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journal homepage: [www.elsevier.com/locate/jfec](http://www.elsevier.com/locate/jfec)Brand perception, cash flow stability, and financial policy<sup>☆</sup>

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## ABSTRACT

This paper demonstrates that intangible assets play an important role in financial policy. Using a proprietary database of consumer brand evaluation, I show that positive consumer attitude toward a firm's products alleviates financial frictions and provides additional net debt capacity, as measured by higher leverage and lower cash holdings. Brand perception affects financial policy through reducing overall firm riskiness, as strong consumer evaluations translate into lower future cash flow volatility as well as higher credit ratings for potentially volatile firms. The impact of brand is stronger among small firms, contradicting a number of reverse causality and omitted variables explanations.

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*"If this business were split up, I would be glad to take the brands, trademarks and goodwill and you could have all the bricks and mortar—and I would fare better than you".*  
John Stuart, the Chairman of Quaker, ca. 1900.

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## 1. Introduction

This paper explores the impact of an important intangible asset, the firm's brand, on financial policy. Brand is a substantial component of a firm's total value: according to a 2010 estimate, market value of brands accounts for over 30% of the market capitalization of Standard and Poor's (S&P) 500 firms, and exceeds the book value of equity of those firms.<sup>1</sup> Existing literature has largely assumed that intangibles increase firm riskiness, as their value is destroyed in financial distress and economic downturns. This paper shows that this is not the case for all intangible assets, as strong brand can affect financial structure by reducing the riskiness of future cash flows. Using a novel survey-based data set of consumer brand evaluations, I demonstrate that positive perception of firms' products reduces forward-looking volatility of cash flows, and insulates firms during periods of recession. The lower

<sup>1</sup> See Gerzema and Lebar (2008, pp. 9–12).

riskiness associated with strong brand increases the probability that firms will meet their future financial obligations, and alleviates financial frictions, allowing firms to have higher levels of debt and smaller cash cushions.

I first establish the cash flow volatility mechanism through which brand is linked to financial decisions, and demonstrate how consumers' positive opinion of a product reduces the riskiness of the firm. Although a critical assumption of perfect competition is that all sellers provide standard goods, in practice, individuals perceive different brands of the same product as heterogeneous, preferring some brands over others. Chamberlin (1933) shows that the product differentiation creates "monopolistic competition," in which a firm's market becomes separated from its competitors, and clienteles of consumers with varying degrees of product loyalty evolve. Loyal consumers are more likely to repeatedly purchase the product they value and are less likely to switch to competitors. This behavior ensures a stable level of cash flows over time, and insulates the firm from downside shocks.

I examine the validity of the cash flow volatility mechanism by empirically testing whether favorable brand perception reduces the riskiness of the firm. The data come from a marketing database, Brand Asset Valuator (BAV), the world's largest study of consumer evaluation across different product brands.<sup>2</sup> Research in the marketing field demonstrates that positive consumer evaluations of a brand are associated with higher loyalty and larger purchase probabilities.<sup>3</sup> As a result, favorable consumer views of a firm's products can provide information about characteristics of its intangible assets that are not reflected in the balance sheet. My main proxy for consumer brand perception is brand *Stature*, which measures how familiar households are with the brand and whether they have a positive regard towards it.

I evaluate firms' riskiness as a function of brand perception in a number of ways. First, I find that firms with higher brand *Stature* experience lower forward-looking volatility of cash flows at both the individual and industry-adjusted level. The results are robust to controlling for the level of asset tangibility and historical measures of cash flow volatility. Second, I demonstrate that the relation between brand strength and firm riskiness also holds in periods of economic downturns. Specifically, I examine whether firms with strong brand perception suffer more during recessions, as wealth-constrained consumers become more price conscious and less sensitive to their personal preferences. Matched-sample analysis reveals that this is not the case: firms with high brand *Stature* experience better operating performance, compared to their less consumer-valued peers. Finally, I ask whether firms with a strong brand have a lower probability of bankruptcy, as measured by the credit ratings on their debt. The results show that credit ratings of firms operating in potentially risky environments (as measured by historical cash flow volatility) improve with positive brand perception of products. Therefore, strong brand is

especially beneficial in reducing the default probabilities among apriori less stable firms.

After establishing that favorable perception of a brand is associated with lower cash flow volatility and lower bankruptcy risk, I analyze the implications of brand loyalty for financial policy. First, firms with a strong brand perception will be able to enjoy the benefits of higher stability and lower default probability by taking on more debt. In addition, stable levels of cash flows provide a ready source of future liquidity, reducing the levels of cash reserves that firms have to maintain for precautionary reasons. In support of these arguments, I find that firms with stronger brand perception hold more leverage: a one standard deviation increase in brand *Stature* increases market leverage of the median firm by almost 2%. Firms with strong brand perception also hold substantially less cash compared to firms with otherwise similar characteristics.

Next, I address alternative explanations and the possibility of reverse causality concerns. Brand perception could be endogenously determined if firms with easy access to debt capital decide to actively invest in altering consumer opinions about their products through promotions, advertising, and quality improvement. If this is the case, the relation between brand and financial policy variables should be stronger among firms with established reputations in financial capital markets, as they can raise external capital at low cost and allocate more resources to strategic brand management. To examine this possibility, I include the interaction of brand *Stature* and size in leverage and cash holdings estimations, and find that the effect of brand perception on financial decisions is about twice as strong in magnitude among small firms. A one standard deviation increase in brand *Stature* allows for more than 4% of additional debt capacity and reduces cash holdings by 4.5% for a firm in the 25th percentile. These results are inconsistent with the notion that financially established firms with easy access to external capital allocate more resources to the enhancement of their brand image. The overall evidence indicates that potentially opaque firms with limited access to external capital markets are those that obtain more financial flexibility when they have strong brands.

I also examine whether brand perception could be affected by the proximity to bankruptcy. If consumers anticipate that the quality of the brand will decrease in financial distress, they could revise their opinions of a brand in anticipation of an upcoming bankruptcy. To address this possibility, I compare changes in brand *Stature* when firms experience a downgrade along different points of the credit ratings spectrum. If proximity to distress reduces consumer opinion of a brand, then the higher is the spike in default probability following the downgrade, the steeper should be the decrease in brand perception. However, I do not find support for this explanation, as firms that are downgraded within the sub-investment grade spectrum do not lose more brand loyalty than those firms that are downgraded within the A-rating range. Taken together, the results are inconsistent with the idea that brand perception is affected by financial health, or that firms with strong brand perception are more concerned about default probabilities than their lower-valued peers. In fact, the findings suggest that brand perception provides an advantage in obtaining good credit ratings with smaller financial adjustments needed.

<sup>2</sup> Published academic studies in marketing, based on BAV data, include Mizik and Jacobson (2008, 2009), Bronnenberg, Dhar, and Dube (2007, 2009), and Romaniuk, Sharp, and Ehrenberg (2007).

<sup>3</sup> See, among others, Starr and Rubinson (1978), Rao and Monroe (1989), and Dodds, Monroe, and Grewal (1991).

Overall, this paper makes several contributions to the existing research. Broadly, it adds to the product market and financial decisions literature by identifying a new mechanism that links characteristics of consumer product demand to the financial decisions. Also, while most existing studies focus on the relations between financial policy and industry variables, such as concentration ratio and competition, this paper shows how characteristics of consumer demand at the firm level affect financial decisions.<sup>4</sup>

The study also contributes to the area of capital structure examining the link between characteristics of assets/liabilities and financial leverage. Although Titman and Wessels (1988) have established that asset tangibility is one of the most important determinants of capital structure, recent studies, including Benmelech (2009), Benmelech and Bergman (2009), and Campello and Giambona (forthcoming) demonstrate that there is substantial variation within characteristics of tangible assets. Specifically, properties such as salability and redeployability have an impact on leverage levels and debt maturity. By focusing on the characteristics of intangible assets, this study complements the relatively limited literature on how the properties of off-balance sheet assets and liabilities, such as leases and pension plans, affect financial policy (Graham, Lemmon, and Schallheim, 1998; Shivdasani and Stefanescu, 2010).

Finally, this study contributes to a growing number of finance papers that map marketing concepts, such as advertising and brand perception, into financial theory. For example, Grullon, Kanatas, and Weston (2004) and Chemmanur and Yan (2010a, 2010b) look at the link between firm characteristics and advertising. Chemmanur and Yan (2009) and Grullon, Kanatas, and Kumar (2006) explore the relation between advertising and capital structure decisions, while Frieder and Subrahmanyam (2005) examine the impact of brand on a firm's ownership structure. This study incorporates a new data set that captures consumer subjective evaluation of firms' products and demonstrates that, in addition to visibility, marketing characteristics affect firms' financial decisions through the channel of cash flow stability.

The rest of the paper is organized as follows: Section 2 develops the main hypotheses of the paper; Section 3 describes the data; and Section 4 explores the link between brand perception and different measures of riskiness. In Section 5 I test the implications of brand perception for financial policy; Section 6 discusses alternative explanations and verifies the robustness of the main conclusions. Section 7 concludes.

## 2. Hypotheses development

This section develops the hypotheses of the paper. First, the discussion will focus on explaining how consumer attitudes towards a firm's products translate into intangible asset characteristics and reduce cash flow riskiness. Then the hypotheses about how brand perception affects capital structure and cash holding policies will be presented.

Homogeneity in product characteristics and consumer preferences is a central assumption of perfect competition, allowing individuals to choose between different sellers based solely on price. However, in reality, consumers are surrounded by hundreds of different brands that they value differently. The heterogeneity in brand characteristics on one side, and consumer subjective preferences on the other, led Chamberlin (1933) to define a concept of "monopolistic competition": Whenever there is product differentiation (whether real or subjective), buyers will be paired with sellers according to their preferences, and the actual sales of the product will depend on the manner in which brands are differentiated from competitors. The more unique and appreciated the characteristics of the brand are, the more customers value the product, and the more loyal they become.

Empirical research in the industrial organization area has found support for this theory. Using detailed data on household purchase behavior over time, papers by Thomas (1989), Kwoka (1993), and Landes and Rosenfield (1994) show that consumers do take into account specific characteristics of the product (such as color, styling, and quality) in their purchase decisions just as much as they consider prices. Similarly, marketing studies, based on surveys and laboratory experiments, demonstrate that favorable consumer evaluations translate into actual buying behavior, leading to higher rates of repeat purchases and lower probability of switching (Starr and Rubinson, 1978; Dodds et al., 1991). Taken together, these findings suggest that positive consumer attitude increases the certainty of contemporaneous and future sales for the brand, and can be used to derive the effect of brands on the cash flow characteristics of the entire firm.

Two recent papers analyze the impact of brand on the value and riskiness of the overall cash flow of a firm. Belo, Lin, and Vitorino (2012) and Gourio and Rudanko (2011) study the role of brand capital on investment policy of a firm, its value, and the riskiness of the cash flow. The model by Belo et al. (2012) assumes that brand capital is an accumulation of past advertising expenses, and it impacts the demand function for the firm's products by shifting it out. As a result, firms with more brand capital enjoy higher operating profits at any given state of the world. Assuming that the cost structure is the same, higher sales prices dampen profit volatility for firms with stronger brand capital. In the model by Gourio and Rudanko (2011), brand loyalty arises from the existence of search costs that consumers incur while looking for products that meet their tastes. As a result, once consumers find a good match, they choose to stick with the product, reducing the demand sensitivity to price changes. The higher is the subjective value of a brand, the longer will be the estimated search for an alternative of a similar quality. Therefore, firms with higher brand perception will be able to retain a higher number of customers, and their sales will enjoy lower volatility over time. While the two papers use different mechanisms to model brand impact on firm characteristics and performance, their predictions regarding the riskiness of the cash flows are similar. Both models predict a negative relation between brand capital and market risk, as well as the overall cash flow volatility.

<sup>4</sup> Studies that link real and financial policy include, among others, Chevalier (1995a, 1995b), Kovenock and Phillips (1995, 1997), Phillips (1995), Khanna and Tice (2000), MacKay and Phillips (2005), and Lyandres (2006).

A number of empirical studies in industrial organization literature have empirically examined the relationship between consumer loyalty and firm riskiness using advertising expenses to proxy for brand capital, but found inconclusive results.<sup>5</sup> A possible reason for the mixed empirical pattern is that advertising is not a good proxy for brand capital and consumer loyalty. According to the informative view developed in the industrial organization literature, advertising could facilitate competition, rather than build barriers to entry, by creating visibility and providing consumers with information about new products. Therefore, using surveys of consumer attitude towards brands provides a potentially better measure of brand capital. Moreover, advertising is just one of many inputs that firms use to affect consumer view of a product, together with promotions, public relations, special events, and other tools of strategic brand management (Aaker, 1996). As a result, brand perception measures the outcome of all the cumulative efforts to market the product, as well as additional factors, such as the fit between consumer preferences and product characteristics.

Given the conceptual differences between advertising expenses and brand perception, I use survey data on consumer brand perception and start by testing the implications of the theoretical models that link brand attitude and firm risk. If consumer loyalty indeed creates a buffer that reduces the volatility of profits over time, then one should observe a negative relation between brand perception and cash flow volatility.

**Hypothesis 1.** Firms with stronger brand perception have lower cash flow volatility.

Next, I ask whether debt market participants account for the lower forward-looking volatility of firms with a strong brand in evaluating default probabilities. Finance literature has long emphasized the importance of cash flow stability in contracting between equity and debt holders. In a world of uncertainty, the more stable is the future cash flow of the firm, the smaller is the probability of default. If a loyal pool of satisfied consumers generates sufficient cash flows for future debt payments, the expected default probabilities on debt contracts of firms with strong brand perception will be smaller, and translate into better credit ratings. The second hypothesis is summarized as follows.

**Hypothesis 2.** Firms with stronger brand perception have higher credit ratings.

Finally, I establish the impact of consumer attitudes towards a firm's products on financial policy. An important determinant of debt capacity is the ex ante probability of default. Therefore, firms with a strong brand perception will enjoy the benefits of higher stability and the lower likelihood of getting into bankruptcy by taking on more credit. Empirically, incorporating consumer brand evaluation into capital structure estimation should provide

additional explanatory power. Moreover, brand capacity should have a significant impact on capital structure after including the commonly used measures of historical volatility. Thus, cash flow stability is especially important during recession, entry of new competitors, and predatory behavior by competitors. If those events have not occurred in the past, they cannot be captured by an historical firm performance measure. As a measure of forward-looking riskiness, brand perception should enhance debt capacity after controlling for historical cash flow volatility.

**Hypothesis 3a.** Firms with stronger brand perception have higher leverage.

In addition to affecting debt capacity, lower riskiness also has implications for the cash holding decisions of the firm. Studies such as Opler, Pinkowitz, Stulz, and Williamson (1999) and Bates, Kahle, and Stulz (2009) show that firms choose to insure against potential operating and financial losses associated with low cash flow realization by holding more liquid assets. Since raising external capital is costlier than using internal funds, firms hold a certain proportion of their retained earnings in cash and other liquid assets as a cushion. When firms have secure streams of future cash flows, the need to hold cash for precautionary reasons declines. According to Kim, Mauer, and Sherman (1998), operating cash flow provides a ready source of liquidity and allows maintaining lower levels of cash at any given point. In addition, firms usually hoard cash as a means to fight peer predation. The presence of loyal consumers increases the costs of predatory behavior for competitors, and as a result, firms with strong brand perception can hold less cash.

**Hypothesis 3b.** Firms with stronger brand perception have lower cash holdings.

### 3. Data

#### 3.1. Brand Asset Valuator

Brand Asset Valuator (BAV) is a proprietary brand metrics model developed and managed by Brand Asset Consulting, a subsidiary of Young & Rubicam Brands. Brand Asset Consulting uses the model to help clients evaluate and improve their brand by analyzing different aspects of brand image. The model is widely known among both marketing researchers and practitioners and is incorporated into major marketing textbooks (see, for example, Aaker, 1996; Keller, 2008).

The BAV model has several advantages over other marketing models that measure brand value. Most importantly, it relies on a customer survey-based approach, which is in contrast to a financial valuation approach that uses accounting and financial data to estimate the brand value (for example, models by Interbrand and BrandFinance 2000 are based on cash flow forecasts). As a result, the BAV model is exogenous of accounting and market variables, such as stock prices, market-to-book ratios, and

<sup>5</sup> See Bagwell (2007) for an overview of existing studies.



revenues. Second, the model has a wide base of respondents, representative of the US population. Finally, the list of brands is not biased towards clients of Brand Asset Consulting, as the company tries to maintain a fair representation of all major industry competitors. [Appendix A](#) provides a detailed description of the BAV survey. The overall results are aggregated across respondents for any given brand-year and are then combined into pillars that capture different aspects of brand. The main measure of brand loyalty and quality perception is brand *Stature*, which is a product of *Knowledge* (how well consumers know the brand) and *Esteem* (how much regard and loyalty consumers have towards the brand). Since *Stature* is aggregated across component that are measured on different scales, its magnitude does not have an economic meaning. To provide an intuitive interpretation of results, *Stature* is standardized throughout the analysis.

The BAV questionnaire is constructed at the brand level, so to merge it with the financial data, reported at the firm level, I manually create a bridge that links BAV and Compustat. Specifically, I identify a representative brand for each firm by finding the brand with the most closely matching firm name, and use its scores. For example, The Gap Inc., a retailer of casual apparel, owns several brands: Gap, Banana Republic, Old Navy, Piperlime, and Athleta. I use the scores for Gap brand as the representative of the firm. [Appendix A.2](#) describes the merging algorithm, as well as alternative ways of aggregating the data across brands, which are used to verify robustness.

### 3.2. Financial variables

The financial variables are selected based on the widely cited literature on capital structure and cash holdings.<sup>6</sup> First, I use Compustat data to obtain accounting and financial variables. *Sales* measures the total net sales, expressed in millions of constant 1993 dollars. *Age* of the firm is calculated starting from the first year the firm appears in the Compustat database, and a dummy variable *Young* is an indicator that takes the value of one if the firm is 3 years old or younger to measure the potential non-linear impact of very young firms, which tend to be more volatile and opaque. Market-to-book ratio (*M/B*) is the market value of equity plus the book value of assets minus preferred stock<sup>7</sup> plus deferred taxes, all divided by the book value of assets. *M/B* measures the future prospects of the firm, as well as the total value of the firm assets, including the intangibles. I proxy for overall profitability with *EBITDA*, the ratio of earnings before depreciation to total assets. *Leverage* is the sum of short-term and long-term debt, scaled by book or market assets. I measure the tangibility of assets as net property, plant, and equipment, divided by book assets. I employ *Depreciation*, scaled by assets, as an additional measure in robustness tests. To

examine the financial stability of a firm I calculate [Altman's \(1968\)](#) modified Z-score. The modified Z-score excludes the component of financial leverage (see, for example, [MacKie-Mason, 1990](#); [Leary and Roberts, 2005](#)), and it equals the sum of 3.3 times earnings before interest and taxes, plus sales, 1.4 times retained earnings, plus 1.2 times working capital, all scaled by total assets.

I measure advertising and research and development (R&D) expenses in two ways. First, I scale advertising expenses and R&D by sales, as commonly used in the literature.<sup>8</sup> For robustness, I also use the natural logarithm of the non-scaled amount (in millions of constant 1993 dollars). If advertising by the same firm has a spillover effect across its brands, then the overall advertising volume consumers are exposed to could be a more precise measure ([Grullon et al., 2004](#)). For the same reason, I use *Log(R&D)* rather than its ratio over assets or sales to capture the potential impact of quality improvement and new product development on consumer attitude. I estimate all specifications using the overall dollar amount of advertising and R&D expenditures, and find results similar to those presented here.

I measure cash holdings in two ways. The first measure is *Cash/assets*, the ratio of cash and short-term investments to total assets. I also scale cash by sales (*Cash/sales*) and use it as an alternative measure. Following [Opler et al. \(1999\)](#), I use working capital net of cash holdings (*Wcap*), scaled by assets, to capture additional liquid asset substitutes that are available to the firm. Since firms with more potential projects should hold more cash to finance them, I use a measure of capital expenditures (*Capex*) to proxy for investments. *S&P500* is a dummy variable that equals one for firms that belong to the S&P 500 index and zero otherwise. This dummy variable is another proxy for size and is also a reflection of trading characteristics, such as visibility, liquidity, and the number of shareholders. *DivDummy* is an indicator variable of whether a firm pays out dividends to its shareholders.

A potential concern of a study that relies on brand data is that conceptually, the idea of a brand could be industry-specific. To avoid capturing industry rather than firm product characteristics, I control for industry characteristics by including industry fixed effects in all specifications. Industries are defined using the Standard Industry Classification (SIC) two-digit code. It is important to note, though, that brand perception is not another proxy for market concentration. While industry concentration is an important determinant of firms' financial and operational decisions, there is still a potential variation in consumer attitude among different firms for any given degree of industry concentration. To examine how strongly brand perception is correlated with industry concentration, I create a Herfindahl index (*HHI*) and include the measure in the descriptive statistics.

Finally, I obtain stock performance information from the Center for Research in Security Prices (CRSP), and use

<sup>6</sup> See, among others, [Hovakimian, Opler, and Titman \(2001\)](#), [Fama and French \(2002\)](#), [Faulkender and Petersen \(2006\)](#), [Opler et al. \(1999\)](#), and [Kim et al. \(1998\)](#).

<sup>7</sup> Preferred stock is equal to the liquidation value if not missing; otherwise I use redemption value if not missing; otherwise the carrying value.

<sup>8</sup> Missing values receive a value of zero. I add a value of one to advertising and R&D expenses, before converting them to logarithms.

average monthly stock returns (*Return*) over a calendar year as an additional control variable in robustness tests.

For the multivariate analysis, the variables *Size*, *Sales*, and *Age* are converted into natural logarithms. Before merging the Compustat-CRSP data with BAV, I remove all observations with missing values for the following variables: *Sales*, *Cash*, *EBITDA*, modified *Z-score*, and *M/B*, and trim the top and bottom 1% of those variables to mitigate the effect of outliers (the results remain robust to estimating the main specifications using the untrimmed sample). After merging BAV data with financial variables, the final sample consists of 468 firms and 2,585 firm-year observations.

**Table 1**

Descriptive statistics.

This table presents the distribution of the main variables of interest with non-missing *Stature* values for the period 1993–2009. *Stature* measures brand loyalty and quality perception, and is calculated as the standardized product of *Knowledge* (how well consumers know the brand) and *Esteem* (how much regard and loyalty consumers have towards the brand). *Log(sales)* is the total sales, in millions of constant 1993 dollars, converted to logarithms. *M/B*, market-to-book ratio, is the market value of equity plus the book value of assets minus preferred stock plus deferred taxes, all divided by the book value of assets. *EBITDA* is the ratio of operating income before depreciation to total assets. *Tangibility* is defined as net property, plant, and equipment divided by book assets. *S&P500* is a dummy variable that equals one if a firm belongs to the S&P 500 index, and zero otherwise. *Age* is calculated starting from the first year the firm appeared in the Compustat database. Modified *Z-score* is the sum of 3.3 times earnings before interest and taxes plus sales, 1.4 times retained earnings, plus 1.2 times working capital, all scaled by total assets. *Advertising/sales* and *R&D/sales* are the overall amount of advertising and R&D expenses, respectively, scaled by total sales. *Hist volatility(EBITDA)* is the standard deviation of *EBITDA* in the previous 5 years. *Book leverage* is the sum of short-term and long-term debt scaled by book assets. *Cash/assets* is cash and short-term investments, scaled by total assets (*Assets*). The Herfindahl index is the summed squared market shares of all the publicly traded companies in an industry defined by the SIC four-digit code.

Variable	Mean	Median	Std dev	25th Pctl	75th Pctl	Correlation with stature
<i>Log(sales)</i>	7.90	8.15	1.45	6.91	9.06	0.30
<i>M/B</i>	2.15	1.72	1.37	1.23	2.58	0.08
<i>EBITDA</i>	14.8%	14.6%	11.4%	9.1%	20.8%	0.17
<i>Tangibility</i>	28.3%	23.9%	19.6%	13.1%	39.4%	0.04
<i>S&amp;P500</i>	0.49	0.00	0.50	0.00	1.00	0.31
<i>Age</i>	26.42	17.00	23.39	8.00	38.00	0.35
Modified <i>Z-score</i>	1.88	2.00	1.58	1.33	2.76	0.18
<i>Advertising/sales</i>	3.9%	2.2%	6.7%	0.0%	4.8%	0.08
<i>RD/sales</i>	3.0%	0.0%	6.5%	0.0%	2.5%	−0.17
<i>Hist volatility(EBITDA)</i>	4.4%	2.7%	7.8%	1.6%	5.0%	−0.15
<i>Book leverage</i>	23.9%	21.5%	24.5%	7.8%	33.5%	0.17
<i>Cash/assets</i>	15.2%	10.4%	15.4%	3.6%	21.6%	−0.26
<i>Herfindahl index</i>	0.07	0.05	0.07	0.04	0.08	0.19

**Table 2**

Industry distribution.

This table presents the distribution of the BAV sample and CRSP-Compustat universe (with non-missing values for sales and market capitalization) by industry for the period 1993–2009 (firm-year observations). Industries are defined according to the Fama-French 12-industry classification. Panel A reports the proportion (in percent) of the number of observations in each industry out of the overall number of observations in the sample. Panel B reports the proportion (in percent) of the market capitalization of each industry out of the overall market capitalization of the sample.

Industry number	Industry name	Industry description	Panel A % of firms		Panel B % of market cap	
			BAV	CRSP-Compustat universe	BAV	CRSP-Compustat universe
1	Consumer nondurables	Food, tobacco, textiles, apparel, leather, toys	23.07	4.98	16.43	5.75
2	Consumer durables	Cars, TV's, furniture, household appliances	3.02	2.38	1.28	2.81
3	Manufacturing	Machinery, trucks, planes, off furn, paper, com printing	9.56	9.37	9.25	6.19
4	Energy	Oil, gas, and coal extraction	0.58	3.88	0.60	9.49
5	Chemicals	Chemicals and allied products	3.79	2.11	2.96	2.72
6	Business equipment	Computers, software, electronic equipment	15.63	18.23	26.25	14.97
7	Telecommunications	Telephone and television transmission	5.53	3.46	8.93	11.14
8	Utilities	Utilities	0.15	2.46	0.17	3.36
9	Shops	Wholesale, retail, and some services	23.30	9.04	9.90	5.80
10	Healthcare	Healthcare, medical equipment, and drugs	4.30	10.11	17.60	9.48
11	Money	Financial services	1.74	21.00	1.52	19.19
12	Other	Other	9.33	12.98	5.12	9.10

noted. First, the concept of brand is not applicable to some industries (for example, industries based on a business-to-business approach, such as mining, construction, and agricultural production). Therefore, the mere idea of product differentiation is potentially relevant only to a subset of firms. Second, although the sample is relatively small in terms of the number of firms, its market capitalization represents 20% of that of all Compustat firms.

The last column of the table reports the correlation of the variables with *Stature*. Larger, more mature, and more profitable firms are associated with stronger brand perception, as measured by *Stature*. Tangibility is only weakly correlated with *Stature*, supporting the argument that consumer brand evaluations are not just another proxy for intangible assets. The ratio of advertising to sales has almost no correlation with brand perception, and *R&D/sales* has a negative correlation, suggesting that consumers do not shape positive opinions about products based merely on their quality and that other factors, such as brand image and personal taste, are more influential in determining consumer loyalty and quality perception. Experimental marketing studies are consistent with this finding, and demonstrate that the differential perception of brands is not based on objective differences between products (Keller, 2008).

I also examine the distribution of the BAV sample by industry. Table 2 summarizes the results. Panel A presents the distribution by the number of firms. BAV is more biased towards consumer nondurables and retail sectors, which is not surprising given that most of the firms in these sectors are business-to-consumer firms. While financial services and utilities are underrepresented, the remaining segments are comparable to the overall universe of firms. The gap between the BAV sample and the CRSP-Compustat universe is less significant in the nondurables sector when the distribution is constructed based on market capitalization (Panel B), although business equipment and healthcare receive a higher weight. In unreported results, I create a distribution of the number of firms in the BAV sample by the SIC two-digit code and find that none of the industries' weights exceeds 10%. Taken together, the evidence suggests that even though the BAV sample is somewhat restricted by definition, the data cover a wide spectrum of industries and represent all the major sectors of the economy.

#### 4. Brand perception and firm risk

This section examines the validity of the cash flow volatility channel, and demonstrates that consumers' positive opinion of a product reduces the overall riskiness of the firm both during periods of economic growth and economic downturn.

##### 4.1. Future cash flow stability

I start the empirical analysis by testing whether strong consumer brand perception translates into more stable operating and financial performance. Specifically, I examine how the overall riskiness of future cash flows depends on the strength of firms' brands.

To analyze future cash stability, I construct two measures. The first is forward-looking cash flow volatility of an

individual firm, defined as the standard deviation of annual profitability (*EBITDA*) during period  $(t+1)$  through  $(t+5)$ . It is possible, though, that cash flow volatility reflects nonlinear industry effects that are not captured by the dummy variables. To account for this possibility, I construct a second measure, the forward-looking relative cash flow volatility. The relative cash flow volatility is computed by first averaging industry profitability across firms (based on a SIC two-digit code), and then calculating the standard deviation of the industry average 5 years forward. Relative volatility is an individual firm's forward-looking volatility, scaled by the forward-looking volatility of the industry.<sup>9</sup>

I estimate absolute and relative volatility of firms' earnings as a function of brand *Stature* and a set of control variables. The results are reported in Table 3. Panel A demonstrates that the effect of brand *Stature* on future cash flow volatility is negative and significant in both specifications. The impact of *Stature* is negative and significant in Panel B as well, suggesting that the relation is not driven by nonlinear industry effects. A one standard deviation increase in brand perception reduces the relative volatility of an average firm in its industry by 6.7–8.5%. Cross-sectionally, this is equivalent to the difference in brand perception between Tyson Foods and ConAgra Foods: Tyson's brand *Stature* is about one standard deviation higher than that of ConAgra. The magnitudes of the coefficients remain largely unaffected after adding advertising and R&D expenses in alternative specifications. Interestingly, coefficients on advertising and R&D are positive, implying that investment in advertising and product development could be ex ante risky, and that intangible assets are created only if those investments are valued by consumers. It is also interesting that adding historical volatility does not change the magnitude of the *Stature* coefficient, suggesting that *Stature* measures forward- rather than past-looking volatility and captures risk characteristics that the historical measure does not.

To ensure the robustness of the results, I calculate historical volatility of *EBITDA* based on the past 10-, 5-, and 3-year periods, and forward-looking volatility based on future 3 and 5 years of data, and re-estimate the main results using each of the possible period length combinations. The results remain similar to those presented.

Next, I examine whether the relation between brand perception and cash flow volatility could be specific to luxury goods markets. Thus, luxury goods firms could face an exceptionally stable demand from loyal customers, and at the same time spend substantial resources on enhancing the brand perception. To examine this possibility, I first identify all luxury brands in the BAV sample and compute their average brand perception scores.<sup>10</sup> I find that luxury brands do not have exceptionally high brand perception. Moreover, the mean brand *Stature* of luxury products is negative, implying that these goods have a

<sup>9</sup> To mitigate the impact of outliers, the ratios are winzorized at 1%.

<sup>10</sup> To classify a brand as luxury, I search for all the luxury goods names that appear in Ait-Sahalia, Parker, and Yogo (2004), and then identify those brands in the BAV sample. The final subsample consists of 32 brands and includes luxury automobiles and retailers of high-end luxury goods, as well as the brands they own.

weaker brand perception than the overall sample. To ensure that the findings are not driven by a small number of observations, I also adopt a different methodology and classify firms as luxury according to their gross profit margins. The Compustat sample is allocated every year into profit margin deciles within each of the 12 Fama and French industry classifications. Luxury firms are defined as those that belong to the top two deciles in year  $t$  and year  $(t-1)$ . In addition, the sample of luxury products is limited to industries 1 (Consumer non-durables), 2 (Consumer durables), and 9 (Wholesale and retail). After defining the luxury goods firms (about 12% of the sample), I exclude them from the analysis and repeat the estimation of cash flow volatility. The untabulated results confirm that the impact of *Stature* remains significant. To verify that the results are not sensitive to the choice of a cutoff, I alter the definition of luxury products by using the top decile (top three deciles) of gross profit margins as alternative cutoffs, and find that the results are similar to the ones reported in Table 3.

#### 4.2. Performance during economic downturns

The previous subsection demonstrates that, on average, strong brand perception is associated with higher stability

of forward-looking cash flows. In this subsection I focus on the performance of high *Stature* firms during recession and ask whether these findings are robust to periods of economic distress. If consumers switch to cheaper brands following an economic slump, firms with a strong brand perception could suffer more, and, in fact, become riskier during recession than other firms.

Theoretical literature on brand capital does not have clear predictions about what happens to brands during recession. On the one side, the sensitivity of sales and profits to brand strength could vary over time, being lowest during the periods of economic downturn, when consumers become price conscious. On the other side, if loyal customers believe there is no suitable alternative to the brand they like, they will continue buying it during recessions, while shifting to cheaper substitutes of brands that they do not appreciate as much. Anecdotal evidence supports the second alternative. For example, during the recent recession, annual reports of Coca-Cola, which has one of the strongest *Stature* scores in the BAV sample, indicate that the company's sales volume (as measured by the number of unit cases) in North America declined only by 1% in 2008 and by 2% in 2009. At the same time, US Gross Domestic Product (GDP) per capita contracted by almost 5% during the years of 2008–2009, and the unemployment rate spiked

**Table 3**

The effect of brand *Stature* on forward-looking cash flow volatility.

This table reports the results of the OLS regression in which the dependent variable is forward-looking absolute volatility of earnings in Panel A, and forward-looking relative volatility of earnings in Panel B, based on the 1993–2009 sample period. Forward-looking absolute cash flow volatility at time  $t$  is the standard deviation of a firm's annual profitability (*EBITDA*), scaled by total assets, calculated over the period  $(t+1)$  through  $(t+5)$ . Forward-looking relative cash flow volatility is forward-looking absolute volatility, scaled by the industry forward-looking volatility, which is the volatility of the average industry profitability (based on the SIC two-digit code) 5 years forward. *Stature* measures brand loyalty and quality perception, and is calculated as the standardized product of *Knowledge* (how well consumers know the brand) and *Esteem* (how much regard and loyalty consumers have towards the brand).  $\text{Log}(\text{sales})$  is the logarithm of the total net sales expressed in millions of constant 1993 dollars. *M/B*, market-to-book ratio, is the market value of equity plus the book value of assets minus preferred stock plus deferred taxes, all scaled by book assets. *Young* is an indicator variable for whether the firm is 3 years old or younger. *Advertising/sales* and *R&D/sales* are the overall amount of advertising and R&D expenses, respectively, scaled by total sales. *Hist volatility (EBITDA)* is the standard deviation of *EBITDA* in the previous 5 years. All explanatory variables are lagged by one period. All estimation models include year and industry fixed effects (at SIC two-digit level). Standard errors are reported in parentheses and are based on heteroskedasticity-consistent errors adjusted for clustering across firms. The symbols \*\*\*, \*\*, and \* indicate  $p$ -values of 1%, 5%, and 10%, respectively.

	Panel A: Absolute vol		Panel B: Relative vol	
	(1)	(2)	(3)	(4)
<i>Intercept</i>	0.062*** (0.011)	0.039*** (0.013)	1.715*** (0.349)	1.253*** (0.372)
<i>Stature</i>	-0.002** (0.001)	-0.002* (0.001)	-0.085** (0.035)	-0.067* (0.035)
<i>Log(sales)</i>	-0.006*** (0.001)	-0.005*** (0.001)	-0.211*** (0.039)	-0.195*** (0.039)
<i>M/B</i>	0.005*** (0.001)	0.003*** (0.001)	0.132*** (0.032)	0.078** (0.03)
<i>EBITDA</i>	-0.048*** (0.018)	-0.014 (0.019)	-0.518 (0.525)	0.408 (0.515)
<i>Young</i>		0.008** (0.004)		0.211 (0.139)
<i>Advertising/sales</i>		0.046 (0.035)		1.338 (1.001)
<i>R&amp;D/sales</i>		0.044* (0.027)		2.518*** (0.789)
<i>Hist volatility(EBITDA)</i>		0.061* (0.031)		0.019* (0.011)
<i>Obs.</i>	2338	2338	2338	2337
<i>Number of firms</i>	452	452	452	452
<i>R-squared adj.</i>	0.26	0.30	0.16	0.22



to 9.9%. Thus, consumer loyalty seems to remain persistent despite income shocks.

To formally support the discussion above, I examine the performance of firms with strong brand perception relative to their peers during the recent recessions. To test which firms suffer more, I compare the operating and financial performance of firms with low versus high brand *Stature* during the two economic recessions that occurred within my sample period: the high-tech bubble crash of 2001 and the financial crisis of 2008–2009. I employ a matched-sample methodology and start by allocating all sample firms in year ( $t-1$ ) into quartiles of *Sales*. Each group is then further sorted into quartiles of *Stature*. Firms in the lowest quartile are the *Low stature* firms, and firms that belong to the top quartile are designated *High stature*. Next, for every firm in the *Low stature* group, I find a match in the *High stature* group that belongs to the same *Sales* quartile and has the closest level of sales as of period ( $t-1$ ). Table 4 compares changes in sales, profitability, and Altman's (1968) modified Z-score of the two groups during the two recession periods. As mentioned before, the modified Z-score excludes the component of financial leverage, which could also be a function of brand perception. The first recession, as measured by the National Bureau of Economic Research (NBER) Business Cycle data, occurred between March and November 2001, so I measure the performance of firms during the year of 2001. The second recession officially started in December of 2007 and lasted until June 2009. Therefore, I use 2008–2009 as the second recession period.

The results demonstrate that firms with high brand *Stature* do not experience a significant performance decline compared to firms with low *Stature*. In fact, only positive differences are statistically significant, suggesting that firms with strong brand perform better than their less valued peers. For example, during the recession of 2001, *High stature* firms increased their sales and managed to maintain healthy Z-score ratios. During the financial crisis of 2008–2009, an average *High stature* firm increased its

profitability by 2.07%, while an average *Low stature* firm remained at the same level of profitability. While the differences in sales among high and low *Stature* firms are negative during this period, they are also small in magnitude and statistically insignificant. Overall, the comparison of high and low brand perception firms during the two periods of economic downturn demonstrates that firms with high brand perception do not suffer more and actually perform better than their competitors with lower consumer loyalty.

To verify robustness of the results to the matching technique, I also use an independent sorting into *Stature* and *Sales* quartiles, which produces similar results, but generates a few outliers due to a small number of observations in some *Sales-Stature* groups. I also use the period of 2007–2009 as an alternative way to identify the recent recession, and the conclusions do not change in a material way.

#### 4.3. Credit riskiness

After demonstrating that brand *Stature* is associated with more stable future cash flows in periods of both economic growth and economic downturn, I ask whether there is a benefit for market participants. Specifically, I look at firm riskiness from the perspective of debt holders. The reason for focusing on debt holders is two-fold. First, the debt contract structure makes creditors more sensitive to volatility of firm cash flows, as debt holders do not gain from positive shocks but they do bear losses during cash flow drops. Second, it is not clear what the impact of lower cash flow volatility should be on stock holders. All else constant, equity volatility should decline as well. However, if brand perception has positive implications for leverage, the position of stock holders will also become more levered, increasing equity volatility. As will be demonstrated in Section 5, higher *Stature* indeed has a positive effect on firm leverage, and therefore, it is not clear a priori which of the effects will dominate.

**Table 4**

Operating performance of low versus high *Stature* firms during recession.

This table presents sample statistics of selected variables for low and high brand *Stature* firms, matched on size. *Stature* measures brand loyalty and quality perception, and is calculated as the standardized product of *Knowledge* (how well consumers know the brand) and *Esteem* (how much regard and loyalty consumers have towards the brand). Every year the firms are sorted into four groups based on *Sales* as of ( $t-1$ ) and each size group is then sorted into four additional groups based on *Stature* as of ( $t-1$ ). The bottom quartile includes *Low stature* firms, and the top one includes *High stature* firms. *Change in EBITDA* is the difference in operating performance between years  $t$  and ( $t-1$ ), scaled by assets as of ( $t-1$ ), in percents. *Change in sales* is the difference in log of total sales, in millions of constant 1993 dollars, between years  $t$  and ( $t-1$ ). Modified Z-score is the sum of 3.3 times earnings before interest and taxes, plus sales, 1.4 times retained earnings, plus 1.2 times working capital, all scaled by total assets. The periods of recession are based on NBER Business Cycle data. Tests on means and medians are the  $t$ -test and Wilcoxon test, respectively. The symbols \*\*\*, \*\*, and \* indicate  $p$ -values of 1%, 5%, and 10%, respectively, and are based on two-tailed tests.

Variable	Number of observations	Low stature		High stature		High minus low stature	
		Mean	Median	Mean	Median	Mean	Median
<i>Panel A: Recession of 2001</i>							
<i>Change in EBITDA</i>	56	0.35	0.22	−0.74	−0.38	−1.09	−0.60
<i>Change in sales</i>	56	−5.96	−1.23	2.47	2.51	8.43**	3.74**
<i>Z-score</i>	56	0.83	1.25	2.12	2.28	1.29***	1.03***
<i>Panel B: Recession of 2008–2009</i>							
<i>Change in EBITDA</i>	109	0.00	0.55	2.07	1.22	2.07**	0.67
<i>Change in sales</i>	109	−2.50	−0.54	−3.20	−1.92	−0.70	−1.38
<i>Z-score</i>	109	1.45	1.76	1.76	2.26	0.31	0.50***

**Table 5**The effect of brand *Stature* on credit rating.

This table reports the results of the OLS regression in which the dependent variable is S&P domestic long-term issuer credit rating, based on the 1993–2009 sample period. Panel A consists of all the sample firms; Panel B includes firms with historical volatility of profits (*Hist volatility(EBITDA)*) below sample median in a given year; Panel C includes firms with historical volatility of profits above or equal median; Panel D is further restricted to firms with historical volatility of profits above the sample mean. Credit ratings are converted into a numeric scale, so that credit rating “AAA” receives a score of one, and a credit rating of “D” receives a score of 22. *Stature* measures brand loyalty and quality perception, and is calculated as the standardized product of *Knowledge* (how well consumers know the brand) and *Esteem* (how much regard and loyalty consumers have towards the brand). *Log(sales)* is the logarithm of the total net sales expressed in millions of constant 1993 dollars. *M/B*, market-to-book ratio, is the market value of equity plus the book value of assets minus preferred stock plus deferred taxes, scaled by total assets. *EBITDA* is the ratio of operating income before depreciation to total assets. *Tangibility* is defined as net property, plant, and equipment divided by book assets. *Leverage* is the sum of short-term and long-term debt scaled by book assets. *Advertising/sales* and *R&D/sales* are the overall amount of advertising and R&D expenses, respectively, scaled by total sales. *Hist volatility(EBITDA)* is the standard deviation of *EBITDA* in the previous five years. All explanatory variables are lagged by one period. All estimation models include year and industry fixed effects (at the SIC two-digit level). Standard errors are reported in parentheses and are based on heteroskedasticity-consistent errors adjusted for clustering across firms. The symbols \*\*\*, \*\*, and \* indicate *p*-values of 1%, 5%, and 10%, respectively.

	Panel A: Full sample		Panel B: Histvol < median		Panel C: Histvol > median		Panel D: Histvol > mean	
	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)
<i>Intercept</i>	21.71*** (1.27)	20.27*** (1.36)	24.02*** (1.69)	22.97*** (1.62)	19.11*** (1.26)	19.11*** (1.29)	16.84*** (1.39)	15.15*** (1.4)
<i>Stature</i>	−0.11 (0.1)	−0.14 (0.1)	0.12 (0.14)	0.06 (0.13)	−0.33** (0.14)	−0.37** (0.15)	−0.54*** (0.17)	−0.597*** (0.17)
<i>Log(sales)</i>	−1.25*** (0.13)	−1.15*** (0.13)	−1.39*** (0.17)	−1.3*** (0.16)	−1.01*** (0.14)	−0.89*** (0.13)	−0.93*** (0.15)	−0.78*** (0.15)
<i>M/B</i>	−0.21** (0.1)	−0.24** (0.1)	−0.2* (0.11)	−0.13 (0.11)	−0.18* (0.11)	−0.2* (0.11)	−0.25** (0.11)	−0.24** (0.12)
<i>EBITDA</i>	−14.15*** (1.71)	−13.55*** (1.69)	−18.14*** (2.81)	−19.19*** (2.8)	−13.29*** (1.73)	−12.92*** (1.63)	−11.66*** (1.74)	−11.89*** (1.67)
<i>Tangibility</i>	−1.95** (0.91)	−1.79** (0.9)	−1.31 (1.05)	−1.24 (1.04)	−1.84 (1.19)	−1.48 (1.15)	−1.56 (1.45)	−1.13 (1.43)
<i>Leverage</i>	4.69*** (0.64)	4.61*** (0.65)	5.55*** (0.83)	5.27*** (0.82)	4.19*** (0.7)	4.11*** (0.67)	4.3*** (0.78)	4.21*** (0.75)
<i>Advertising/sales</i>		2.99 (2.46)		−1.815 (2.49)		6.46** (3.05)		7.71** (3.59)
<i>R&amp;D/sales</i>		−1.73 (3.35)		−10.68*** (3.85)		−0.64 (4.33)		−1.79 (4.58)
<i>Hist volatility(EBITDA)</i>		9.2** (3.98)		43.03*** (14.81)		6.44** (3.07)		4.04* (2.23)
<i>Obs.</i>	1793	1793	893	893	900	900	598	598
<i>Number of firms</i>	324	324	225	225	251	251	202	202
<i>R-squared adj.</i>	0.68	0.69	0.75	0.76	0.66	0.67	0.65	0.67

To evaluate the impact of brand *Stature* on credit riskiness, I examine the S&P credit ratings. Credit ratings are a better risk measure than, for example, Altman's Z-score, as they focus on the creditworthiness of the firm until the maturity of its debt, and therefore, are fundamentally forward-looking. Moreover, while credit rating agencies consider financial information, based on profitability, balance sheet, and cash flow generation, they also rely on a broad scope of business risk factors (Langohr and Langohr, 2008). The importance of those factors is explicitly emphasized by S&P: “...it is critical to realize that ratings analysis starts with the assessment of the business and competitive profile of the company. Two companies with identical financial metrics are rated very differently, to the extent that their business challenges and prospects differ.”<sup>11</sup> Therefore, if brand strength has a material impact on firms' forward-looking volatility, credit rating agencies should recognize its importance and take brand perception into account when determining credit ratings.

In an effort to replicate the decisions of credit rating agencies, I use Compustat's S&P domestic long-term issuer credit rating. Specifically, I estimate credit ratings in a linear regression setting and convert the alphanumeric scale, employed by the S&P agency, into a numeric one. Thus, credit rating “AAA” receives a score of one, and a credit rating of “D” takes on a value of 22. Control variables include size, profitability, tangibility, and M/B ratio, and capture different aspects of current performance and future growth opportunities. In addition, I include the level of leverage, since leverage is an important indicator of firms' financial health that rating agencies take into account when determining the ratings (Langohr and Langohr, 2008). Since leverage is clearly an endogenous variable, its inclusion in the regression could raise concerns about a possibility that firms choose to actively manage their credit rating through financial leverage. Section 6.1 examines this issue in detail.

The credit ratings estimations are summarized in Table 5, and Panel A reports the results based on the overall sample of rated firms. While brand *Stature* generally improves credit ratings, as indicated by the negative sign of the coefficients, the effect is not significant. To examine this relation in further

<sup>11</sup> Standard and Poor's (2006), p. 19.

detail, I focus on a subsample of firms for which I conjecture the relation would be strongest. Specifically, the benefits of brand strength could be more valuable for riskier firms that are prone to a wider range of shocks and more extensive losses during bad states of the world. In this case, reliance on historical information about firm performance to project future cash flows is insufficient, and brand perception, as an indicator of *forward-looking* volatility, would help to differentiate potentially stable firms from their riskier peers. In contrast, brand perception could contribute relatively little information about firms operating in less risky environments, as such firms could be sufficiently transparent for risk evaluation. To examine the validity of this explanation, I use historical volatility (*Hist volatility (EBITDA)*) to capture the degree of a firm's potential riskiness. Specifically, every year I calculate the median historical standard deviation of profits for the BAV sample and allocate all the firms into a group of low (below median) and high (equal or above median) historical volatility. Credit ratings are re-estimated separately for each subsample, and the results are reported in Panels B and C.

The effect of brand *Stature* on bond ratings differs substantially among low and high volatility firms. While its impact remains insignificant in the subsample of low-volatility firms, strong brand perception significantly improves credit ratings of historically risky firms. The coefficient of *Stature* ranges from  $-0.33$  to  $-0.37$ , suggesting that a one standard deviation increase in brand *Stature* helps close over one-third of a notch between the current and the higher available rating. Taken together, the analysis reveals that information incorporated in brand *Stature* is especially valuable for determining ratings of historically volatile firms. These results are important, as they indicate that brand perception captures certain aspects of product market risk that are not reflected in other variables, and distinguishes firms with a loyal consumer base from their less reputable peers.

To explore the impact of brand perception on credit ratings further, I limit the sample to firms with historical volatility above the mean, rather than median *Hist volatility (EBITDA)* (since the volatility is bounded at zero, its distribution is skewed, and the alternative cutoff captures especially volatile firms). The results, presented in Panel D, show that the magnitudes of the *Stature* coefficients are twice the magnitudes in Panel C, confirming the idea that brand perception helps in differentiating among firms that have been historically risky.

The signs of control variables are in line with previous research. Larger, more profitable, and less levered firms obtain better credit ratings. Similar to the estimation of forward-looking volatility, inclusion of historical volatility, as well as variables that could be associated with brand perception, such as advertising and R&D expenses, does not impact the significance and magnitude of brand *Stature* in a material way.

I verify the robustness of the results in a number of ways. First, I use credit spreads as an alternative measure of expected probability of default. To calculate credit spreads, I merge Trade Reporting and Compliance Engine (TRACE) bond yield data with bond characteristics information from the Mergent database. I then calculate value-weighted (scaled by amount outstanding) average yields

across all the bond tranches. After merging yields with the BAV data, I obtain a sample of 739 observations for the period 2002–2009. I re-estimate the two specifications using credit spreads as the dependent variable and find a negative and statistically significant effect of brand *Stature* (not reported). Second, I include additional variables that could be considered by credit agencies, and re-estimate the regressions adding depreciation, net working capital, and past stock returns as additional indicators of firm performance. The results remain similar to those presented. Finally, I verify that the estimation is not subject to sample selection, as firms that decide to obtain a credit rating are fundamentally different from those that decide to use only private debt. Following Hovakimian, Kayhan, and Titman (2012), I use *S&P500* dummy and the proportion of rated firms in a given SIC two-digit industry as instruments to model access to the public debt market (size, profitability, M/B, and tangibility are included as control variables). The results of simultaneous estimation of the selection equation and the credit ratings are similar to the ones obtained using the Ordinary Least Squares (OLS) regression.

Overall, the results in Table 5 demonstrate that brand *Stature* reduces the probability of default, as captured by credit ratings. The effect is especially pronounced for the subsample of firms that have been historically volatile. These findings suggest that the influence of strong brands is particularly beneficial to improving the forward-looking financial stability of potentially risky firms.

## 5. Brand perception and financial policy

This section tests the main hypotheses of the paper: the impact of positive brand perception on financial policy. If favorable brand perception secures future payoffs to bondholders, then firms should be able to borrow more. In addition, secured future cash flows, as well as easier access to the debt market, should reduce the cash level firms need to hold for precautionary reasons. Taken together, I hypothesize that strong brand perception alleviates financial frictions and increases net debt capacity. Below, I evaluate the impact of brand *Stature* on each of these variables (leverage and cash holdings) separately.

### 5.1. Leverage

First, I consider whether firms take advantage of lower forward-looking riskiness by taking on more debt. I start with a univariate analysis of the relation between brand perception and capital structure and examine the *Stature*-leverage pattern, controlling for size. Each year the sample is partitioned into five quintiles based on *Sales*, and then five brand *Stature* quintiles are formed within each *Sales* group. Panel A of Table 6 presents average book and market leverage levels for each *Size-Stature* group. Consistent with previous studies, I find that size affects leverage: Large firms in all *Stature* quintiles (with the exception of *High stature*) hold considerably more leverage than firms in the lowest size quintile, and the differences are particularly pronounced for firms in the lowest *Stature* quintile. At the same time, there is a significant variation in

**Table 6**Brand *Stature* and financial policy: univariate analysis.

This table presents a comparison of equally weighted group means for measures of leverage (Panel A), and cash holdings (Panel B), all based on the 1993–2009 sample period. The quintiles are formed by first partitioning the BAV sample by *Sales*, and then partitioning each size quintile by *Stature* quintiles. *Sales* are the total net sales expressed in millions of constant 1993 dollars. *Stature* measures brand loyalty and quality perception, and is calculated as the standardized product of *Knowledge* (how well consumers know the brand) and *Esteem* (how much regard and loyalty consumers have towards the brand). *Leverage* is the sum of short-term and long-term debt, scaled by book or market value of assets; *Cash* is cash and short-term investments, scaled by assets or sales.

	Small	2	3	4	Large	Small	2	3	4	Large
Stature/sales quintile	Book leverage					Market leverage				
Panel A: Leverage										
Low	0.06	0.14	0.18	0.23	0.25	0.04	0.09	0.13	0.16	0.17
2	0.16	0.15	0.21	0.27	0.26	0.12	0.10	0.15	0.19	0.18
3	0.20	0.21	0.25	0.30	0.26	0.14	0.15	0.18	0.22	0.19
4	0.14	0.30	0.24	0.21	0.28	0.10	0.17	0.15	0.14	0.20
High	0.29	0.32	0.33	0.32	0.22	0.16	0.20	0.17	0.17	0.13
Difference (high-low)	0.23	0.17	0.15	0.09	−0.03	0.12	0.11	0.04	0.01	−0.04
t-Stat (high-low)	6.86	5.89	6.67	4.27	−1.33	6.20	5.86	2.48	0.51	−2.08
	Small	2	3	4	Large	Small	2	3	4	Large
Stature/sales quintile	Cash/assets					Cash/sales				
Panel B: Cash holdings										
Low	0.34	0.25	0.23	0.15	0.14	0.40	0.41	0.37	0.21	0.23
2	0.22	0.20	0.12	0.13	0.13	0.19	0.19	0.11	0.19	0.20
3	0.22	0.13	0.14	0.13	0.12	0.16	0.15	0.13	0.14	0.19
4	0.21	0.13	0.13	0.13	0.13	0.16	0.10	0.12	0.14	0.18
High	0.13	0.10	0.07	0.07	0.13	0.11	0.07	0.07	0.08	0.19
Difference (high-low)	−0.20	−0.16	−0.16	−0.07	−0.01	−0.29	−0.33	−0.30	−0.14	−0.04
t-Stat (high-low)	−7.65	−7.91	−7.60	−5.11	−0.76	−7.03	−8.00	−8.02	−5.95	−1.29

the average leverage level across brand value groups. Even controlling for size, leverage increases for firms with higher *Stature* in all but the largest *Sales* groups, and the differences are statistically and economically significant. The differences are most pronounced among the smallest firms: the difference in book (market) leverage between high and low *Stature* is 23% (12%).

Table 7 presents results of a multivariate analysis of estimating leverage as a function of customer brand perception and a variety of control variables used in previous capital structure research. Each specification is estimated using a Tobit model, which accounts for zero-leverage firms (about 10% of the sample). Consistent with the univariate analysis, I find a positive and significant effect of *Stature* on *Leverage*. Its magnitude in Specification 1 is 0.01 in the market leverage and 0.03 in the book leverage estimation. The larger magnitude of the *Stature* coefficient in the book leverage regression is not surprising, since positive brand perception also increases the market value of the firm, and decreases the market leverage ratio.

Specification 2 presents the results of alternative specifications to insure that the relation between brand perception and leverage is not driven by established and mature firms, which could have easy access to external capital markets and, at the same time, better reputations in the product market. Thus, established firms could obtain more resources to invest in enhancing the quality of their products or to use marketing strategies, such as promotions and advertising, to alter consumer attitudes

towards the firm's products. I address this possibility by including an interaction term between *Stature* and *Sales*. If the relation between brand perception and leverage is driven by established firms that are also financially unconstrained, then the interaction term should have a positive coefficient, as size will proxy for financial maturity and reputation. In fact, *Stature\*log(sales)* has a negative and significant coefficient in all specifications, consistent with the univariate analysis, and suggesting that the impact of brand perception is more pronounced among small firms. Thus, a one standard deviation increase in *Stature* is associated with a 2.2% increase in market leverage for a median-sized firm, but allows for more than 4% of additional debt capacity for a firm in the 25th percentile of the sample. Given that the mean market leverage of the sample is about 18%, this translates into over 20% of additional debt capital. These results are important in addressing the omitted variable explanation. It seems unlikely that smaller firms invest more in brand management than larger firms, especially considering the higher costs of access to external capital markets that they incur. At the same time, the results are consistent with the riskiness channel: Lower volatility of the future cash flow is especially beneficial for firms that, all else being constant, are considered risky. In sum, positive product reputation benefits the financial position of small borrowers the most.

The control variables are generally in line with previous studies. M/B has a negative impact on leverage, and firm size allows for more debt capacity, consistent with other



Table 7

Cross-sectional regression of leverage.

This table reports the results of the Tobit estimation of book and market leverage (Panel A and Panel B, respectively), all based on the 1993–2009 sample period. *Leverage* is the sum of short-term and long-term debt scaled by book (market) value of assets. *Stature* measures brand loyalty and quality perception, and is calculated as the standardized product of *Knowledge* (how well consumers know the brand) and *Esteem* (how much regard and loyalty consumers have towards the brand). *Log(sales)* is total sales, in millions of constant 1993 dollars, converted to logarithms. *M/B*, market-to-book ratio, is the market value of equity plus the book value of assets minus preferred stock plus deferred taxes, scaled by book assets. *EBITDA* is the ratio of operating income before depreciation to total assets. *S&P500* is a dummy variable that equals one if a firm belongs to the S&P 500 index, and zero otherwise. *Log(age)* is calculated starting from the first year the firm appeared in the Compustat database. *Tangibility* is defined as net property, plant, and equipment divided by book assets. *Advertising/sales* and *R&D/sales* are the overall amount of advertising and R&D expenses, respectively, scaled by total sales. *Hist volatility (EBITDA)* is the standard deviation of *EBITDA* in the previous 5 years. All explanatory variables are lagged by one period. All estimation models include year and industry fixed effects (at the SIC two-digit level). Standard errors are reported in parentheses and are based on heteroskedasticity-consistent errors adjusted for clustering across firms. The symbols \*\*\*, \*\*, and \* indicate *p*-values of 1%, 5%, and 10%, respectively.

	Panel A: Book leverage			Panel B: Market leverage		
	(1)	(2)	(3)	(1)	(2)	(3)
<i>Intercept</i>	−0.02 (0.08)	0.05 (0.08)	−0.03 (0.07)	−0.04 (0.05)	0.01 (0.05)	−0.022 (0.05)
<i>Stature</i>	0.03*** (0.01)	0.30*** (0.07)	0.30*** (0.07)	0.01* (0.01)	0.18*** (0.04)	0.17*** (0.04)
<i>Log(sales)</i>	0.01* (0.01)	0.002 (0.01)	0.01 (0.01)	0.01*** (0.005)	0.01 (0.01)	0.01** (0.005)
<i>Stature*log(sales)</i>		−0.03*** (0.01)	−0.03*** (0.01)		−0.02*** (0.01)	−0.02*** (0.005)
<i>M/B</i>	−0.03*** (0.01)	−0.02*** (0.01)	−0.02*** (0.01)	−0.04*** (0.005)	−0.03*** (0.005)	−0.03*** (0.005)
<i>EBITDA</i>	0.0004 (0.02)	0.004 (0.02)	0.008 (0.02)	−0.02 (0.01)	−0.01 (0.01)	−0.01 (0.01)
<i>S&amp;P500</i>	−0.01 (0.01)	−0.01 (0.01)	−0.005 (0.01)	−0.004 (0.01)	−0.003 (0.01)	−0.001 (0.01)
<i>Log(age)</i>	0.08 (0.1)	−0.01 (0.1)	−0.02 (0.12)	−0.002 (0.06)	−0.06 (0.06)	−0.09 (0.07)
<i>Tangibility</i>	−0.01 (0.08)	0.004 (0.07)	0.005 (0.08)	−0.007 (0.05)	0.001 (0.05)	0.002 (0.05)
<i>Advertising/sales</i>			0.30** (0.14)			0.14* (0.083)
<i>R&amp;D/sales</i>			−0.45*** (0.18)			−0.32*** (0.113)
<i>Hist volatility(EBITDA)</i>			0.15** (0.07)			0.03 (0.05)
<i>Number of obs.</i>	2572	2572	2572	2569	2569	2569
<i>Number of clusters</i>	468	468	468	468	468	468
<i>Chi-squared</i>	843.2	947.1	999.0	1132.6	1211.8	1252.7

capital structure findings. The effect of R&D expenses, included in Specification 3, is also negative suggesting that product development increases uniqueness, and reduces the redeployability of assets in liquidation. Interestingly, the coefficients of advertising expenses have a positive sign, and confirm the idea that rather than being another proxy for asset uniqueness, advertising helps create intangible value through enhancing brand strength. The historical volatility of EBITDA does not have a negative impact on capital structure, in line with the previous discussion about fundamental differences between past- and forward-looking cash flow volatility. It is somewhat unusual that profitability does not have a significant impact on leverage. However, it is important to note that the BAV subsample relies on a recent time period (when the impact of profitability on leverage has decreased) and also includes firms with a lower degree of information asymmetry and fewer financial constraints, so that the pecking order forces, potentially driving the negative relation between profitability and leverage, could be less significant.

I also repeat the main analysis using additional definitions of leverage. First, I exclude the short-term debt component and define leverage as long-term debt, scaled by assets. The results remain virtually unchanged. Second, I re-estimate all specifications using liabilities-to-assets as an alternative measure of debt (Welch, 2011). I do not find any material differences in the coefficient of brand *Stature* using total liabilities-to-assets. I also re-run the main specifications using additional control variables: *DivDummy*, sales growth in years ( $t-1$ ) and ( $t-2$ ), *Depreciation*, *Return*, and a *NYSE* dummy. While some of the coefficients appear to be statistically significant and have the predicted sign (for example, *Depreciation* and the *NYSE* dummy have positive impacts on leverage), they do not affect the magnitude and statistical significance of brand *Stature*.

Overall, the results of the leverage estimation are consistent with the hypothesis that consumer attitudes towards a firm's product have an economically and statistically significant impact on capital structure, even after controlling for other commonly used determinants of

**Table 8**

Cross-sectional regression of cash holdings.

This table reports the results of the OLS regression in which the dependent variable is the ratio of cash to assets in Panel A, and the ratio of cash to sales in Panel B, all based on the 1993–2009 sample period. *Stature* measures brand loyalty and quality perception, and is calculated as the standardized product of *Knowledge* (how well consumers know the brand) and *Esteem* (how much regard and loyalty consumers have towards the brand). *Log(sales)* is total sales, in millions of constant 1993 dollars, converted to logarithms. *S&P500* is a dummy variable that equals one if a firm belongs to the S&P500 index, and zero otherwise. *M/B*, market-to-book ratio, is the market value of equity plus the book value of assets minus preferred stock plus deferred taxes, all scaled by book assets. *EBITDA* is the ratio of operating income before depreciation to total assets. *Tangibility* is defined as net property, plant, and equipment divided by book assets. *Wcap* is working capital net of cash, scaled by assets. *Capex* is the ratio of capital expenditures to total assets. *DivDummy* is a dummy variable that equals one if a firm pays out dividends, and zero otherwise. *Advertising/sales* and *R&D/sales* are the overall amount of advertising and R&D expenses, respectively, scaled by total sales. *Hist volatility(EBITDA)* is the standard deviation of *EBITDA* in the previous five years. All explanatory variables are lagged by one period. All estimation models include year and industry fixed effects (at the SIC two-digit level). Standard errors are reported in parentheses and are based on heteroskedasticity-consistent errors adjusted for clustering across firms. The symbols \*\*\*, \*\*, and \* indicate *p*-values of 1%, 5%, and 10%, respectively.

	Panel A			Panel B		
	(1)	(2)	(3)	(1)	(2)	(3)
<i>Intercept</i>	0.45*** (0.047)	0.411*** (0.045)	0.408*** (0.047)	0.389*** (0.09)	0.335*** (0.084)	0.446*** (0.086)
<i>Stature</i>	−0.017*** (0.005)	−0.156*** (0.031)	−0.138*** (0.03)	−0.022*** (0.008)	−0.21*** (0.058)	−0.188*** (0.056)
<i>Log(sales)</i>	−0.019*** (0.005)	−0.014*** (0.005)	−0.015*** (0.005)	−0.025*** (0.009)	−0.018*** (0.009)	−0.03*** (0.009)
<i>Stature*Log(sales)</i>		0.016*** (0.004)	0.015*** (0.003)		0.022*** (0.007)	0.022*** (0.007)
<i>S&amp;P500</i>	−0.016 (0.011)	−0.018* (0.011)	−0.026*** (0.01)	0.008 (0.02)	0.004 (0.02)	−0.017 (0.017)
<i>M/B</i>	0.03*** (0.004)	0.028*** (0.004)	0.023*** (0.004)	0.028*** (0.006)	0.025*** (0.006)	0.018*** (0.006)
<i>EBITDA</i>	−0.117** (0.05)	−0.076 (0.051)	0.014 (0.051)	−0.287*** (0.071)	−0.231*** (0.07)	−0.113* (0.06)
<i>Tangibility</i>	−0.147*** (0.036)	−0.145*** (0.035)	−0.148*** (0.035)	−0.119** (0.055)	−0.117** (0.055)	−0.144*** (0.053)
<i>Wcap</i>	−0.287*** (0.043)	−0.279*** (0.043)	−0.252*** (0.044)	−0.236*** (0.059)	−0.226*** (0.059)	−0.18*** (0.055)
<i>Capex</i>	0.062 (0.092)	0.009 (0.093)	0.014 (0.089)	0.037 (0.128)	−0.033 (0.131)	0.033 (0.125)
<i>DivDummy</i>	−0.013 (0.01)	−0.012 (0.01)	−0.01 (0.01)	0.002 (0.017)	0.003 (0.017)	0.01 (0.016)
<i>Advertising/sales</i>			−0.169 (0.11)			−0.492*** (0.188)
<i>R&amp;D/sales</i>			0.455*** (0.1)			1.345*** (0.23)
<i>Hist volatility(EBITDA)</i>			0.152* (0.085)			−0.254*** (0.095)
<i>Number of obs.</i>	2568	2568	2568	2568	2568	2568
<i>Number of clusters</i>	465	465	465	465	465	465
<i>R-squared adj.</i>	0.52	0.53	0.56	0.420	0.43	0.46

leverage. The positive impact of *Stature* on *Leverage* suggests that consumer brand perception reduces bankruptcy risk and guarantees higher and more stable cash flows, providing firms with more debt capacity.

More broadly, the findings of this subsection complement existing research that examines the link between cash flow volatility and other firm characteristics. Brand *Stature* can be viewed as a forward-looking measure of a firm's riskiness, as opposed to commonly used volatility measures based on past firm performance. Therefore, the results help explain mixed empirical conclusions on the relation between historical cash flow volatility and capital structure.<sup>12</sup> Because historical data are a noisy proxy for

future performance, brand *Stature* provides incremental information and lends empirical support for the validity of the negative relation between cash flow volatility and leverage.

## 5.2. Cash holdings

Having demonstrated that brand *Stature* is associated with higher levels of leverage, I next test the final hypothesis that brand perception should affect the levels of cash holdings. Following the methodology of the previous subsection, I start with a univariate analysis of cash holdings scaled by assets and sales, across *Sales-Stature* groups. The results are presented in Panel B of Table 6. Consistent with previous studies, I find that size plays an important role in cash holding policies. Larger firms hold significantly less cash than small firms, and the pattern

<sup>12</sup> Parsons and Titman (2009, pp. 14–16) provide an overview of existing literature on the topic.

linearly declines across size groups. Keeping size constant, cash holdings decrease across *Stature* groups, consistent with the predictions, outlined in Section 2. The difference is the most pronounced for the smallest size quintile. Thus, firms in the bottom *Stature* quintile hold 34% of their assets as cash and liquid securities (scaled by assets), whereas firms in the top *Stature* group hold only 13%. The differences are even more pronounced when analyzing cash holdings scaled by *Sales*.

I proceed with the multivariate analysis and estimate cash holdings as a function of *Stature* and common control variables. The results are presented in Table 8 (in Panel A cash holdings are scaled by total assets, and in Panel B by total sales). Consistent with previous literature, I find that cash holdings decrease with size and net working capital, which can be considered a substitute for cash. More profitable and tangible firms also hold less cash, as their probability and costs of financial distress are lower. At the same time, firms with more growth opportunities, as captured by *M/B*, accumulate cash to finance future projects. To verify the robustness of the results for cash holdings, in unreported regressions I include additional control variables—(*Log(age)*, sales growth in years (*t*–1) and (*t*–2), *Depreciation*, *Return*, *NYSE*)—and obtain results similar to the ones reported here.

To ensure that the results are not driven by firms with an established reputation in both financial and product markets, I alter the baseline specification by adding the interaction of *Stature* and *Sales* (Specification 2). The *Stature\*log(sales)* interaction term is statistically significant, indicating that the impact of *Stature* on cash holdings is more pronounced for smaller firms. In terms of magnitude, a median firm that experiences a one standard deviation increase in brand perception reduces its cash holdings by over 3%, while a firm in the 25th percentile reduces it by almost 6%. Specification 3 also includes past cash flow volatility, as well as size-scaled advertising and R&D expenses. The coefficients of *Stature*, as well as its interaction with size, remain practically unchanged. Similar to the leverage estimation, the coefficients of *Advertising/sales* and *R&D/sales* have opposite signs, suggesting that while R&D could proxy for investment opportunities, the role of advertising is different, as it allows firms to hold less cash.

The findings for cash holdings, together with the results on leverage, robustly demonstrate that firms with strong brand *Stature* hold significantly more net debt (debt minus cash holdings, all scaled by book assets). Net debt, commonly used by practitioners, shows how well firms can manage their debt. Given a fixed debt level, a firm with more cash reserves is better able to handle financial troubles than a similar firm with lower cash reserves. The higher levels of net debt among firms with high *Stature* provide evidence that firms with strong brand perception have lower expected costs of financial distress, which allows them to maintain a high level of net debt. Moreover, the results for both leverage and cash holdings are more pronounced among small firms, contradicting potential explanations that established and mature firms with access to external capital markets invest more in building their brand perception among consumers.

## 6. Alternative explanations

While this paper focuses on cash flow stability as the main channel through which characteristics of intangible assets affect financial policy, it is possible that additional mechanisms link brand perception and corporate decisions. This section discusses the extent to which alternative explanations could apply.

### 6.1. Endogeneity and reverse causality

Below, I examine three possible sources of endogeneity. First, I consider the reverse causality explanation, according to which leverage affects brand perception. Second, I discuss whether proximity to financial distress, as proxied by credit ratings, could have an impact on brand perception and thus drive the negative relation between credit ratings and brand. Finally, I ask whether firms with valuable brands choose to take actions that improve their credit ratings.

#### 6.1.1. Brand perception and leverage

I begin by examining the extent to which the positive relations between brand perception and leverage is driven by the reverse causality argument, suggesting that financial leverage could dictate a firm's product market behavior and affect brand strength. Thus, firms with higher leverage could choose to compete more aggressively and strategically allocate more resources to enhance their brand value. While this explanation is plausible, the negative relation between brand perception and cash holdings, documented in this paper, undermines it. Studies by [Telser \(1966\)](#), [Bolton and Scharfstein \(1990\)](#), and [Fresard \(2010\)](#) have shown that deep-pocketed firms increase their output and gain market share at the expense of industry rivals. Therefore, firms that compete more aggressively should hold more cash as part of their product market strategy. The results of this paper show the opposite. Firms with stronger brand perception hold less cash, which is inconsistent with the explanation that links strategic debt and cash holdings to product market competition.

#### 6.1.2. Brand perception and the probability of bankruptcy

Another alternative explanation is that brand perception is affected by the financial stability of the firm. Specifically, proximity to financial distress could impose additional costs on customers ([Titman, 1984](#)), altering their opinion of a brand. For example, a consumer considering a new laptop purchase could avoid buying one from a firm that is about to default, as default would affect the availability of future customer support. Consumers of nondurable products may also revise their brand perception downwards if they anticipate that, near bankruptcy, a food manufacturer will switch to low quality ingredients, or that an apparel retailer will carry a smaller variety of items.

To address this possibility, I examine changes in brand perception around credit rating downgrades. I perform a difference-in-differences analysis by matching each downgraded firm to a control firm of a similar size and brand

**Table 9**

Changes in brand perception around credit rating downgrades.

This table presents summary statistics of the changes in brand *Stature* around credit rating downgrades between period 2001 and 2009. The subsample in Panel A includes all downgrades. The subsample in Panel B-1 consists of A-rated firms that were downgraded to a lower investment-grade rating. Panel B-2 includes firms that were downgraded from an investment to a non-investment rating. The subsample in Panel B-3 consists of non-investment grade firms that were downgraded to a lower non-investment grade credit rating. For every event firm, one matching firms is selected by first identifying the subsample of non-event firms based on belonging to the same quintile of *Sales* and *Stature* as of period ( $t-1$ ), and then picking the firm with the closest *Stature*. The table reports the mean changes over time and between event and control firms, as well as  $t$ -statistics.

Panel A: All downgrades							
Period	# Obs	Event firms		Control firms		Event-control	
		Change	$t$ -Stat	Change	$t$ -Stat	Change	$t$ -Stat
$t - (t-2)$	83	-0.14	-5.22	-0.07	-3.09	-0.08	-2.55
$t - (t-1)$	113	-0.07	-4.65	-0.03	-2.16	-0.04	-1.89
$(t+1) - t$	103	-0.09	-5.24	-0.06	-3.16	-0.03	-1.36
$(t+2) - t$	88	-0.14	-6.65	-0.11	-3.59	-0.03	-0.96
Panel B-1: Downgrades of A-rated firms to a lower investment-grade rating							
Period	# Obs	Event firms		Control firms		Event-control	
		Change	$t$ -Stat	Change	$t$ -Stat	Change	$t$ -Stat
$t - (t-2)$	30	-0.22	-5.15	-0.09	-2.04	-0.13	-2.63
$t - (t-1)$	41	-0.11	-3.96	-0.05	-1.86	-0.06	-1.58
$(t+1) - t$	39	-0.09	-2.86	-0.09	-2.37	0.00	0.02
$(t+2) - t$	35	-0.16	-3.44	-0.13	-2.3	-0.02	-0.38
Panel B-2: Downgrades from investment to non-investment grade rating							
Period	# Obs	Event firms		Control firms		Event-control	
		Change	$t$ -Stat	Change	$t$ -Stat	Change	$t$ -Stat
$t - (t-2)$	20	-0.15	-2.20	-0.11	-2.28	-0.04	-0.66
$t - (t-1)$	28	-0.05	-1.37	-0.08	-2.37	0.04	0.97
$(t+1) - t$	27	-0.07	-2.15	-0.01	-0.29	-0.07	-1.51
$(t+2) - t$	21	-0.07	-2.18	-0.05	-0.91	-0.01	-0.21
Panel B-3: Downgrades of non-investment grade firms							
Period	# Obs	Event firms		Control firms		Event-control	
		Change	$t$ -Stat	Change	$t$ -Stat	Change	$t$ -Stat
$t - (t-2)$	23	-0.11	-2.20	-0.05	-1.07	-0.07	-1.23
$t - (t-1)$	32	-0.05	-2.81	-0.01	-0.35	-0.04	-1.30
$(t+1) - t$	26	-0.12	-3.77	-0.08	-2.81	-0.04	-1.30
$(t+2) - t$	22	-0.13	-4.46	-0.12	-3.61	-0.01	-0.28

strength. A matched firm is selected from the subsample of firms that have not experienced a downgrade based on belonging to the same quintile of *Sales* and *Stature* as of period ( $t-1$ ), and then choosing the firm with the closest *Stature* to the *Stature* of the event firm. Since calculating differences in *Stature* requires data for at least two consecutive years, the analysis is limited to the period 2001–2009.

Panel A of Table 9 summarizes the results for the entire spectrum of credit rating downgrades. Overall, both the event and control firms experience significant erosion in brand perception over time. This trend is consistent with the marketing literature, which shows that consumer attitudes towards brands have been sharply declining in the past decade (see, e.g., Gerzema and Lebar, 2008). To differentiate the time-series trend from the effect of the credit ratings downgrade, I test whether the

differences between event and control firms are significant around the downgrade. The last column of Panel A indicates that net brand perception has experienced a significant decrease during the two years prior to the downgrade, but not after the downgrade. Overall, the pattern is more consistent with the explanation that credit ratings agencies downgrade firms in response to weakening of their brands rather than with the explanation that consumers respond to downgrades by revising their opinion of a brand.

It is possible, however, that consumers adjust their brand perception before the actual downgrade, since in addition to credit ratings, S&P releases outlooks, indicating that the credit ratings can be lowered or raised in the next 6-month to 2-year period. Therefore, consumers could update their opinions of a firm following a release of a negative outlook, rather than after the actual downgrade.



To address this possibility, I examine how credit ratings downgrades affect brand perception along different points of the credit rating spectrum. If the spillover effect from financial to product market plays a role, then the decrease in brand perception prior to the downgrade should be driven by those downgrades that result in a lower credit rating, since the threat of bankruptcy becomes more acute. At the same time, consumers should be less likely to react negatively to downgrades within the investment-grade range, as the increase in probability of financial distress is negligible.

Panel B examines whether changes in brand perception vary along different points of the credit rating spectrum. To identify critical points along the credit rating spectrum, I select three subsample groups among the overall sample of downgraded firms. The first, or benchmark group, consists of A-rated firms that were downgraded to a lower investment-grade credit rating. This group should have the smallest *Stature* reaction, as the increase in probability of default in this range is minor. The second group includes firms that were downgraded from an investment- to a sub-investment grade rating, and the third group consists of firms that were downgraded within the sub-investment grade range. Both the second and third groups should experience a steeper decline in brand perception compared to firms in the first group, as the drop below investment-grade rating, as well as a downgrade within the sub-investment range, significantly increase the probability of bankruptcy.

The summary of the changes in brand *Stature* around downgrades of different ratings groups is presented in Panel B. Overall, the changes in brand *Stature* prior to the downgrade are significant only among the A-rated firms that remained in the investment-grade territory following the downgrade, as they lose 0.13 of their brand *Stature* compared to their peers between years ( $t-2$ ) and  $t$ . The net changes in brand perception between sample and control groups are statistically insignificant for firms that experienced a more substantial drop in ratings, and either moved from an investment- to a non-investment grade group, or were downgraded within the “junk” rating territory. Taken together, these results are the exact opposite of the spillover effect predictions. The change in brand *Stature* of firms that were downgraded from an investment- to a sub-investment grade is somewhat larger in magnitude in the year following the downgrade ( $-0.07$  compared to  $0.0$ ), but the differences are statistically insignificant. A similarly insignificant pattern in the post-downgrade consumer reaction emerges from examining the differences in brand perception among the group of sub-investment grade firms. Taken together, there is no evidence that consumers revise their brand perceptions more significantly around downgrades that result in a substantial spike in bankruptcy risk.

To further ensure the robustness, I perform additional tests by using two alternative ways to isolate spikes in bankruptcy risk. First, I identify all firms whose Altman's Z-score dropped below 1.81 between years ( $t-1$ ) and  $t$ .<sup>13</sup>

Similar to the reported results, I do not find that firms experience a loss of brand strength either before or after a drop in Altman's Z-score below the critical threshold. Second, I study the response of brand *Stature* to changes in credit spreads. If credit spreads change after market participants update their beliefs about the probability of bankruptcy, then the more the spreads widen, the more extreme should be the changes in *Stature* around the event. I split all firms in the BAV sample into deciles of credit spread changes and calculate changes in *Stature*. The results indicate that brand *Stature* does not experience a significant decline before or after acute widening of the spreads, and there is also no pattern when moving across the deciles of spread changes.

### 6.1.3. Brand perception and credit ratings management

Another potential interpretation of the positive relation between brand strength and credit ratings is based on the idea by Hovakimian et al. (2012) that firms have optimal default probabilities in mind, and they manage their financial policies accordingly. It is possible, then, that strong brand creates an incentive to maintain higher levels of credit ratings due to higher costs of financial distress. Hovakimian et al. (2012) show that firms with high advertising expenses target lower probability of default. A similar explanation could also apply to brand capital, suggesting that firms with valuable brands face higher costs of distress.

To address this concern, I ask whether the explanation that strong brand creates an incentive to preserve higher credit ratings over time is consistent with the firms' actual financial policy. If firms with high *Stature* target higher credit ratings, they should also have lower leverage, since capital structure adjustments are the primary tool in credit ratings management (Kisgen, 2009; Hovakimian et al., 2012). However, I find the opposite. As demonstrated in Tables 6 and 7, firms with strong brand perception hold more debt on average than firms with weaker brands. In addition, firms with high *Stature* hold smaller cash reserves. Taken together, the results are inconsistent with the bankruptcy costs explanation and suggest that strong brands provide an advantage in obtaining good credit ratings with smaller financial adjustments needed.

## 6.2. Agency problems

The findings of the paper are potentially consistent with an agency explanation, as market competition is considered one of the managerial disciplining devices (see, among others, Alchian, 1950; Stigler, 1958; Hart, 1983). A loyal pool of consumers can insulate the firm from the industry competitors and reduce the impact of market competition. As a result, agency problems between managers and shareholders intensify. However, the outcome of agency conflicts should be hoarding cash and holding less debt, which restricts managerial discretion (Jensen, 1986). This paper finds the opposite.

(footnote continued)

as a more realistic cutoff, following a significant increase in the average Z-scores during 1990–2000.

<sup>13</sup> The Z-score test of this subsection is based on the original definition of Altman's Z-score, rather than the modified one, and includes the leverage component. The threshold point is based on Altman (2000), who advocates using a lower bound of the zone-of-ignorance of (1.81)

It is still possible, though, that firms decide to use higher debt levels and lower cash holdings as a mechanism to mitigate the agency problems. For example, managers can voluntarily restrict themselves from overuse of funds by choosing higher debt levels and lower cash reserves to maintain a favorable reputation among shareholders. To address this concern, I examine whether the substitution effect associated with intensified agency problems could be the actual driver of the results by analyzing the entrenchment index of the corporate governance provisions suggested by [Bebchuk, Cohen, and Ferrell \(2009\)](#).<sup>14</sup> If the hypothesis is correct, the index should be lower among firms with stronger brand perception. I split the sample into quintiles of *Stature* and compute the average entrenchment index for each group. I find that the difference between the top and the bottom quintiles is negative (although insignificant), indicating that firms with stronger brand perception could have better corporate governance. I also add the entrenchment index to the regressions of leverage and find that it does not influence the results (unreported).

### 6.3. Information asymmetry

Higher brand perception could affect information asymmetry of the firm. For example, [Chemmanur and Yan \(2009, 2010b\)](#) and [Grullon et al. \(2004\)](#) show that advertising affects the overall visibility of a firm and reduces information asymmetry. Although advertising and brand perception are quite different concepts, it is still plausible that strong brand perception of a firm's products enhances investors' interest and leads to more research on its operations. The empirical results for cash holdings are consistent with this explanation: Firms with lower information asymmetry have lower costs associated with raising debt, and therefore, do not need to hold much cash. However, information asymmetry does not explain the positive link between brand perception and leverage. If firms with stronger brand perception enjoy lower information asymmetry, the impact should be stronger for equity than for debt due to the option-like structure of the equity payout. Therefore, if the explanation is correct, the leverage level of firms with strong brand perception should actually be higher.

### 6.4. Profitability

Higher brand perception can affect financial decisions through profitability rather than through the cash flow volatility channel. If demand for a firm's product is more inelastic among loyal customers, the firm will exploit this characteristic by charging higher prices. As an outcome, brand stability will affect financial decisions through level of profitability rather than through its future stability.

To explore this concern, I first calculate the simple correlation between brand perception and profitability.

The analysis in [Table 1](#) demonstrates that the correlation between *Stature* and EBITDA, at 0.17, is not particularly high. These results are consistent with brands such as McDonalds and Wal-Mart consistently scoring high on the brand *Stature* scale and suggest that some brands appeal to consumers by positioning their products as being consistently cheap.

To examine the joint relations between profitability, brand, and leverage further, I explore the leverage across *Profitability-Stature* quartiles (controlling for size), and find that *Profitability* has a negative and significant impact on debt among large firms with the highest brand *Stature*. The findings are consistent with the idea that market leaders (such as Coca-Cola in the soft beverage market) can have a different optimal product market strategy than the rest of the firms. For example, they could be more likely to adopt aggressive strategies, such as predation on competitors, or be able to set prices first (as in a Stackelberg leadership model). A wider range of potential actions in a product market can, in turn, require a more conservative financial policy.<sup>15</sup> Yet, the estimation of the overall BAV sample indicates that the channel of future cash flow volatility is the dominant one in determining the relation between brand perception and capital structure.

## 7. Conclusion

This paper demonstrates that intangible assets have an impact on corporate financial policy. I focus on characteristics of brand, which accounts for a large portion of firms' overall value and is relevant to firms across various industries. To examine the role of intangible assets, I employ a novel data set of consumer brand evaluation, the Brand Asset Valuator, which summarizes individual attitudes towards different brands using US household surveys. The main measure of this paper, brand *Stature*, captures the degree of familiarity and loyalty that consumers feel towards a certain brand. I use the *Stature* measure to test whether positive perception of a brand affects cash flow stability. Marketing literature shows that a strong brand generates a clientele of loyal consumers who have a high subjective value for the firm's products and are willing to stick with them over time. As a result, firms with favorable brand perceptions should enjoy a more stable stream of future profits and lower riskiness.

To support the validity of the cash flow stability mechanism, I demonstrate that brand *Stature* reduces forward-looking volatility of cash flows. To verify that the results also hold in periods of economic distress, I split the sample into quartiles based on brand perception, and examine the performance of firms during recession. I find that brand *Stature* insulates firms' cash flows during market downturns as well, as firms with strong brands do not lose as much as firms with weaker brands. Next, I ask

<sup>14</sup> The entrenchment index data were obtained from Lucian Bebchuk's Web site at (<http://www.law.harvard.edu/faculty/bebchuk/data.shtml>).

<sup>15</sup> Studies that demonstrate that high leverage is associated with softer competition include, among others, [Opler and Titman \(1994\)](#), [Phillips \(1995\)](#), [Chevalier \(1995a, 1995b\)](#), [Khanna and Tice \(2000\)](#), and [Campello \(2006\)](#). In addition, [Dasgupta and Titman \(1998\)](#) show that higher leverage results in softer competition in a Stackelberg model setting.

whether the lower forward-looking volatility, as proxied by brand *Stature*, is captured by credit market participants, and find that brand *Stature* improves credit ratings of historically riskier firms. After demonstrating that consumer attitude translates into lower riskiness and default probabilities, I turn to the main question of the paper and investigate whether characteristics of intangible assets have implications on the financial policy of the firm. I find that brand *Stature* has a positive impact on leverage and a negative impact on cash flows, improving the net debt position of the firm. The results hold after including historical cash flow volatility, the commonly used measure of stability, in all of the regressions. The impact of *Stature* on leverage and cash holdings remains significant, suggesting that *Stature* contains certain information about the firm not reflected in the historical measures of riskiness.

A number of additional tests are performed to rule out endogeneity concerns. First, my subsample results do not support the explanation that financially strong firms allocate more resources to an active management of its brand. For the reverse causality explanation to hold, one would expect to find stronger results among large, mature, and established firms. I find the opposite. The impact of brand is more pronounced among financially constrained, that is, small and historically volatile firms. These findings strengthen the validity of the main hypothesis and suggest that constrained firms benefit most from having a strong brand, as they receive access to external capital markets on more favorable terms. Second, I test whether the link between credit ratings and brand perception could be driven by consumers revising their opinion about products when the firm gets close to bankruptcy. I identify spikes in bankruptcy risk based on credit ratings downgrades and show that brand perception does not change significantly around those events.

Overall, the findings indicate that characteristics of intangible assets are just as significant in explaining financial policy as are tangible assets. The results also suggest that brand *Stature* can be viewed as an alternative forward-looking measure of cash flow volatility, which helps reconcile the mixed empirical evidence on the impact of cash flow volatility on leverage. In addition, this paper explores cross-sectional differences in cash flow volatility from the perspective of the product market. Irvine and Pontiff (2009) and Bates et al. (2009) show an increasing trend in cash flow volatility over time, which they attribute to more intense economic competition. This paper helps in understanding the source of volatility by examining characteristics of a firm's brand.

Lastly, this paper offers implications for firm investment policy, suggesting that young firms can benefit from developing and enhancing their brands early in their business life, because this will improve not only relationships with its customers, but also with potential investors. From the creditors' perspective, the results suggest that a due diligence process that accounts for information such as consumer opinion about the firm's products can help in identifying potentially creditworthy borrowers. Finally, the paper shows the importance of the interaction between the fields of marketing and finance, and suggests that marketing policy such as brand management, and financial policy, such as capital and cash holding decisions, are interdependent.

## Appendix A

### A.1. BAV survey

The BAV model relies on a customer-based approach and at any given year aggregates individual consumer responses along a number of dimensions that measure their attitude towards the brand. The sample consists of nearly 16,000 US households and is constructed to represent the US population, according to the following factors: gender, ethnicity, age, income group, and geographic location. Households are offered a \$5 compensation for their participation, and the response rates are more than 65%. The pilot surveys were conducted in 1993, 1997, and 1999, and starting from 2001, the survey has been undertaken yearly.

The list of brands has expanded over time and as of 2010 included more than 4,500 US and international brands and sub-brands.<sup>16</sup> The list of brands in the survey is continuously updated to include new brands and remove the brands that exit the market. To make the questionnaires manageable, the list of brands is split into groups, so that the average number of brands to be evaluated per questionnaire does not exceed 120. BAV metrics uses a randomization approach in organizing the brands in the questionnaires to avoid imposing associations with a certain industry or firm competitors.

The BAV questionnaire consists of two types of questions. The first type asks respondents to evaluate the following aspects of a brand on a seven-point scale: general knowledge of the brand, personal regard, and relevance. The second type evaluates different components of brand image and asks participants to mark an "X" if a certain characteristic applies. The examples of brand characteristics are: unique, innovative, traditional, good value. Additional questions ask respondents about the frequency of use of a certain brand as well as some demographic information.

The overall results are aggregated across respondents for any given brand-year. Some of the brand-image results are combined into pillars that capture different aspects of brand value, and others are used for additional analysis of brand characteristics. Brand *Knowledge* and *Esteem* constitute brand *Stature*, and measure the brand's loyalty and quality perception. The components of *Esteem* are (1) the proportions of respondents who consider the brand to be of "high quality," a "leader," and "reliable," and (2) the brand score on *Regard* ("how highly you think and feel about the brand" on a seven-point scale). Bronnenberg et al. (2007, 2009) use the percentage of responses to the "high quality" question, as well as the response rates to two additional questions, "good value" and "best brand," as their main measure of demand-related brand performance. I follow their approach, but use all the components of *Esteem*, as well as consumer's *Knowledge* of the brand

<sup>16</sup> Additional models using a customer-based approach include Landor Associates, which covers around 300 brands, and EquiTrend, which covers more than 1,000. Landor Associates' ImagePower, which was the first model of consumer-based surveys, was expanded into BAV in the early 1990s.

(“how well are you familiar with the brand and its products?” on a seven-point scale). The reason for using a more general measure is twofold. First, the BAV model describes brand *Stature*, the combination of *Esteem* and *Knowledge*, as an indicator of the current perception of a brand by consumers (Gerzema and Lebar, 2008), and I do not have a theoretical reason to exclude any of its components. Second, the knowledge of a brand is an essential part of capturing consumer attitude towards a product, as customers who are not familiar with the brand cannot reliably evaluate it. As a result, I believe that brand *Stature* is a more general measure of consumer attitude than the one that includes only selective components of *Esteem*.

## A.2. Merging BAV data with Compustat

Linking brands to firms is not trivial. The reason for that is that most companies have a quite complex brand hierarchy, through which they manage different products across different brand groups.<sup>17</sup> There are four major types of branding strategies. In this appendix, I describe each type of brand portfolio, as well as the merging rule that is applied for each type.

The simplest, and actually the rarest, case is a “mono-brand”: firms in which one brand represents all or most of the firm's business (for example, Starbucks, Target, and Martha Stewart Living Omnimedia). In this case the identification of the brand and the company to which it belongs is one-to-one.

The second case is a corporate brand, in which the corporate name is dominant (or is at least an element) in the product brand names (for example, Apple, Logitech, and Hewlett-Packard). For this type of firm, the link to the company is also easy, since BAV typically asks about a brand either without mentioning the product type or by using a separate entry for the overall brand name (for example, Colgate, Colgate Total, and Colgate mouthwash).

The third type of brand hierarchy is the house-of-brands strategy, in which the firm does not use its corporate name for branding its products. For example, Kimberly-Clark, one of the world's largest producers of paper-based products (whose brands include Kleenex, Huggies, and Cottonelle), keeps the company name only at the background of its product labels. BAV typically asks about the overall brand name, in addition to each of the company brands, in a separate entry. The problem that arises in this case is that the combination of brands comprising the firm's operations does not have to be similar to the overall company valuation. The reason for that is that consumers, while being quite familiar with the brand, often do not know the company it belongs to, so when asked about the company name, they cannot relate it to the brands it owns. While this question can be quite interesting for further marketing research, the purpose of this paper is to get the best approximation of brand perception at a company level. A weighted average of a

firm's brands, while potentially providing a more precise brand value proxy, creates additional problems. The first is data availability: Not all companies report the distribution of their balance sheet information at a brand level. Second, it is not clear which weights are appropriate to use: revenues, gross profits, net profits, etc. The advantage of the data used in this study is that for most of the house-of-brands firms, BAV includes the company name, in addition to the names of the brands it owns, as a separate entry. As a result, I use the BAV data for the company name rather than an aggregation of the individual brands it manages.

The final type of brand hierarchy is the mixed branding strategy, in which a firm uses its company name for some of its brands' products and employs a house-of-brands approach for the rest. The Gap Inc., which owns The Gap, Banana Republic, Old Navy, Piperlime, and Athleta brands, is a classic example of this strategy. The problem here is similar to the previous case: how to construct the best proxy for the company's overall BAV score. I use the brand with the same, or most similar, name to the company as a proxy to the firm's core business. The reasoning for this is as follows: The choice of brand hierarchy is clearly an endogenous decision of a firm. For example, Rao, Agarwal, and Dahlhoff (2004) demonstrate that branding strategy is associated with firm value. As a result, if a firm chooses to identify itself with one of its brands, it must be part of the business strategy of the firm—this brand either constitutes the core of the business or has been historically the main brand of the company, and thus consumers associate it with the firm.

Since the data are a time-series, I identify all the changes in ownerships, such as mergers, acquisitions, and spin-offs, in the BAV-Compustat bridge and change the brand-firm links accordingly. For example, I create the link of Gillette brand to the Gillette Company, but discontinue it in 2005, when the company was acquired by Procter & Gamble.

Overall, this approach of matching brands and firms is somewhat different from the one used in marketing. Marketing studies use the cases of monobrand only and do not consider more complex brand hierarchy structures (Mizik and Jacobson, 2008, 2009). I do not believe that my matching strategy introduces a systematic bias but am aware of the fact that it introduces additional noise. In the trade-off between precision and sample size, I prefer to sacrifice some degree of precision to obtain a larger sample of firms for my analysis. As a result, the final sample is almost twice as large as in the studies that use monobrand only.

I address potential biases resulting from implementing the approach described above by applying three alternative matching algorithms for house-of-brands and mixed-strategy brand portfolios. First, I use a simple average of the *Stature* of all the brands that belong to a firm. As an alternative approach, I assume that the larger the segment of a certain brand in the overall portfolio of a firm's products, the better is consumer familiarity with it. Therefore, the *Stature* of each brand is weighed by the *Knowledge* of its brand, relative to the overall *Knowledge* of the firm (sum of *Knowledge* across all the brands of a firm). In the third approach I use the brand with the maximum *Stature* as representative of the company strength. The idea behind this approach is that a firm typically starts with one brand, which becomes its core business, but as it grows, it starts introducing new brands. Since a firm can

<sup>17</sup> Rao, Agarwal, and Dahlhoff (2004) provide a comprehensive overview of different branding strategies.



always go back to its core business in a case of unsuccessful development of a new brand, the *Stature* of the most valuable brand could be the important one. I repeat the main analysis using each of the alternative merging approaches and find that using alternative matching techniques does not change the conclusions in a material way.

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