whereas the book value of equity is just an accounting adjustment (Welch 2004), the market value of equity reflects investors' belief about the worth of the firm (see Frank and Goyal 2008 and references thereof).

Measuring the moderators for testing H_{2a-c} . H_{2a} makes a prediction about service and manufacturing firms. There

⁴Using Box-Cox transformations, Hirsch and Seaks (1993) compare the linear and the semilog form of equations that relate Tobin's q to advertising, R&D, and other variables. Using three databases, they find that the semilog form fits better than the linear form. They also argue that the independent variables likely have multiplicative rather than linear effects on Tobin's q , and thus, the semilog form is preferred on conceptual grounds.

is no commonly agreed-on definition of service firms. However, using the Fama-French industry categorization, we assigned various industries to the service or manufacturing category on the basis of the degree of service orientation in their businesses. Specifically, we labeled firms in the following industries as service firms (72%): business services, household goods, computer hardware and software, restaurants, retail, wholesale, telecommunications, transport, and utilities. We grouped the rest of the firms (28%) under manufacturing firms. We used contrast coding for the variable Service, which takes a value of 1 for service firms and -1 for manufacturing firms.

We used the Herfindahl index to measure the degree of industry concentration. For ease of interpretation of the results, we created the variable Competition by subtracting the Herfindahl index from 1. Higher values of Competition indicate a more competitive industry. Finally, we measured one-year sales growth for each firm i and year t using the following formula: $(Sales_{i,t} - Sales_{i,t-1})/Sales_{i,t-1}$.

Control variables. We closely followed the literature to identify appropriate control variables. For customer satisfaction, advertising, and R&D (Equations 1-3), we included a common set of three control variables. First, we controlled for institutional investors' ownership because they may have a shortsighted preference for firms with current earnings (Porter 1992), which can lead to lower advertising and R&D. For example, Bushee (1998, 2001) finds that a higher degree of ownership by institutional firms engaged in short-term pursuits results in managers myopically reducing R&D to increase earnings. Second, CEOs may have a preference for long- or short-term cash flows depending on their compensation structure. Following prior literature, we used CEO ownership as a proxy for the degree of alignment of long-term interests between shareholders and top management (Morck, Shleifer, and Vishny 1988). Third, we included cash flows scaled by total assets to control for the availability of funds for advertising, R&D, and other discretionary expenditures that lead to higher customer satisfaction irrespective of the level of leverage. For example, Hambrick, MacMillan, and Barbosa (1983) report a strong link between firm's R&D intensity and cash flow.

Many firms plan their advertising and R&D spending in line with the behavior of other firms in the same industry. To control for this propensity to benchmark against the industry consensus, we used the industry median advertising intensity in Equation 2 (Balasubramanian and Kumar 1990; Farris and Albion 1980) and industry median R&D intensity in Equation 3 (Cohen and Klepper 1992; Lee 2002).

In the Tobin's q equation (Equation 4), we added control variables that explain variations in firm value. Previous research shows that firms with a higher profit margin (Varaiya, Kerin, and Weeks 1987), one-year sales growth (Barth and Kasznik 1999; Rao, Agarwal, and Dahlhoff 2004), and market share (Anderson, Fornell, and Mazvancheryl 2004) have higher firm value. We obtained profit margins by dividing operating income before depreciation by total sales.

Finally, in the leverage equation (Equation 5), we added control variables that can influence a firm's choice of leverage. Frank and Goyal (2009) find that the main determinants of cross-sectional variations in firm leverage are industry median leverage, tangibility of assets, firm size, and profit margin. We obtained asset tangibility by dividing the total value of property, plant, and equipment by the total assets. We used the natural logarithm of total assets as the proxy for firm size. To capture the effect of inflation on the value of reported assets, we used inflation adjustment based on the Consumer Price Index in 2010, the last year in our sample.

To compute industry median values and market share, we must define the industries. To this end, we grouped the firms into industries on the basis of the 48-industry categorization defined by Fama and French (1997) using four-digit Standard Industrial Classification codes.

Addressing potential endogeneity concerns. We took several steps to address endogeneity concerns resulting from potential omitted variables, simultaneity, and reverse causality. Unobserved time-invariant variables such as a firm's risk-taking ability can influence both the strategy and the desired debt levels (Barton and Gordon 1988). By using a fixed-effects formulation (Srinivasan and Hanssens 2009), we controlled for unobserved time-invariant firm- and industry-specific effects. To address potential simultaneity, we followed Petersen and Kumar (2009) and selected an estimation model that jointly estimates all model coefficients. We also lagged all explanatory and control variables by one year to create temporal distance between them and the dependent variables and reduce potential for reverse causality (Boulding and Staelin 1995). Although we also tried second and third lags of leverage in the model, we ultimately used the model with one lag because it has the lowest Akaike information criterion and Bayesian information criterion. We checked the order and rank conditions to ensure that all equations are identified (Wooldridge 2010).

The econometrics literature has advocated for the use of seemingly unrelated regression (SUR) estimation for estimating a system of equations because it provides consistent and efficient estimates by modeling the correlated error terms across equations (Wooldridge 2010). However, in the presence of endogeneity, it may be necessary to use instrumental variables. Prior literature has suggested using lags of dependent variables as instruments (see, e.g., Vilcassim, Kadiyali, and Chintagunta 1999). We used a combination of third and fourth lags of endogenous variables as instruments in a three-stage least squares estimation and performed the Hansen-Sargan test of overidentifying restrictions to determine the validity of the instruments. The test statistic was statistically nonsignificant ($\chi^2(19) = 27.19$, $p > .10$), suggesting that the instruments are valid. Next, we examined whether the SUR estimates differed significantly from the three-stage least squares estimates. Following the well-established literature stream in marketing and econometrics (Hennig-Thurau, Henning, and Sattler 2007; Stahl et al. 2012; Ter Braak, Dekimpe, and Geyskens 2013; Wooldridge 2010), we used the Durbin-Wu-Hausman test

to check for endogeneity. The nonsignificant test statistic ($\chi^2(29) = 27.25$, $p > .10$) suggests that the SUR estimates are preferable to the estimates of instrumental regressions and that endogeneity is not a concern.

Sample Characteristics

Our sample firms belong to a wide range of 23 industries that include services as well as manufacturing. Utilities constitute a large proportion (20.58%) of the sample, followed by the retail (15.3%) and food (7.95%) industries. We excluded financial firms (banking, insurance, and trading) from our analysis because they are subject to very different regulations than nonfinancial firms.⁵ In addition, leverage is usually not just a part of their financing strategy but a core aspect of their business. Therefore, it is not appropriate to compare their leverage with that of nonfinancial firms. After we merged the five data sets and removed 120 firm-year observations pertaining to financial services, our final sample consisted of 1,346 firm-year observations spanning a 17-year period (1994–2010) for which all the relevant variables have nonmissing values.

Table 2 shows the summary statistics and correlations for the sample. The average customer satisfaction score for the sample firms is 76.46, and the mean market leverage is .3 (30%). On average, the firms covered by the ACSI have an advertising intensity of 5% and an R&D intensity of 2%. They have a sizable average market share of 8% and strong average operating profit margin of 19%. The correlation analysis supports many of the prior expectations. Leverage is significantly and negatively correlated with customer satisfaction ($r = -.31$, $p \leq .01$), advertising intensity ($r = -.09$, $p \leq .01$), and R&D intensity ($r = -.12$, $p \leq .01$). Customer satisfaction is significantly positively correlated with Tobin's q ($r = .27$, $p \leq .01$) and advertising intensity ($r = .12$, $p < .01$). Contrary to expectations, R&D intensity has no correlation with customer satisfaction ($r = .02$, $p > .10$).

Results

In Table 3, we report the results of the SUR estimation. The R^2 values range from .30 to .89, suggesting excellent model fit. The chi-square and corresponding p -values indicate that all five equations in the model are statistically significant.

Testing the Mediation of the Leverage–Customer Satisfaction Link

H_{1a} and H_{1b} posit that advertising and R&D mediate the negative impact of leverage on customer satisfaction, respectively. To establish the mediation effect through advertising (R&D), we must satisfy the following three conditions: (1) the coefficient on advertising (R&D) in Equation 1 must be positive and significant, (2) the coefficient of leverage in Equation 2 (Equation 3) for advertising

⁵As an example, in July 2010 U.S. President Barack Obama signed into law the Dodd-Frank Wall Street Reform and Consumer Protection Act. This law puts additional regulations on the financial services industry to reduce the probability of a future financial crisis.

TABLE 2
Means and Correlations for Selected Variables

Variable	M (SD)	1	2	3	4	5	6	7	8	9	10	11	12
1. Customer satisfaction	76.46 (6.26)	1.00											
2. Leverage	.30 (.22)	-.31***	1.00										
3. Tobin's q	1.61 (1.33)	.27***	-.55***	1.00									
4. R&D/Sales	.02 (.03)	.12***	-.12***	.18***	1.00								
5. Advt/Sales	.05 (.06)	.12***	-.09***	.14***	.05*	1.00							
6. Institutional ownership	.60 (.25)	-.12***	-.04	.03	-.17***	.03	1.00						
7. CEO ownership	.01 (.05)	.04	-.18***	.24***	.05*	.02	.05*	1.00					
8. Service dummy ^a	.43 (.90)	-.44***	.13***	-.09***	-.01	.02	.10***	.12***	1.00				
9. Competition	.72 (.23)	-.10***	.37***	-.27***	-.33***	-.03	-.02	-.19***	.36***	1.00			
10. Cash flow	.11 (.07)	.21***	-.54***	.58***	.02	.07***	.03	.17***	-.07**	-.17***	1.00		
11. Profit margin	.19 (.11)	-.14***	.04	.09***	.14***	.16***	-.07**	-.12***	.10***	.13***	.18***	1.00	
12. One-year sales growth	.09 (.24)	-.02	-.08***	.14***	.09***	.01	.01	.04	.12***	-.05*	.04	.04	1.00
13. Market share	.08 (.12)	.15***	-.09***	.06**	.11***	-.06**	-.11**	-.07**	-.44***	-.58***	.07**	-.09***	-.09

* $p < 0.1$.

** $p < .05$.

*** $p < 0.01$.

^a Contrast coded. Seventy-two percent of the sample firms are service firms.

TABLE 3
Results of SUR Estimation

	Customer Satisfaction	Advertising/Sales	R&D/Sales	Ln(Tobin's q)	Leverage
Constant	68.616*** (38.60)	.048** (2.16)	.102*** (16.31)	-1.055*** (-3.16)	.292** (2.27)
Leverage	4.331 (1.50)	-.119*** (-7.39)	.000 ^a (.09)	1.904*** (3.18)	
Customer satisfaction				.021*** (5.06)	-.003*** (-3.29)
Customer satisfaction × Leverage				-.031*** (-3.87)	
Leverage × Service dummy	-2.595*** (-2.74)				
Service dummy	-2.118*** (-3.36)				
Leverage × Competition	-6.613* (-1.68)				
Competition	6.367*** (5.29)				
Leverage × One-year sales growth	-5.376*** (-3.46)				
One-year sales growth	2.637*** (3.86)			.157*** (5.23)	
Advertising/Sales	2.862** (2.29)			.075 (.57)	-.076* (-1.72)
R&D/Sales	13.697* (1.96)			2.065*** (2.84)	-.057 (-.23)
Institutional ownership	-1.410*** (-3.24)	-.002 (-.21)	-.004** (-2.35)		
CEO ownership	-.041 (-.02)	.014 (.31)	.008 (.95)		
Cash flow/Assets	.670 (.42)	-.084** (-2.50)	-.002 (-.33)		
Profit margin				1.205*** (6.87)	-.407*** (-7.16)
Industry median leverage					.286*** (7.09)
Log(Consumer Price Index-adjusted assets)					.011 (1.42)
Tangible/Total assets					-.040 (-.99)
Industry median advertising/Sales		.002 (.48)			
Industry median R&D/Sales			.365*** (12.44)		
Market share				-.269 (-1.25)	
Observations	1,346	1,346	1,346	1,346	1,346
R ²	.87	.30	.89	.83	.85
χ ²	8,641	601	11,339	6,821	7,979
p-value	.000	.000	.000	.000	.000

^aThe actual estimate is .00025.

* $p < .1$.

** $p < .05$.

*** $p < .01$.

Notes: t-statistics appear in parentheses.

(R&D) must be negative and significant, and (3) the product of the coefficient of leverage in Equation 2 (Equation 3) and the coefficient of advertising (R&D) in Equation 1 must be negative and significant. To test the significance of the product term, we used Sobel's test statistic using the formula given by Zhao, Lynch, and Chen (2010).

We first discuss the mediation for advertising. Advertising has a significant and positive impact on customer satisfaction ($b = 2.862, p \leq .05$; Table 3, Column 1), thereby fulfilling Condition 1. Leverage has a negative and significant impact on advertising ($b = -.119, p \leq .01$; Table 3, Column 2), which satisfies Condition 2. Finally, Sobel's test on the

product of the two coefficients ($b = -.341 = -.119 \times 2.862$) shows a statistically significant result ($t = -2.19, p \leq .05$), in support of the mediating role of advertising in the leverage–customer satisfaction link. Thus, the results support H_{1a} .

We followed the same procedure to test the mediation of R&D (H_{1b}). Although R&D has a positive and marginally significant impact on customer satisfaction ($b = 13.697, p \leq .10$; Table 3, Column 1), leverage has no significant effect on R&D ($b = .25 \times 10^{-3}, p > .10$; Table 3, Column 3). As a result, Sobel's test suggests that R&D does not mediate the negative impact of leverage on customer satisfaction ($t = .09, p > .10$). In summary, the results support H_{1a} , but not H_{1b} .

From the set of control variables used in Equations 1, 2, and 3, we find that institutional ownership has significant, negative effects on customer satisfaction ($b = -1.41, p \leq .01$) and R&D intensity ($b = -.004, p \leq .05$). This finding suggests that institutional investors influence managers' decisions to focus on short-term rewards. Cash flow negatively influences advertising intensity ($b = -.084, p < .05$), which is an unexpected result.

Moderation of the Leverage–Customer Satisfaction Link (H_{2a-c})

H_{2a} posits that the negative effect of leverage on customer satisfaction should be more pronounced for service firms. Consistent with this expectation, we find that the coefficient of the interaction of leverage and service dummy is negative ($b = -2.595, p \leq .01$), which indicates that the leverage-induced cash flow pressure may force service firms to pursue productivity gains at the cost of lower customer satisfaction. H_{2b} posits that the link between leverage and customer satisfaction will be more negative for firms operating in competitive industries. We find that the leverage \times competition interaction is negative and marginally significant ($b = -6.613, p \leq .10$). Higher competitive intensity puts firms under cash flow pressure, which is exacerbated by higher leverage. Our result suggests that leveraged firms in competitive industries invest less in building customer satisfaction, presumably to protect their margins or to meet debt obligations.

Finally, according to H_{2c} , customer satisfaction of the firms with lower sales growth should exhibit higher sensitivity to increased leverage. However, in contrast to H_{2c} , we find that the interaction between leverage and one-year sales growth is negative ($b = -5.376, p \leq .01$), indicating that leverage reduces customer satisfaction more severely for high-sales-growth firms. We elaborate on this counterintuitive result in the “Discussion” section and provide guidance for further research. In summary, we find empirical support for H_{2a} and H_{2b} but not for H_{2c} .

In unreported analysis, we also included the three interactions both in the advertising (Equation 2) and the R&D (Equation 3) equations. We find results similar to those reported here.

Moderation of the Customer Satisfaction–Firm Value Link (H_3)

We find that customer satisfaction has a positive impact on Tobin's q ($b = .021, p \leq .01$; Table 3, Column 4). Our result

substantiates previous research showing that customer satisfaction leads to higher firm value (Aksoy et al. 2008; Anderson, Fornell, and Mazvancheryl 2004). H_3 posits that leverage moderates the positive impact of customer satisfaction on firm value. The coefficient of the interaction of leverage and customer satisfaction ($b = -.031, p \leq .01$; Table 3, Column 4) is significant. Thus, the marginal effect of customer satisfaction on firm value depends on the level of leverage. At higher (lower) levels of leverage, customer satisfaction contributes less (more) to firm value. Thus, the results support H_3 .

To explore this moderation in more detail, we followed Spiller et al. (2013) and performed a floodlight analysis using the method described in Mohr, Lichtenstein, and Janiszewski (2012). Floodlight analysis involves plotting the direct impact of the independent variable (customer satisfaction) on the dependent variable (Tobin's q) at numerous values of the moderating variable (leverage). Specifically, we began by fixing leverage at 0 and using increments of .05 until the value of leverage reached 1. In all, we obtained 21 estimates of the direct impact of customer satisfaction on Tobin's q . A plot of these estimates, along with the 90% confidence interval band, is available in the Web Appendix.

We find that the impact of customer satisfaction on Tobin's q decreases linearly at a rate of $-.031$ for every unit increase in leverage. When leverage is at approximately 65%, customer satisfaction has no impact on Tobin's q . From this point onward, as leverage increases, customer satisfaction has a net negative impact on firm value. However, it remains statistically nonsignificant until leverage reaches approximately 95%. Beyond this point, higher customer satisfaction has a statistically significant negative impact on Tobin's q . At very high levels of leverage, risk of bankruptcy is extremely high (Altman 1968). Most bankrupt firms cease operations or continue to face financial and operational difficulties postbankruptcy (Bris, Welch, and Zhu 2006). Accordingly, high-leverage firms near bankruptcy are unlikely to realize future cash flows or exploit future growth options from existing satisfied customers. Therefore, investors may regard efforts to maintain high levels of customer satisfaction as wasteful in the presence of very high leverage and lower their assessment of firm value.

We find a positive main effect of leverage ($b = 1.907, p \leq .01$) on Tobin's q . This suggests that, on average, the benefits of leverage outweigh its costs and lead to higher firm value, which is consistent with prior finance literature (Korteweg 2010). To shed light on the overall economic impact of leverage on Tobin's q for firms with different levels of satisfaction, we perform and report a detailed economic impact analysis in the Web Appendix. We find that firms with very low levels of customer satisfaction benefit from an increase in leverage. However, firms with average or high levels of satisfaction experience a reduction in firm value as leverage increases. Research and development, profit margins, and one-year sales growth positively contribute to firm value, whereas advertising and market share have no statistically significant impacts.

Finally, in Table 3, Column 5, we report the results for leverage (Equation 5). Recall that we included the equation to mitigate concerns about fund needs influencing leverage. We find that customer satisfaction ($b = -.003, p \leq .01$) and advertising ($b = -.076, p \leq .10$) are associated with lower leverage ratios. Our results are consistent with Garmaise (2009), who argues that firms with intangible assets have more equity than debt in their capital structure. Furthermore, consistent with Frank and Goyal (2009), we find that industry median leverage has a positive and profit margin has a negative impact on leverage. We do not observe statistically significant impacts of total assets or tangible assets on leverage.

Robustness Checks

We performed three robustness checks. First, we added a dummy variable in all five equations to indicate the presence or absence of two recessions that occurred in 2001 and 2007–2009, as identified by the National Bureau of Economic Research. Including the recession dummy mitigates concerns about time-series aggregation because firms may have different levels of marketing efforts during recessionary periods. We find that our results continue to hold. Second, following Mizik (2010), we used marketing intensity instead of advertising intensity. Specifically, marketing intensity is calculated as $(SG\&A - R\&D)/Sales$. We find that our results are largely unchanged. Finally, many finance researchers replace missing values of the Compustat R&D variable with zero (Fama and French 1998). Our results are not sensitive to this alternative imputation of R&D intensity.

Discussion

This research examines the impact of leverage on customer satisfaction and firm value. Our results indicate that leverage affects customer satisfaction negatively and is mediated by advertising expenditures. We also find that leverage affects customer satisfaction more severely for firms in service and more competitive industries. However, contrary to our conjecture, we find that the effect of leverage on customer satisfaction is more negative for the high-sales-growth firms. Finally, leverage moderates the link between customer satisfaction and firm value by implicitly reducing the value of the growth options that a satisfied customer base provides. Next, we present the theoretical and managerial implications of the results.

Theoretical Implications

By identifying leverage as an antecedent of customer satisfaction, our findings advance research in the marketing–finance interface. Some marketing studies have examined how implicit changes in leverage through initial public offerings and seasoned equity offerings can affect marketing (e.g., Kurt and Hulland 2013). However, although these equity offerings result in lower leverage, they are special events. Leverage changes can occur more frequently for various other reasons, such as stock buybacks, issuance of corporate bonds, loans from banks, retirement of debt, and

so on. Because our study incorporates changes in leverage from all possible sources, including initial public offerings and seasoned equity offerings, it broadens our understanding of how ongoing changes in capital structure can affect marketing strategy, investments, and outcomes.

Second, we are the first to show that leverage has both a direct and an indirect negative impact on customer satisfaction. While the direct impact is moderated by three variables—service or manufacturing firms, competitive intensity, and sales growth—the indirect impact is mediated by advertising intensity. Previous research has shown that when firms use equity to raise funds, they become more aggressive in their marketing strategy (Kurt and Hulland 2013). The issuance of equity reduces financial leverage, thereby increasing the firm’s financial flexibility and enabling it to pursue a more aggressive marketing strategy. However, we find that debt financing has the opposite effect because it makes firms more conservative, leading to lower customer satisfaction. Thus, we contribute to this literature by identifying a different mechanism for the effect of a firm’s capital structure on its marketing strategy. We answer the call for an increased understanding of marketing’s interface with other business functions (Kumar 2015). We also add to the broader literature that explores the financial and organizational factors that lead to the formation of customer satisfaction (e.g., CEO compensation; Luo, Wieseke, and Homburg 2012).

The finding that leverage moderates the customer satisfaction–firm value link is important. Previous research has found a wide variation in this link across industries (Anderson, Fornell, and Mazvancheryl 2004). Our findings show that these variations could be partly explained by firm-specific leverage. For example, we show that although customer satisfaction increases firm value for firms with low to moderate levels of leverage, it can diminish value for firms with very high levels of leverage. In addition, leverage seems to change the firm’s strategic ability to exploit its satisfied customer base to affect firm value. Thus, our research provides for a fuller understanding of the factors that influence the value-enhancing role of customer satisfaction.

Finally, Garmaise (2009) calls for more research to shed light on the best way to finance intangible marketing assets, suggesting that they should be financed by equity, because if bankruptcy occurs, the market-based assets are likely to lose value. Our theoretical framework suggests that, in addition, higher debt constrains firms from exploiting the strategic opportunities made available by market-based assets. This adds even more emphasis to the idea that equity should be used to finance the creation and maintenance of market-based assets. Our results show that firms with high customer satisfaction have lower leverage and, thus, are using less debt, in support of this contention.

Managerial Implications

Our research has several concrete implications for marketing managers. The first implication is valuable to CMOs in their dialogue with CFOs. Although CFOs will be familiar with the textbook pros and cons of taking on more debt, it is essential for the CMOs to communicate some of the addi-

tional negative effects of higher leverage that the CFO may not be considering. Our results show that higher leverage both explicitly (through the tendency to lower advertising expenditures) and implicitly (captured by our negative coefficient for leverage interaction in Equation 4) can lead to reduced customer satisfaction and shareholder value. In addition, when the firms have high existing levels of customer satisfaction, the increase in leverage can lead to stock market investors penalizing the firm in two ways: first, from lower customer satisfaction and, second, from lower valuation of the growth options embedded in customer satisfaction. Thus, CMOs need to fully understand, estimate, and communicate the impacts of higher leverage on customer satisfaction taking into account their firm and industry.

Second, our finding that the negative effect of leverage on customer satisfaction is more pronounced for service firms suggests that marketers of leveraged service firms should focus on maintaining or improving customer satisfaction through standardization rather than customization, because standardization might allow an increase in productivity without lowering customer satisfaction. Other service firms can move to Web 2.0 applications, such as social media and crowdsourcing platforms, in which peer-to-peer communication can improve customer experience without additional personnel costs.

Third, our finding that leverage affects customer satisfaction more negatively for firms in competitive industries implies that marketers in such industries must keep a close eye on their leveraged competitors. Marketers of low-leverage firms can introduce highly improved products and services to steal market share from leveraged rivals, thereby changing the dynamics of competition. Their leveraged rivals would be financially constrained and therefore unable to match the new offerings of the less leveraged firm. In addition, their dissatisfied customers would have little incentive to return to them. Our results lend support to the findings of Kurt and Hulland (2013) that firms use funds from equity offerings to increase their strategic flexibility and compete aggressively against less flexible competitors.

Finally, in many companies the compensation of marketing managers is tied to customer satisfaction. For example, Lee and Scott (2013) find a positive relationship between cash compensation of CMOs and customer satisfaction. This compensation policy has an implicit assumption that improved customer satisfaction will lead to higher shareholder wealth. However, our results show that the impact of satisfaction on firm value depends on the level of leverage. Thus, we suggest that marketers' incentive-based compensation policies must take into account the capital structure of the firm. When firms are highly leveraged, compensating marketers to increase customer satisfaction can be counterproductive because it may lead to lower shareholder value.

Limitations and Further Research

Clearly, our findings are limited by the sample of the ACSI firms available to us that are also publicly listed on the U.S. stock markets. A significant proportion of our sample firms are from the utilities, retail, and food manufacturing indus-

tries. In the latter two, customer-based assets constitute a large portion of the strategic assets of the firm. However, for utilities, technology and patents might be more important than the customer-based assets. Because of the limited number of observations, we could not perform industry-level subsample analysis. Further research could explore industry-level dynamics by using data sources other than ACSI. Moreover, although ACSI provides scores separated by brands, financial data are available only at the overall firm level. It is possible that leveraged firms might focus on improving customer satisfaction for brands for which they get the maximum return on investment and ignore other brands. Further research should examine these micro effects within a firm.

We hypothesized that leverage should affect customer satisfaction more negatively for low-sales-growth firms. However, empirically we find this to be true for high-sales-growth firms. A potential explanation for this puzzling result is that high-sales-growth firms might have achieved the sales growth by offering price promotions and shrinking the profit margins. In the presence of high leverage, such firms need to preserve the margins, which may lead to slashing long-term investment in customer satisfaction improvements. Data limitations do not allow us to explore this possibility, but we hope that further research can resolve this issue.

We investigated three potential moderators affecting the leverage–customer satisfaction link, but several others can be examined in the future. American Customer Satisfaction Index firms are large firms that find it easy to obtain debt. Further research is needed for small and medium-size firms, wherein the impact of higher leverage may be even more pronounced. Almeida, Campello, and Weisbach (2011) report that the investment policies of firms in economies with less-developed financial markets will differ from those in the United States. Similarly, the benefits of debt depend on tax rates; we suspect that the benefits of debt might be lower in firms paying corporate taxes at lower rates (e.g., in Europe), affecting how leverage influences marketing expenses. Future studies should examine such different moderators more systematically.

In addition, we use low-frequency data, which are available only at an annual level. However, it is possible that the firms change their capital structure more frequently, which may lead to changes in customer satisfaction throughout the year. Further research can address such simultaneity in the system by using higher-frequency data. For example, future studies could use daily customer mindset metrics data available from the YouGov Group, which has been used in previous marketing literature (Luo, Raithel, and Wiles 2013).

Several theoretical models in finance assume that customers are fully informed about the financial condition of the firms (e.g., Maksimovic and Titman 1991). We urge marketing researchers to develop models that reflect more realistic assumptions observed in consumer markets. We only examine the impact of leverage on R&D and advertising. It would be important to understand how marketing decisions such as pricing, promotions, branding, new product introductions, and so on are affected as firms take on

more debt because this will lead to a better appreciation of the impact of capital structure on marketing strategy.

Finally, we find that institutional investor ownership affects customer satisfaction negatively. Although this is not the focus of our research, it provides fruitful pathways for further research. Institutional investors play an important monitoring role (Coffee 1991; Crutchley et al. 1999) and are well informed. For example, Ke and Petroni (2004) show that institutional investors who trade actively are able

to avoid negative consequences by using information from managers as well as accounting statements to predict breaks in the string of quarterly earnings increases. Marketing scholars have explored how the pressure from analysts and stock market investors in general can affect marketing investments (e.g., Mizik and Jacobson 2007). Further research could specifically study the role of institutional investors in influencing a firm's marketing strategy.

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