

# Consumer-Based Brand Equity and Firm Risk

Investors and managers evaluate potential investments in terms of risk and return. Research has focused on linking marketing activities and resource deployments with returns but has largely neglected marketing's role in determining risk. Yet the theoretical literature asserts that investments in market-based assets, such as brands, should lead to reductions in firm risk. Adopting risk measures that are well established in the finance literature, the authors use credit ratings to capture debt-holder risk and the standard deviation of stock returns to measure equity-holder risk, which they then decompose into systematic and unsystematic equity risk. The authors examine the impact of consumer-based brand equity (CBBE) on firm risk using data covering 252 firms from EquiTrend, COMPUSTAT, and the Center for Research in Security Prices over the 2000–2006 period. They find that a firm's CBBE is associated with firm risk and explains variance in the risk measures beyond that explained by existing finance models (i.e., it has "risk relevance"). They also find that CBBE has a stronger role in predicting firm-specific unsystematic risk than systematic risk but that it also has a particularly strong role in protecting equity holders from downside systematic risk. The results have clear economic significance and suggest that managers should make brand management part of the firm's risk management strategy and protect or even increase CBBE investments during periods of economic uncertainty.

*Keywords:* consumer-based brand equity, firm risk, firm returns, shareholder value, marketing–finance interface

**M**anagers can increase the value of investors' holdings in a firm in one (or more) of four ways: (1) increasing the level of the firm's cash flows, (2) realizing cash flows earlier, (3) extending the duration of cash flows, and (4) reducing the risks to the firm's cash flows (Rappaport 1997; Srivastava, Shervani, and Fahey 1998). Thus, investors and managers are concerned not only with assessing the firm's expected returns (i.e., the anticipated level, timing, and duration of cash flows) but also with the associated risks, which are used to discount their value (Day and Fahey 1988; Fama and French 1993). Marketing theorists posit that superior market-based assets, such as brands, may enable firms not only to increase returns but also to lower the risks associated with these returns and thus increase their value (e.g., Fornell et al. 2006; Srivastava, Shervani, and Fahey 1998). Consistent with this notion, there is growing evidence linking brands and firm stock returns (e.g., Aaker and Jacobson 1994, 2001; Kerin and Sethuraman 1998; Madden, Fehle, and Fournier 2006; Mizik and Jacobson 2008). However, little is known about the effect of brands on firm risk (McAlister, Srinivasan, and Kim 2007; Srivastava, Reibstein, and Joshi 2006).

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Here, we focus on the role of consumer-based brand equity (CBBE) in explaining firm risk. This is an important gap in current knowledge for two main reasons. First, risk affects the value that investors place on the firm's cash flows. Therefore, lowering firm risk has an immediate impact on the firm's market value (e.g., Amit and Wernerfelt 1990). Risk also determines a firm's cost of capital (e.g., Merton 1987; Shin and Stulz 2000). By raising the required rates of return on the firm's equity and debt, higher levels of risk damage the firm's strategic opportunities and future financial returns (e.g., Chatterjee, Lubatkin, and Schulze 1999). Firms expend significant resources building and maintaining brand equity, and these investments are fundamental to marketing theory explanations of firms' returns to investors and their risk (Keller and Lehmann 2006; Srivastava, Shervani, and Fahey 1998). Yet there is currently no empirical support for the risk-related aspects of these assertions. This leaves an important theoretical route—risk reduction—by which marketing can contribute to firm performance and the value delivered to investors largely unexplored.

Second, marketers often lament that marketing costs are viewed in accounting terms as an expense, to be evaluated only in the short run and minimized, rather than in finance terms as a long-term investment (Rust et al. 2004). Unless marketing-related spending can be linked with both financial rewards and risks, this situation is unlikely to change (Day and Fahey 1988). This has implications for marketers' ability not only to secure funds to invest in marketing assets but also to ensure that they have an equal "seat at the table" in corporate-level decision making (e.g., Lukas, Whitwell, and Doyle 2005; Webster, Malter, and Ganesan 2003). It

also has potential implications for accounting regulations and financial reporting requirements (e.g., Wyatt 2005).

We address this important knowledge gap by empirically examining the relationship between a firm's CBBE and the risk to the firm's debt holders and equity holders. Specifically, we assess the extent to which CBBE provides incremental information to widely used accounting measures in predicting firm risk. Using standard predictor variables and modeling approaches for each risk-dependent variable from the finance literature, we first replicate prior findings in finance. To these models we then add the firm's CBBE to assess the extent to which it has "risk relevance" in explaining debt-holder and equity-holder risk. This approach is important because of managers' tendency to underinvest in brands when guided solely by their impact on accounting measures (e.g., Mizik and Jacobson 2008). If CBBE has risk relevance for investors beyond any impact through current-term accounting outcomes, managers will be better able to avoid potential underinvestment in the firm's brands and to maximize long-term firm value.

Using data from the EquiTrend database, COMPUSTAT, and Center for Research in Security Prices (CRSP) covering 252 firms operating in consumer markets over the 2000–2006 period, we find that a firm's CBBE is significantly related to the risk of the firm's debt and equity. Importantly, CBBE explains variance in firm risk beyond that explained by traditional finance models. Specifically, we find that firms with higher CBBE have higher credit ratings and lower total, systematic, and unsystematic equity risk. We also find that CBBE has a particularly strong role in predicting unsystematic equity risk and downside systematic equity risk. Our results indicate that the link between firm value and brand assets is partly explained by the effect of CBBE on firm risk.

We begin by examining the literature on firm risk. We then detail the theoretical rationale for linking CBBE with firm risk and develop specific research hypotheses. Next, we describe our research design regarding the data set assembled and the analysis approach adopted. We then present and discuss the results of our analyses and consider the implications for theory and practice. Finally, we consider the limitations of our study and detail theoretically noteworthy and managerially relevant avenues for further research.

## Overview of Firm-Level Risk

Risk is a critical concept in the fields of finance, insurance, accounting, strategic management, and marketing. Two related aspects of risk are important in any study of firm-level risk: the type of risk and the stakeholders involved.

### *Types of Firm-Level Risk*

Two important types of risk have been identified as being potentially important in understanding firm-level risk. The first is variability-based risk—the perspective adopted in most marketing research (e.g., Gruca and Rego 2005; McAlister, Srinivasan, and Kim 2007). From this perspective, variability in firm cash flows creates uncertainty in terms of a lack of predictability. Investors require higher rates of return to compensate for lower predictability, which translates into lower stock prices and higher debt costs. The

second type is vulnerability-based risk—the perspective adopted in finance research that deals with firm debt and in accounting research that deals with bankruptcy (e.g., D'Aveni and Ilinitch 1992; Miller and Leiblein 1996). From this perspective, firm cash flows are assessed in terms of the likelihood that they will be sufficient to meet the firm's financial needs and obligations. This vulnerability aspect of risk is analogous to notions of "probability of loss" in consumer behavior and insurance research (Mitchell 1999). Studies have shown that the vulnerability-based risk perspective is widely held among both managers and investors (e.g., Ruefli, Collins, and Lacugna 1999). Although cash flow vulnerability is a key aspect of firm-level risk in marketing theory (e.g., Dickson and Giglierano 1986; Srivastava, Shervani, and Fahey 1998), it has not been empirically studied by marketing researchers.

### *Stakeholder Risk Perspectives*

Different stakeholders may have different interests in and perspectives on firm-level risk. For example, the perspectives of investors, employees, and governments are likely to be different (e.g., Ruefli, Collins, and Lacugna 1999). Here, our primary focus is the investor perspective, for which finance theory indicates two key stakeholders—debt holders and equity holders. Although the marketing literature has recently begun paying attention to equity holders, debt holders have not been studied by marketing researchers. Yet, from a finance perspective, debt holders are often more important because they have the primary legal claim on the firm's assets (e.g., Brealey, Myers, and Allen 2008). Furthermore, the value of the world's bond markets approximates that of equity markets, suggesting that investors in debt are as important as investors in equity. By directly affecting the firm's cost of debt and cost of equity, both debt-holder and equity-holder risks have an important effect on the firm's cost of capital (e.g., Anderson, Mansi, and Reeb 2004; Ang et al. 2006; Fama and French 1997; Merton 1974). Thus, we view risk from both debt-holder and equity-holder perspectives in this study.

*Debt-holder risk.* From a debt-holder perspective, the vulnerability of the firm's future cash flows is the primary aspect of risk interest because this determines the firm's ability to service its existing debt and its capacity to take on and service new debt (e.g., Merton 1974). This is consistent with accounting-based assessments of the likelihood of the firm being able to cover its debt repayments and avoid bankruptcy (e.g., D'Aveni and Ilinitch 1992; Singh, Faircloth, and Nejadmalayeri 2005). In addition, the value and liquidity of a firm's assets may also play a part in debtor risk assessments because these can be used as collateral (e.g., Brealey, Myers, and Allen 2008).

*Equity-holder risk.* From an equity-holder perspective, risk research in finance has been driven by the capital asset pricing model, which views "total" equity risk as the variability of a firm's stock returns (e.g., Markowitz 1999; Sharpe 1964). Total equity risk can be divided into "systematic" equity risk—the extent to which a firm's stock return variability is related to that of the rest of the stock market—and "unsystematic" equity risk, which is firm-specific and

unrelated to the market as a whole. Therefore, systematic equity risk reflects the variability in a firm's stock returns associated with macroeconomic events that affect the entire stock market, such as adjustments in interest or exchange rates and changes in energy prices (e.g., Brealey, Myers, and Allen 2008). Meanwhile, unsystematic equity risk reflects the variability in a firm's stock returns associated with events that primarily affect only that firm, such as a labor dispute or the launch of an innovative new product (e.g., Shin and Stulz 2000).

Because systematic equity risk involves the impact of economywide events in terms of the correlation between variations in the firm's returns and those of the overall stock market, it may be difficult for managers to control (e.g., Lubatkin and Chatterjee 1994). Conversely, firm-specific events and the unsystematic equity risk they produce are more directly within managers' control and therefore are more likely to be an important factor in managers' risk assessments of the firm's investment alternatives (e.g., Chatterjee, Lubatkin, and Schulze 1999). In the few empirical marketing studies that have explicitly addressed equity risk, researchers have assessed either firms' total equity risk (e.g., Gruca and Rego 2005) or their systematic equity risk (e.g., Madden, Fehle, and Fournier 2006; McAlister, Srinivasan, and Kim 2007). As a result, despite being viewed by researchers as the key factor in managers' equity-related risk assessments of internal investment alternatives (e.g., Chatterjee, Lubatkin, and Schulze 1999), few marketing studies have assessed firms' unsystematic equity risk (e.g., Luo and Bhattacharya 2008).

By examining a firm's vulnerability-related risk from the perspective of debt holders and variability-related risk from the perspective of equity holders, our study provides a comprehensive understanding of how brands influence firm risk. Finance research has identified four types of variables as the most significant predictors of firm risk from the perspective of both debt holders and equity holders: firm size, financial leverage, profitability, and earnings variability (e.g., Coles, Daniel, and Naveen 2006; Ferreira and Laux 2007; Kaplan and Urwitz 1979; Kisgen 2006). By first replicating standard finance models using these variables to explain debt-holder and equity-holder risk and then exploring the extent to which firms' brand assets add additional explanatory power to these finance models, we can examine the risk relevance of brand assets.<sup>1</sup>

## Brands and Firm-Level Risk

The literature does not address which aspects of brand assets may be most closely connected with firm risk. We selected brand equity as the focus of this study because there was some support for the idea that this construct may be logically connected with firm risk. The rationale is provided theoretically by Srivastava, Shervani, and Fahey's (1998) connection of market-based relational assets (e.g.,

brands) with the risks to firm cash flows. There is also some empirical support for this theoretical relationship in Gruca and Rego's (2005) findings linking cash flow variability with customer satisfaction as a market-based relational asset and in Madden, Fehle, and Fournier's (2006) finding that a portfolio of stocks for firms with high-value brands has lower systematic risk. In theoretically linking brand equity with firm risk, we do not develop separate hypotheses for debt-holder and equity-holder risk, because the finance and accounting literature suggests that the rationale for the proposed impact of brand equity is conceptually similar for each group of financial claimants.

Brand equity is the value added to a product or service by its association with a brand name and/or symbol (e.g., Aaker 2004; Keller 1993). Brand equity has been operationalized in three main ways in the marketing literature: (1) as consumers' brand beliefs and attitudes that affect purchase behavior, (2) as an observed set of product-market-level revenue outcomes relative to an unbranded benchmark, and (3) as a financial-market-based estimate of the dollar value of the firm's intangible assets that may be attributable to the firm's brands (e.g., Ailawadi, Lehmann, and Neslin 2003; Keller and Lehmann 2006). Here, we adopt a consumer-based perspective because all three approaches view the value of a brand's equity as ultimately being a function of the value that the brand delivers to consumers (Aaker 2004).<sup>2</sup> In turn, this is a function of consumers' awareness of the brand and the image associations of the brand in their memory (Berthon, Hulbert, and Pitt 1999; Lane and Jacobson 1995). Brands with high CBBE are those that have high levels of consumer awareness and strong, positive, and unique associations in consumers' memory (Keller 1993).

The literature suggests three primary reasons to expect that firms with strong CBBE should have lower risk. First, by enabling rapid product/service identification and reducing consumer search costs, brands with high consumer-based equity facilitate repeat-purchasing behavior (Berthon, Hulbert, and Pitt 1999; Keller 2003). This may be particularly important in relatively low-involvement purchase decisions, such as frequently purchased consumer packaged goods (e.g., Hoyer and Brown 1990). In addition, high CBBE should be associated with consumers' emotional connection with the brand and result in stronger brand loyalty (e.g., Chaudhuri and Holbrook 2001). Loyal consumers are those who rebuy a brand, consider only that brand, and engage in no brand-related information search (Newman and Werbel 1973). Thus, consumers who are loyal to a particular brand are less susceptible to the marketing efforts of rivals, reducing "churn" among the brand's customer base (Oliver 1997). The uniqueness aspect of CBBE (the differentiation between the brand's associations and those of other brands in consumers' memory) should also reduce brand substitution and therefore further protect the firm's future cash flows (e.g., McAlister, Srinivasan, and Kim 2007; Mela, Gupta, and Lehmann 1997).

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<sup>1</sup>We synthesize the work of Anderson, Mansi, and Reeb (2004), Billett and Liu (2008), Kamstra, Kennedy, and Suan (2001), and Kisgen (2006) for our debt-holder-risk model specification and that of Ferreira and Laux (2007) for our equity-holder-risk model specification.

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<sup>2</sup>Product-market-based and financial-market-based brand equity operationalizations also require data that are not publically available for most firms.

Second, because they are perceived as higher quality (e.g., Aaker and Jacobson 1994; Erdem 1998), brands with strong CBBE are associated with lower consumer price sensitivity (e.g., Ailawadi, Neslin, and Lehmann 2003; Allenby and Rossi 1991). This should further enhance the behavioral loyalty we described previously because consumers will be less susceptible to price-based appeals from rival brands. Lower price sensitivity among consumers should also protect cash flows from the risks of supply and operational changes that raise the firm's costs (e.g., Sivakumar and Raj 1997). This is consistent with management research linking higher product quality with lower firm risk (Kroll, Wright, and Heiens 1999).

Third, among investors, firms with strong CBBE should also be more well known (have higher levels of awareness), and what is known about them should be more positive (have stronger positive quality associations) than firms with low CBBE. This may have a corporate reputation effect, which signals lower risks to debt holders and equity holders. There is some support for such a direct signaling phenomenon, with several studies reporting that investors prefer to hold stocks of well-known companies (e.g., McAlister, Srinivasan, and Kim 2007; Singh, Faircloth, and Nejadmalayeri 2005). More formally,

H<sub>1</sub>: CBBE is negatively associated with firms' debt-holder and equity-holder risk.

Systematic risk pertains to variability in a firm's stock returns that is common to the entire economy or market. Therefore, firms that are able to cushion themselves from the impact of market fluctuations and deliver consistent cash flows enjoy lower systematic risk. As such, CBBE may reduce a firm's systematic risk by increasing brand loyalty, which decreases the risk of market-level shocks to the firm's cash flows. Unsystematic risk pertains to stock return variability that is not explained by movements in the market as a whole and therefore is driven by firm-specific actions and shocks. Investments in creating CBBE may affect unsystematic risk by creating a market-based asset that is significantly different from those created by other firms. Although H<sub>1</sub> posits that CBBE is negatively associated with both systematic and unsystematic equity risk, there are reasons to expect that the magnitude of the effect of CBBE may be different across the two types of risk.

Specifically, we anticipate that the negative effect of CBBE is likely to be stronger on firms' unsystematic than systematic equity risk for two reasons. First, from a theoretical perspective, brands are viewed as resources that are not only rare, valuable, and difficult to imitate or substitute but also idiosyncratic (e.g., Aaker 2004; Barney 1991). Indeed, the reason a brand with strong CBBE is believed to be financially valuable is that the positive associations with the brand in consumers' memories are distinct from those with other brands (e.g., Keller and Lehmann 2006; Mizik and Jacobson 2008). Such idiosyncratic brand associations are likely to mean that though brands with strong CBBE provide a protective earnings "cushion" from market-level shocks, each firm's specific brands may be affected differently. To the extent that firms' brands are idiosyncratic, they are likely to have a stronger effect on firm-specific unsystematic risk than on systematic risk.

Second, from an empirical perspective, recent research in finance has reported that unsystematic risk has a much greater role in explaining firms' total equity risk than systematic risk. For example, both Goyal and Santa-Clara (2003) and Gaspar and Massa (2006) find that idiosyncratic risk explains more than 80% of total equity risk. Thus, finance research suggests that market-level shocks are less frequent and/or less important in determining firms' overall stock return variability. Because brand assets are relatively stable and durable (e.g., Aaker 2004), to the extent that CBBE protects the firm's returns, they are likely to play a more important role in doing so from the more frequent and/or important firm-specific shocks than from less frequent and/or less important market-level shocks. Thus:

H<sub>2</sub>: CBBE is more strongly negatively associated with firms' unsystematic than systematic equity risk.

In further decomposing firms' equity risk, researchers have recently begun to explore its "upside" (when stock returns are increasing) and "downside" (when stock returns are decreasing) components.<sup>3</sup> This is a new (and still somewhat controversial) approach in the finance literature examining systematic risk (e.g., Ang, Chen, and Xing 2006). It has also recently been extended into the realm of unsystematic risk in the marketing literature (e.g., Tuli and Bharadwaj 2008). From a systematic-risk perspective, downside (upside) risk is the observed variability in a firm's stock returns accounted for by equity market movements when the stock market declines (trades higher). We expect that the systematic risk-reducing effect of CBBE is greater on downside risk than on upside risk for two reasons. First, during market downturns, firms with strong CBBE are likely to be particularly strongly insulated from earnings declines because of the stronger loyalty and commitment of consumers to high-CBBE brands. In addition, to the extent that price competition is enhanced during market downturns, pressures for short-term price reductions are likely to be lower for brands with high CBBE, and engaging in price promotions is more likely to benefit high- than low-CBBE brands (e.g., Allenby and Rossi 1991; Sivakumar and Raj 1997). Second, although brands with strong CBBE may achieve greater stability in returns (for the reasons we outlined in H<sub>1</sub>), this is likely to be even more valued by investors when market-level cash flows are perceived as risky. This is consistent with widely held investor sentiment regarding the "defensive" value of the stocks of well-known consumer packaged goods firms during times of economic uncertainty.

From an unsystematic-risk perspective, downside (upside) risk is the idiosyncratic variability in the firm's stock returns on days when the firm's stock price moves lower (higher). The literature does not provide any specific reasons to expect that CBBE is more strongly negatively associated with downside than upside unsystematic risk. However, analogically, Tuli and Bharadwaj (2008) find that firms with increasing levels of customer satisfaction have lower downside (versus overall) unsystematic risk. To the extent that firms with strong CBBE can be expected to have higher levels of customer satisfaction and loyalty, this sug-

<sup>3</sup>We thank an anonymous reviewer for this suggestion.

gests that CBBE is particularly important in lowering the variability of losses from investing in a firm's stock. More formally,

H<sub>3</sub>: CBBE is more strongly negatively associated with firms' downside equity risk than upside equity risk.

## Research Design

### Data

To examine the relationship between CBBE and firm risk, we use Harris Interactive's EquiTrend database as our sampling frame. This is an appropriate sampling frame for three main reasons. First, Harris Interactive collects data on consumer brand perceptions that are required to operationalize CBBE. Second, brands owned by a large number of firms across a wide range of different categories are included in the EquiTrend database, which provides a broadly based sample from a generalizability perspective. Third, most of the firms with brands represented in the EquiTrend database are publicly traded, which enables us to collect risk performance and other accounting, finance, and operating data from secondary sources.

Harris Interactive collects annual data from more than 20,000 U.S. consumers of more than 1000 large brands across 35 categories to measure consumers' brand knowledge and perceptions. The consumer sample is designed to be representative of the U.S. population over 15 years of age, and each brand in the database is rated by more than 1200 consumers. As we detail subsequently, we also collected data on several industry- and firm-level control variables from other secondary sources, including Standard & Poor's COMPUSTAT and the CRSP databases. Table 1 provides descriptive statistics for each of the variables in our data set, which we discuss in greater detail subsequently.

### Brand Equity

At the brand level, our CBBE measure is a latent variable scaled to a 0–100 index and estimated using four individual-level consumer variables: Familiarity is assessed by consumer ratings of familiarity with the brand on a 5-point scale (1 = "never heard of the brand," 2 = "just know of the brand," 3 = "somewhat familiar with the brand," 4 = "very familiar with the brand," and 5 = "extremely familiar with the brand"). Perceived quality is assessed by consumer ratings of the quality of the brand

on an 11-point scale (0 = "unacceptable/poor," 5 = "quite acceptable," and 10 = "outstanding/extraordinary"). Purchase consideration is assessed by consumers' ratings of intentions regarding their future relationship with the brand on an 11-point scale (0 = "never would purchase the brand," and 10 = "absolutely would purchase the brand"). Finally, distinctiveness is assessed by consumer ratings of the differentiation of the brand on an 11-point scale (0 = "not distinctive at all," and 10 = "totally distinctive from others"). These four variables provide excellent indicators of consumers' awareness of the brand (familiarity) and the strength of positive (perceived quality and purchase consideration) and unique (perceived distinctiveness) associations with the brand in their minds; they are also the major aspects of Keller's (1993) conceptualization of CBBE.

We validated our measure by comparing it with a product-market operationalization for the subsets of observations that were common with our data set. The correlation between our brand-level CBBE score and a revenue-premium value that we computed using Information Resources Inc.'s data is .57 (n = 92). This suggests that our data and operationalization provide a valid indicator of the strength of a brand's CBBE. We aggregate the CBBE score for each brand to the firm level (because this is the level at which investors assess risk) as the mean level of CBBE of all the firm's brands in the EquiTrend database.<sup>4</sup> The mean CBBE value for the firms in our sample is 60.8, with a median of 61.4 and a standard deviation of 7.9.

### Firm Risk Measures

We examine firm risk using two indicators. First, credit ratings (COMPUSTAT Item 280), which provide an assessment of firms' cash flow vulnerability (i.e., the likelihood that they will be able to repay debt), are widely used by debtors (e.g., Anderson, Mansi, and Reeb 2004; Kisgen 2006). Credit rating is an ordinal measure ranging from 2 (for an AAA rating, the highest possible) to 27 (for a D, or default). We reverse this measure by subtracting it from 27, so that a higher number corresponds to a higher credit rating (i.e., better credit worthiness with a maximum of 25 and

<sup>4</sup>Although it may be preferable to weight each brand's CBBE by its relative contribution to the firm's overall revenue, such data are not publicly available for the vast majority of the brands in our database.

TABLE 1  
Univariate Statistics (N = 1103)

Variables	M	SD	SE	Minimum	Mdn	Maximum
Credit rating	16.669	4.143	.123	.000	17.000	25.000
Total risk (annual)	35.54%	19.04%	.57%	10.81%	30.18%	160.24%
Systematic risk (annual)	15.06%	9.67%	.29%	.30%	12.64%	63.20%
Unsystematic risk (annual)	31.40%	17.50%	.51%	4.00%	26.41%	155.23%
Return on assets (ROA)	4.16%	13.38%	.36%	-161.55%	5.52%	90.17%
ROA variability	16.89%	160.90%	4.50%	.06%	3.70%	4094.76%
Market-to-book ratio	1.377	1.069	.030	-4.987	1.383	7.299
Size (assets)	29,701	64,807	1741	20	9234	750,507
Leverage	.282	.255	.007	.000	.244	2.140
Diversification	8.078	5.865	.158	1.000	8.112	31.000
Age (months)	399.642	299.457	8.494	19.000	328.000	996.000
CBBE	60.816	7.858	.211	29.166	61.376	81.433

a minimum of 0). As Table 1 shows, the mean credit rating among the firms in our sample was 16.7, with a median of 17 (corresponding to a BBB+ rating) and a standard deviation of 4.1 (slightly more than four rating categories).

Second, we use the variance of stock returns as our measure of total equity risk, which is a widely used equity risk indicator in finance research (e.g., Schwert 1989). For each firm year in our sample, using CRSP data, we retrieved daily stock returns for the 252 trading days before the fiscal year end. The standard deviation of these daily returns is our measure of total equity risk. The mean annualized total equity risk for our sample is 35.54%, with a median of 30.18% and a standard deviation of 19.04%.

We then separate our total equity risk measure into its two components: systematic equity risk and unsystematic equity risk. Using the same daily returns data for each firm, we regress these against market returns and use the standard deviation of the errors in this regression as our measure of firms' unsystematic equity risk (e.g., Bansal and Clelland 2004). We then subtract the squared standard deviation in the errors from the squared standard deviation in returns to obtain our systematic equity risk metric (e.g., Lubatkin and Chatterjee 1994). Finally, we apply a square root transformation to this measure to make it comparable to our total equity risk measure. In our sample, annualized systematic equity risk has a mean of 15.06%, with a median of 12.64% and a standard deviation of 9.67%, and annualized unsystematic equity risk has a mean of 31.40%, with a median of 26.41% and a standard deviation of 17.50%.

Management researchers argue that measures of firm risk should be widely available and well understood if they are to affect management behavior (e.g., choices to invest in building brand equity versus some other asset) (e.g., Ruefli, Collins, and LaCugna 1999). From this perspective, credit ratings are public data that are widely available and used by managers and investors. Credit ratings have been established in the finance literature as valid indicators of debtholder risk, and when rating changes occur, both stock and bond prices have been shown to react (see Hand, Holthausen, and Leftwich 1992). Similarly, stock return variability is easily observed and is something that analysts and investors track. Thus, the measures of risk we use are easy to understand and readily available to managers and investors.

### **Control Variables**

We include several firm- and industry-level covariates in our analyses, closely following widely used models of credit ratings (e.g., Kamstra, Kennedy, and Suan 2001; Kisgen 2006) and equity risk (e.g., Ferreira and Laux 2007) in the finance literature. This enables us to control for factors that are already known to affect firm risk and to calibrate the extent to which CBBE contributes new information in explaining firm risk—that is, its risk relevance (e.g., Anderson, Mansi, and Reeb 2004; Billett and Liu 2008; Coles, Daniel, and Naveen 2006).

*Firm size.* We use COMPUSTAT data to compute the natural log of each firm's total assets (COMPUSTAT Item 6). The value of a firm's assets should be associated with both the value of collateral available to secure debt and the

variability of the firm's returns. All else being equal, firms with more valuable assets should exhibit better creditworthiness and greater returns stability. The mean asset value of the firms in our data set is approximately \$29 billion, with a median of \$9.2 billion and a standard deviation of \$64.8 billion.

*Leverage.* We compute leverage as the ratio of long-term debt (COMPUSTAT Item 9) plus current liabilities (COMPUSTAT Item 34) to total assets (COMPUSTAT Item 6). The finance literature has linked leverage with equity risk and with firms' ability to repay debt (e.g., Ferreira and Laux 2007; Kisgen 2006). The mean leverage of the firms in our data set is .282, with a median of .244 and a standard deviation of .255.

*Return on assets (ROA).* We compute ROA as the ratio of income before extraordinary items to total assets (COMPUSTAT Items 18 and 6). The mean ROA in our data set is 4.2%, with a median of 5.5% and a standard deviation of 13.4%. Greater ROA should be associated with improved creditworthiness and lower equity risk because it indicates the firm's likely future financial health (e.g., Ferreira and Laux 2007; Kamstra, Kennedy, and Suan 2001).

*ROA variability.* We compute ROA variability as the standard deviation of the prior five years' ROA. The mean level of ROA variability in our data set is 16.89%, with a median of 3.7% and a standard deviation of 160.9%. Greater ROA variability should be associated with decreased creditworthiness and higher equity risk because it indicates the uncertainty of the firm's likely future financial health (Ferreira and Laux 2007; Kisgen 2006).

*Market-to-book ratio.* We compute market-to-book ratio by multiplying the total number of shares outstanding with the stock price at fiscal year end and then dividing it by the book value of common equity ([COMPUSTAT Items 25 × 199]/60). Larger market-to-book ratios indicate investor expectations of greater future cash flow growth and therefore should be associated with lower equity risk. The mean market-to-book ratio for the firms in our sample is 1.377, with a median of 1.383 and a standard deviation of 1.069.

*Diversification.* Diversification in the firm's business operations is indicated by the number of different industries in which the firm operates. These data are collected from the COMPUSTAT segments database. Operating in a greater number of industries to reduce the negative impact of industry-level shocks and to provide countercyclical cash flows, both of which reduce firm risk, is a common reason proposed for firm diversification (e.g., Lubatkin and Chatterjee 1994). Following Ferreira and Laux (2007), we create a dummy variable to indicate whether the firm has significant business operations in one or more different industries (business segments). In our sample, more than 90% of the firms operate in more than one industry.

For control purposes, we also create a dummy for firm age (whether the firm had been listed on CRSP for more or less than 25 years), year dummies, and industry dummies. We create industry dummies using two definitions. First, we use firms' primary Standard Industrial Classification codes to compute Fama and French's (1997) industry definitions (48 industries) and corresponding dummies (47 dummies).

Second, we use these codes to compute Barth, Cram, and Nelson's (2001) industry definitions (14 industries) and corresponding dummies (13). Because the estimates in our analyses do not change significantly when we use either of these two definitions and because none of the dummies are themselves significant, we chose to use Barth, Cram, and Nelson's industry dummies in our analyses because they minimize loss in degrees of freedom.

We removed financial firms from our data set because their capital and risk requirements are heavily regulated and atypical. We also removed privately held companies and nonprofit organizations for which the secondary financial data required for our analyses are not available. The final data set contained 1096 firm-year observations for which we have complete data, representing 252 different firms over a seven-year period (2000–2006). Tables 1 and 2 and Figure 1 provide descriptive statistics and correlations for the variables in our data set.

### **Model Formulation**

We use two types of regressions to examine the associations between CBBE and firm risk. First, we use an ordered logit approach to estimate the relationship between firms' CBBE and debt-holder risk because our credit rating measure is an ordinal scale with multiple categories (e.g., Anderson, Mansi, and Reeb 2004; Kamstra, Kennedy, and Suan 2001). Second, we use a standard ordinary least squares (OLS) linear regression approach to estimate the relationship between firms' CBBE and equity-holder risk because these risk measures are continuous (e.g., Coles, Daniel, and Naveen 2006; Ferreira and Laux 2007).

Time-series cross-sectional panel data sets present the potential for estimation bias and efficiency problems associated with serial correlation (Kennedy 2003). This may be particularly problematic for the debt-holder risk model because credit ratings are not likely to change dramatically in the short run. To address these potential concerns, we estimated cluster-adjusted robust standard errors for the credit ratings model (e.g., Eckbo and Smith 1998) and use these to assess the significance of the estimates. Because equity-holder risk does not closely follow a random walk, serial correlation should not be a major concern in these regressions. Nonetheless, to assess this possibility, in addition to using an OLS estimation, we computed the equity-holder regression models using the Newey–West method (Cecchetti, Kashyap, and Wilcox 1997) and found no significant changes to the estimates. Therefore, we report the standardized OLS estimates in Table 3. Finally, the Hausman test (Greene 2003) indicates that a fixed-effects correction is necessary in our models. Therefore, we estimate our models using industry- and year-specific dummies. We also test for violations of standard regression assumptions pertaining to model misspecification using Ramsey's (1969) RESET test, normality using the Jarque–Bera test, and heteroskedasticity using the Breusch–Pagan test. None of these violations appear to be either generalized or problematic in our data. Finally, the relatively low correlations among our independent variables and the variance inflation and condition indexes statistics well below standard cutoffs (the highest values being 2.7 and 9.8, respectively) indicate no particular problems with multicollinearity in our regressions.

For the credit ratings equation, we synthesize the relevant findings of Anderson, Mansi, and Reeb (2004), Billett and Liu (2008), Kamstra, Kennedy, and Suan (2001), and Kisgen (2006) to develop our “financial control variables–only” baseline ordered logit model. To examine the risk relevance of CBBE, in Table 3, we estimate a nested model formulation: (1) intercept plus financial control variables only and (2) the intercept and financial control variables plus the CBBE variable. Similarly, for the total equity risk equation in Table 4, and its decomposition into systematic equity risk and unsystematic equity risk and their upside and downside variants (Table 5), we follow Ferreira and Laux's (2007) approach to develop our financial control variable model and then estimate two model specifications: (1) intercept plus financial control variables and (2) intercept plus financial control variables and the CBBE variable.

## **Results and Discussion**

Table 3 details the estimates for the credit rating model. The estimates for the control variables are consistent with prior findings in the finance literature, and the R-square value of almost 62.8% for the baseline financial control variables–only model is almost exactly aligned with those reported in Kamstra, Kennedy, and Suan's (2001) review of similar models in finance. These control results indicate that higher leverage decreases creditworthiness and that, though not significant, the coefficient on ROA variability is also in the anticipated negative direction. As we expected, larger ROA and total asset values are associated with higher credit ratings. Although the results are not significant, the coefficient for diversification is in the direction predicted by the literature. An R-square increase of 5% when CBBE is added to the equation indicates that CBBE has significant risk relevance. This result suggests that the financial markets view CBBE as a strong predictor of firms' ability to take on and service debt capital.

Table 4 details the estimates for the total, systematic, and unsystematic equity risk models. Across all three equity risk dependents, our models have strong predictive power and exhibit significantly greater R-square values when CBBE is added to the financial control variables. In terms of the three financial control variable baseline models, the R-square values are consistent with those observed in prior studies (e.g., Coles, Daniel, and Naveen 2006; Luo and Bhattacharya 2008). In addition, the observed coefficients are consistent with prior findings in the finance literature. Namely, for systematic equity risk, only the ROA variable is significant. Meanwhile, for total and unsystematic risk, we find that firm size (i.e., total asset value), ROA, and market-to-book ratio are negatively associated with equity risk, while leverage is positively associated with equity risk (e.g., Coles, Daniel, and Naveen 2006; Ferreira and Laux 2007). For all three equity risk dependents, the introduction of the CBBE variable significantly increases the R-square by 4%–6%, again indicating that CBBE contains risk-relevant information for the financial markets. In support of H<sub>2</sub>, the size and significance of the coefficients and the relative R-square increases suggest that CBBE has a stronger negative impact on unsystematic than systematic risk.

H<sub>3</sub> makes prediction about firms' equity risk when it is subdivided into upside and downside risk. As Table 5

**TABLE 2**  
**Correlations (N = 1103)**

	1	2	3	4	5	6	7	8	9	10	11	12
1. Credit rating	1.000											
2. Total risk (annual)	-.433***	1.000										
3. Systematic risk (annual)	-.235***	.715***	1.000									
4. Unsystematic risk (annual)	-.461***	.983***	.580***	1.000								
5. ROA	.451***	-.508***	-.309***	-.504***	1.000							
6. ROA variability	-.137***	.249***	.141***	.248***	-.345***	1.000						
7. Market-to-book ratio	.174***	-.225***	-.128***	-.199***	.172***	-.065**	1.000					
8. Size (assets)	.477***	-.321***	-.046n.s.	-.360***	.137***	-.136***	-.013n.s.	1.000				
9. Leverage	-.370***	.140***	-.026n.s.	.157***	-.183***	-.031n.s.	-.225***	-.097***	1.000			
10. Diversification	.124***	.023n.s.	.073**	.021n.s.	.021n.s.	-.002n.s.	-.096***	.115***	.007	1.000		
11. Age	.339***	-.290***	-.215***	-.285***	.183***	-.076***	.067**	.193***	-.076***	.072***	1.000	
12. CBBE	.191***	-.108***	-.056*	-.122***	.141***	-.068**	.079***	.039n.s.	-.039n.s.	.052*	.134***	1.000

\* $p < .10$ .

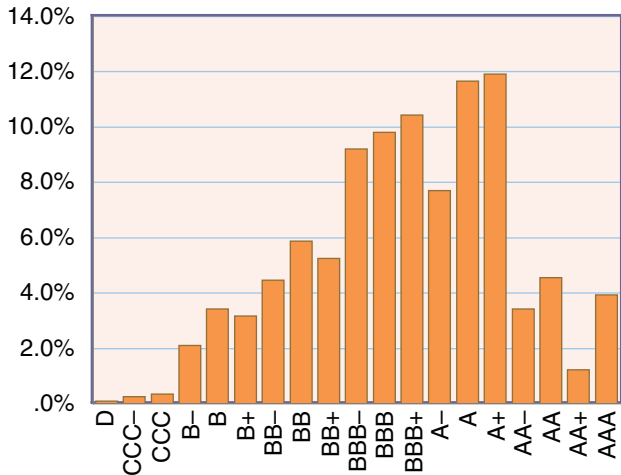
\*\* $p < .05$ .

\*\*\* $p < .01$ .

Notes: n.s. = not significant.



**FIGURE 1**  
**Credit Ratings Histogram**



**TABLE 3**  
**Debt-Holder-Risk Ordered Logit Model**

$$\text{Credit Rating}_{t+1} = \beta_0 + \beta_1 \text{ROA}_t + \beta_2 \text{ROA Variability}_t + \beta_3 \ln(\text{Assets})_t + \beta_4 \text{Leverage}_t + \beta_5 \text{Diversification}_t + \beta_6 \text{CBBE}_t + \varepsilon_t$$

Standardized Estimates	Financial Control Variables Only	Financial Control + Brand Equity Variable
ROA <sub>t</sub>	.662*	.616*
ROA Variability <sub>t</sub>	-.035 <sup>n.s.</sup>	-.019 <sup>n.s.</sup>
Size (ln Assets) <sub>t</sub>	.760*	.780*
Leverage <sub>t</sub>	-.424*	-.405*
Diversification <sub>t</sub>	.030 <sup>n.s.</sup>	.034 <sup>n.s.</sup>
CBBE <sub>t</sub>		.290*
Industry dummies	Yes	Yes
Year dummies	Yes	Yes
χ <sup>2</sup> statistic	3744.3	5476.7
AIC	4663.8	4603.5
-2 log-likelihood	4583.8	4518.5
Adjusted pseudo-R <sup>2</sup>	62.80%	67.78%
Incremental R <sup>2</sup> test		
p-value	(.000)	(.000)

\*p < .01.

Notes: Dependent variable = credit rating. n.s. = not significant, and AIC = Akaike information criterion.

shows, our results suggest that CBBE significantly reduces both upside and downside systematic and unsystematic risk. The difference in the CBBE coefficient for upside and downside equity risk is not significant for unsystematic risk. However, consistent with H<sub>3</sub>, we find that the size of the negative CBBE coefficient is significantly larger for downside than for upside systematic risk. This suggests that though CBBE always helps significantly reduce stock return variability, it is particularly helpful in protecting the firm's returns from economy- and market-level shocks during equity market downturns. This provides an empirical

rationale for the widely observed phenomenon of investors seeking to invest in the stock of companies with strong brands operating in consumer markets during periods of economic uncertainty.

## Implications

From a theoretical perspective, our findings provide the most comprehensive support to date for the central thesis that market-based assets affect firm risk. This is a critical component in linking marketing with firm performance because when firm risk is reduced, the value of the firm's cash flows increases even if their level remains exactly the same. We show that brands can affect both the vulnerability of cash flows as reflected in evaluations of the risk to debt repayments and the variability of cash flows as reflected in stock return variations. Overall, these results contribute new insights into the understanding of the role of brand assets in managing firm risk. No previous research in marketing has examined the debt-holder risk perspective. The only previous empirical study of brands to pay any attention to the equity risk aspect of firm performance is that of Madden, Fehle, and Fournier (2006). They compare a stock portfolio of Interbrand-rated firms with a similar sample of nonrated firms and report that systematic equity risk is lower for the Interbrand portfolio. Our study supports this finding (Table 4) and complements it by finding an even stronger systematic equity risk effect when stock markets move to the downside (Table 5).

In addition, we find that CBBE is strongly related to the firm's unsystematic equity risk. Indeed, our results indicate that the CBBE effect on unsystematic risk is even greater than its effect on overall systematic risk. This suggests that though both effects are significant, the idiosyncratic, firm-specific, risk-reducing effect of CBBE is stronger than its effect on insulating the firm from economy-level shocks. This is consistent with recent findings in the context of corporate social responsibility (Luo and Bhattacharya 2008).

Our study also has important implications for finance theory. For example, previous studies in finance have found a negative association between firms' intangible assets and their debt capacity and have suggested greater collateralization difficulties and higher liquidation costs of intangibles as a rationale (e.g., Harris and Raviv 1991; Titman and Wessels 1988). As a result, finance research on capital structure has assumed that all intangible assets are unattractive to debt markets. Our results show that this is not the case; indeed, the risk relevance of CBBE for credit ratings suggests that brand assets can enhance rather than reduce a firm's debt capacity. Therefore, finance researchers should theoretically reexamine why this is the case for brands but not other types of intangible assets.

There may be several reasons that CBBE's influence on firms' capital structure differs from other types of legal (e.g., trademarks, patents) and competitive (e.g., knowledge, organizational culture) intangible assets. From a marketing theory perspective, the most likely reason may be CBBE's position as a market-based asset that has a direct value to customers (e.g., Srivastava, Shervani, and Fahey 1998). In contrast, most other forms of intangible assets are non-market-based resource inputs that may (or may not) be

**TABLE 4**  
**Shareholder Risk Cluster-Adjusted Robust Regression**

$$\text{Risk}_{t+1} = \beta_0 + \beta_1 \text{ROA}_t + \beta_2 \text{ROA Variability}_t + \beta_3 \text{Market-to-Book Ratio}_t + \beta_4 \ln(\text{Assets})_t + \beta_5 \text{Leverage}_t + \beta_6 \text{Diversification}_t + \beta_7 \text{Age}_t + \beta_8 \text{CBBE}_t + \varepsilon_t$$

Standardized Estimates	Total Risk		Systematic Risk		Unsystematic Risk	
	Financial Control Variables Only	Financial Control + Brand Equity Variable	Financial Control Variables Only	Financial Control + Brand Equity Variable	Financial Control Variables Only	Financial Control + Brand Equity Variable
ROA <sub>t</sub>	-.320**	-.313**	-.143**	-.141**	-.339**	-.332**
ROA Variability <sub>t</sub>	.011 <sup>n.s.</sup>	.010 <sup>n.s.</sup>	.020 <sup>n.s.</sup>	.020 <sup>n.s.</sup>	.011 <sup>n.s.</sup>	.009 <sup>n.s.</sup>
Market-to-Book Ratio <sub>t</sub>	-.054*	-.048*	-.009 <sup>n.s.</sup>	-.007 <sup>n.s.</sup>	-.062**	-.055**
Size (ln Assets) <sub>t</sub>	-.241**	-.239**	.028 <sup>n.s.</sup>	.029 <sup>n.s.</sup>	-.295**	-.293**
Leverage <sub>t</sub>	.119**	.116**	.010 <sup>n.s.</sup>	.009 <sup>n.s.</sup>	.140**	.136**
Diversification <sub>t</sub>	-.012 <sup>n.s.</sup>	-.009 <sup>n.s.</sup>	-.006 <sup>n.s.</sup>	-.004 <sup>n.s.</sup>	-.012 <sup>n.s.</sup>	-.008 <sup>n.s.</sup>
Age <sub>t</sub>	-.122**	-.114**	-.106**	-.104**	-.112**	-.103**
CBBE <sub>t</sub>		-.095**		-.060*		-.106**
Industry dummies	Yes	Yes	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R <sup>2</sup>	56.01%	61.70%	38.94%	42.96%	52.77%	57.19%
Incremental R <sup>2</sup> test <i>p</i> -value	(.000)	(.000)	(.000)	(.000)	(.000)	(.000)

\**p* < .05.

\*\**p* < .01.

Notes: Dependent variables = total, systematic, and unsystematic risk. n.s. = not significant.

**TABLE 5**  
**Upside and Downside Equity Risk Comparisons**

$$\text{Risk}_{t+1} = \beta_0 + \beta_1 \text{ROA}_t + \beta_2 \text{ROA Variability}_t + \beta_3 \text{Market-to-Book Ratio}_t + \beta_4 \ln(\text{Assets})_t + \beta_5 \text{Leverage}_t + \beta_6 \text{Diversification}_t + \beta_7 \text{Age}_t + \beta_8 \text{CBBE}_t + \varepsilon_t$$

	Systematic Risk		Unsystematic Risk	
	Upside	Downside	Upside	Downside
ROA <sub>t</sub>	-.073**	.024 <sup>n.s.</sup>	-.307***	-.286***
ROA Variability <sub>t</sub>	-.001 <sup>n.s.</sup>	.020 <sup>n.s.</sup>	.029 <sup>n.s.</sup>	.018 <sup>n.s.</sup>
Market-to-Book Ratio <sub>t</sub>	.013 <sup>n.s.</sup>	-.045 <sup>n.s.</sup>	-.056**	-.038*
Size (ln Assets) <sub>t</sub>	.027 <sup>n.s.</sup>	.015 <sup>n.s.</sup>	-.279***	-.231***
Leverage <sub>t</sub>	-.001 <sup>n.s.</sup>	.041 <sup>n.s.</sup>	.120***	.113***
Diversification <sub>t</sub>	.032 <sup>n.s.</sup>	-.029 <sup>n.s.</sup>	.010 <sup>n.s.</sup>	.001 <sup>n.s.</sup>
Age <sub>t</sub>	-.093***	-.080***	-.112***	-.100***
CBBE <sub>t</sub>	-.044**	-.135***	-.090***	-.110***
Industry dummies	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes
Adjusted R <sup>2</sup>	33.86%	27.82%	55.77%	53.06%
Brand equity estimate difference test	<i>p</i> < .0001		<i>p</i> = .1244	

\**p* < .10.

\*\**p* < .05.

\*\*\**p* < .01.

Notes: Dependent variables = systematic and unsystematic risk. n.s. = not significant. Upside systematic risk is defined as a trading day for which the market returns exceeded the risk-free investment; otherwise, it is downside. Upside unsystematic risk is defined as a trading day for which an individual stock return exceeded its average return for the year; otherwise, it is downside (for details, see Luo and Bhattacharya 2008; Tuli and Bharadwaj 2008).

used in ways that ultimately create value for customers. From a finance theory perspective, our results may also be interpreted as implying that a more liquid market exists for brands than for other types of intangible assets (i.e., brands are better collateral, with lower liquidation costs and higher asset market value) (e.g., Myers 1977). Regardless, our results indicate the potential for an important new stream of

finance research that distinguishes between market-based and non-market-based intangible assets in predicting firm risk, capital structure, and cost of capital.

From a managerial perspective, we provide new insights into how investments in brand equity affect firm performance. From an economic standpoint, our results strongly suggest that brands matter in contributing to firm perfor-

mance by managing firm risk. For example, on average, a one-standard-deviation increase in CBBE (approximately 8 points on our 100-point scale) corresponds to a full two-category improvement in the credit rating of the firms in our sample. The average firm in our sample has \$10 billion in long-term debt, and a two-category credit rating improvement from the sample average of BBB+ corresponds to a 40-basis-point reduction in the cost of capital.<sup>5</sup> This translates into savings of approximately \$40 million per year in debt service alone.

This suggests that when marketers attempt to persuade chief financial officers and others of the value of investments in the firm's brand assets, they should include reductions in the firm's cost of capital in their payback calculations. The credit rating results we report here provide an initial calibration scale that may be useful for these purposes. However, these figures likely underestimate the cost of capital benefits of firms' brand assets because they do not include the effects through equity risk reduction. From this perspective, in our data set, a one-standard-deviation increase in CBBE corresponds to a .095 standard-deviation decrease in total equity risk (a 5.1% decrease), a .060 standard-deviation decrease in systematic equity risk (a 3.9% decrease), and .106 standard-deviation decrease in unsystematic equity risk (a 5.9% decrease). These percentages are substantial enough that they will also likely translate into a significantly lower cost of capital, with additional substantial corresponding savings for the firm. To give some idea of the potential scale of these likely savings, using data from Stern Stewart, we examined the cost of capital for the firms in the top and bottom 10% of our CBBE data and found a significant difference in the expected direction of approximately 60 basis points (8.00% versus 7.43%).

In addition, our results suggest that investments in creating and maintaining CBBE are a direct way for managers to reduce risks that are idiosyncratic to the firm. Thus, brand management should be viewed as an additional tool when planning and executing firms' risk-management strategies. We also find that CBBE has a particularly strong role in reducing firm risk during periods when the stock market is trending downward. This has important implications for brand-building and maintenance expenditures during periods of economic contraction. In particular, it suggests that simply reducing brand-related expenditures during a recession (as is common) will likely increase rather than decrease firm risk. For the benefit of the firm's investors, marketers should use our risk-reduction results as evidence in vigorously arguing with chief financial and chief executive officers for at least sustaining expenditures that maintain or enhance the firm's CBBE during periods of economic uncertainty.

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<sup>5</sup>The credit risk yield curve is nonlinear, indicating that the change in the cost of debt associated with a two-category credit rating improvement depends on the initial rating. The 40-basis-point figure is taken from Bloomberg as of December 27, 2007, but this figure was relatively stable for the 12 months before this date. We avoided using later yield curve figures because of the highly unusual turmoil in the debt markets since that time.

Finally, our study has important implications for financial reporting regulations. Accounting principles suggest that firms' financial statements should contain all possible information that may be valuable to investors (e.g., Ittner and Larcker 1998). Our findings indicate that information pertaining to firms' CBBE has risk relevance beyond the value of accounting information contained in firms' balance sheets and income statements. As a result, our findings indicate that firms may want to voluntarily disclose information pertaining to their CBBE, such as the results of consumer brand equity tracking studies. Our results also add weight to the suggestion that accounting regulators should consider the development of standardized reporting requirements regarding firms' intangible assets to help analysts and investors more accurately value firms' stock and debt (e.g., Whitwell, Lukas, and Hill 2007). Marketing researchers can play an important role in the development of standardized measurement systems for assessing firms' brand assets (e.g., Fischer 2007).

## Limitations

In interpreting the findings of our study, we should note several limitations in our data set. First, because of data source limitations, our sample contains only large publicly traded companies in the United States with end-user customers in the 35 categories captured by EquiTrend. With 252 different firms in our data set, we expect these results to be generalizable, at least for large firms operating in consumer markets in which these findings are likely to have real economic significance. However, our results may not be equally generalizable to firms whose end-user customers are businesses.

Second, we do not have EquiTrend data for all the brands owned by each of the 252 firms in our database. Thus, the brands included in our data set contribute less than 100% of the sales revenue of the firms in our firm-level analyses, meaning that there is noise in our data. Therefore, our findings may underestimate the significant effects of CBBE in reducing firm risk (Aaker and Jacobson 1994).

Third, we adopt a conservative risk relevance approach to modeling the impact of CBBE on firm risk. This requires the use of standard finance research variables and estimation approaches. This approach is helpful in ensuring that our results will be widely accepted by finance researchers and professionals (including chief financial officers). However, this also limits the extent to which we can use additional independent variables and nonstandard formulations of the risk-dependent variables and independent variable model setup.

## Further Research

Beyond the need for research to overcome these limitations, our study also suggests several new areas for further research. First, finance theory suggests that investments with different risks should require different returns—the classic risk–reward trade-off. Our results show that CBBE is associated with firm risk. This suggests that a firm with a portfolio containing brands with different levels of CBBE should view some of its brands as higher-risk investments

than others. This should translate into higher hurdle rates for investment decisions based on the brand's CBBE. To the extent that this does not occur, managers will make suboptimal marketing investments (Aaker and Jacobson 1987). Are such risk differences recognized by managers and reflected in brand-related investments in practice? If so, do such risk-based brand investment criteria produce higher returns? In addition, the correlations in Table 1 indicate that brands with higher CBBE may simultaneously enjoy lower risk and greater returns. This possibility should be investigated further.

Second, previous researchers have suggested the potential utility of directly applying financial portfolio theory regarding investor strategies for mitigating equity risk to firms' own investments in their product portfolios (e.g., Cardozo and Smith 1983). This suggests some questions about whether and how firms' brand portfolio strategy decisions, such as the number of brands to market and the differences among the brands in the portfolio, affect the risks and returns to their brand investments. Conversely, other researchers have cast doubt on the utility of financial portfolio theory in this context and have suggested that investors can more effectively and efficiently diversify away brand-specific risk by holding stocks in different firms (Devinney and Stewart 1988). Thus, an important issue for further research is the relative risk and reward performance of a stock portfolio of a larger number of different firms each marketing a single brand versus a smaller number of

firms each marketing a larger number of equally strong brands.

Third, our CBBE findings raise the question of the impact of other market-based assets on firm risk. For example, what is the risk relevance of firms' customer relationships, channel relationships, and market knowledge? How do these market-based assets compare with CBBE in explaining firm risk? Are different market-based assets complementary to one another, or are they substitutes in their relationship to firm risk? In combination, what is the magnitude of the impact of firms' market-based assets on firm risk? Answering these questions provides an important and exciting challenge in building out knowledge of the contribution of marketing to firm performance and the value delivered to investors.

## Conclusions

Our study of the relationship between CBBE and firm risk contributes new insights to the emerging marketing–finance literature by illuminating a new way brands contribute to the financial performance of the firm. We show that higher levels of the average CBBE of a firm's brands have a robust impact in reducing debt-holder risk, thus directly contributing to lowering the cost of capital for the firm. In addition, we find that firms that possess brands with strong CBBE are also able to significantly reduce their equity risk. These results are not only statistically significant but also have important managerial and economic significance.

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