Product Demand Characteristics, Brand Perception, and Financial Policy

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Abstract

We use a proprietary database of consumer brand evaluation to explore the role of firm-specific demand characteristics in financial decisions. We hypothesize that higher and more inelastic consumer demand for a product reduces the costs of financial distress but can also intensify agency conflicts by increasing firm market power. The empirical analysis shows that firms with stronger demand take on more debt and hold less cash, suggesting that financial distress risk is the primary channel through which brand value affects financial policy. To address endogeneity issues, we instrument for characteristics of product demand by using extreme consumer responses about the actual usage of the brands and arrive at similar conclusions. Taken together, the results suggest that features of demand for a firm's products affect financial decisions and allow the firm to have higher leverage and smaller cash cushions.

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Extensive theoretical and empirical literature has examined the interaction between financial and real policy of a firm. A large group of studies has focused on the relationship between financial policy and industry factors, such as concentration ratio and competition (Chevalier (1995a, 1995b), Kovenock and Phillips (1995, 1997), Phillips (1995), Khanna and Tice (2000)), firm's relative technological position (MacKay and Phillips (2005)), and interdependence between operation of a firm and its rivals (Lyandres (2006)). At a firm level, studies have examined the interaction between capital structure and characteristics of the supply side, such as the flexibility of the production function (MacKay (2003)) and investments in R&D (Opler and Titman (1994)). Still, little is known about the interaction of the demand side with a firm's financial policy.

This study complements previous research by analyzing the cross-sectional variation in demand characteristics of the product market at a firm level. It explores the role of firm-specific demand characteristics in financial decisions using a proprietary database that measures unique attributes of product demand across firms. The database, Brand Asset Valuator (BAV), is the world's largest study of consumer evaluation across different product brands and has never been used in financial research.[1] Overall, the concept of brand can be defined as a "name, term, symbol or design … intended to identify the goods and services of one seller or group of sellers and to differentiate them from those of competitors."[2] Research in marketing has demonstrated that favorable consumer evaluations of a brand are associated with higher loyalty, higher perception of quality, and larger purchase probabilities (Starr and Rubinson (1978), Rao and Monroe (1989), Dodds, Monroe, and Grewal (1991)). As a result, consumer opinions about how much they value a brand are a natural candidate to capture demand characteristics of a firm. We aggregate consumer responses on measures of how well they know and value a brand to construct our main proxy of product demand characteristics (brand *Stature*).

Why are demand characteristics important? A critical assumption of perfect competition is that sellers provide homogeneous, or standard, goods. However, in practice, the majority of firms produce goods with somewhat different properties (or at least goods that are perceived differently by consumers). Product differentiation creates "monopolistic competition," in which a firm's market becomes separated to a degree from its competitors (Chamberlin (1933)), and as a

[1] Published academic studies, based on BAV data, include Mizik and Jacobson (2008, 2009), Bronnenberg, Dhar, and Dube (2007, 2009) and Romaniuk, Sharp, and Ehrenberg (2007).

[2] According to the American Marketing Association (AMA).

result, every firm faces a different demand curve. A shifted out and inelastic demand curve allows a firm to better utilize its monopolistic power and set higher prices, indicating a larger and more stable consumer base and higher market power of a firm compared to competitors.

How should those demand characteristics affect financial decisions? One effect is that higher and more inelastic demand reduces the expected costs of financial distress, as firms are less likely to face low states of cash flow realization. Firms with strong demand are also less prone to predatory behavior by competitors. As a result, strong consumer demand enhances the debt capacity of a firm. In addition, a firm with high and inelastic demand enjoys larger and more certain future cash flow and, therefore, can hold less cash for precautionary reasons and distribute more to its shareholders.

At the same time, inelastic demand reduces a firm's sensitivity to peer competition. Market competition is considered to be one of the managerial disciplining devices (Allen and Gale (2000)). Grullon and Michaely (2007) support this argument by demonstrating that firms in less competitive industries pay out less. Agency conflicts generates opposite predictions about the relations between demand function characteristics and a firm's financial decisions. Since stable consumer demand improves a firm's relative positioning among other firms and reduces the impact of market competition on a firm, agency problems between managers and shareholders intensify. As an outcome, firms with string demand hoard cash and distribute less to the shareholders. Firms might also choose to hold less debt, as debt also restricts managerial discretion (Jensen (1986)).

We empirically examine the two hypotheses about the effect of demand function characteristics on financial policy. The first hypothesis states that the market friction that links demand characteristics to a firm's decisions is costs of financial distress. Firms with higher and more inelastic demand have lower costs of financial distress, which allows them to hold more debt and less cash and to pay out more. The second hypothesis is an outcome of intensified agency problems, and predicts that a strong demand for a firm's products reduces the disciplinary role of market competition and, consequently, firms hold less debt, hoard cash, and pay out less. Whether demand characteristics are related to a firm's financial channel and which of the mechanisms determines the relationship is an open empirical question.

We estimate each of the dependent variables (leverage, cash holdings, and payout ratio of a firm) as a function of brand *Stature*, the aggregate measure of demand characteristics, and a set of commonly used control variables and demonstrate that the properties of consumer demand

have an economically and statistically significant impact on capital structure and cash holdings. The empirical results provide support for the first hypothesis, suggesting that the impact of consumer demand on the costs of financial distress dominates its impact through more acute agency problems. We find that firms with stronger demand hold more leverage: a one-standard deviation increase in brand *Stature* increases debt holdings by about 16%. Those firms also hold less cash, compared to firms with similar accounting and financial characteristics. We do not find a robust impact of consumer demand on payout policy. While the general relation is, overall, positive, it is not statistically significant in all specifications. To understand more deeply the relative contribution of consumer demand characteristics, we perform a variance decomposition analysis and find that *Stature* contributes to the explanatory power at least as much as the standard control variables, suggesting that it can be responsible for the large component of the firm fixed effects in cross-sectional leverage estimation. Taken together, the results suggest that consumer demand characteristics are important in explaining financial policy of a firm, and financial distress risk is the primary channel through which consumer demand affects financial policy.

We perform additional tests to enhance the validity of our main results. For example, the results above can be explained also by the substitution model of agency costs. If managers of firms with strong demand anticipate a harshening of agency problems, they may voluntarily restrict themselves from potential overuse of a firm's funds. By choosing higher debt levels, lower cash reserves, and higher payouts, they are able to maintain a favorable reputation of operating in the best interests of the shareholders. To address this concern, we use the entrenchment index of the corporate governance provisions, suggested by Bebchuk, Cohen, and Ferrell (2009). If managers are indeed willing to forego some of the power to signal their intentions, we should observe a lower corporate governance index for firms with stronger demand. However, we find that entrenchment index is actually higher among those firms, consistent with the outcome, rather than substitution, explanation. Including the entrenchment index to the regression specifications does not influence the main results.

Another obvious concern for the validity of the results above is the issue of endogeneity. Firms may try to affect consumer demand by improving the quality of their products or altering consumer opinions about the brand through advertising. The reverse causality argument predicts that a firm's capital structure determines how aggressively it competes in prices, R&D, and

advertising.[3] Some omitted factors may also play a role. To address those issues, we use a piece of the BAV survey data that is correlated with consumer view of a brand but is unlikely to be correlated with the firms' financial policy. Specifically, we use the percentage of household responses to the questions "the one I prefer to buy/use" and "the one I would never buy/use" as instruments for consumer perception of a product. The variables have several advantages. First, they are formed through an individual experience of respondents with a certain brand and, therefore, better reflect the match (mismatch) between product qualities and consumer preferences. Second, due to their intensity, these measures are not likely to be affected by the contemporaneous market policy of a firm, such as price cuts or extensive advertising.[4] We re-estimate the main regressions using 2SLS technique and find support for the main results that stronger consumer demand has a positive impact on capital structure and a negative impact on cash holdings.

This paper makes several contributions to the existing research. First, it adds to the literature on product market and financial decisions by identifying potential channels that link characteristics of consumer product demand to financial decisions of a firm and evaluates the impact of those characteristics. While previous studies on product market characteristics mainly focus on capital structure decisions, this paper takes a broader approach and explores a variety of a firm's financial policy components (capital structure, cash holding, and payout).

Second, this paper complements capital structure research that examines the link between the properties of a firm's assets/liabilities and financial leverage. Although recent studies have mainly focused on the impact of tangible assets characteristics (Benmelech (2009), Benmelech and Bergman (2009), Campello and Giambona (2010)), little has been done to examine characteristics of the intangible side of the assets. While the literature so far concludes that capital can be borrowed mainly against tangible assets (Rampini and Vaswinathan (2010)), this paper demonstrates that characteristics of the firm's intangible assets, such as brand stature, also provide debt capacity. As a result, this study adds to the relatively limited literature on how the properties of the off-balance sheet assets and liabilities, such as leases and pension plans (Graham, Lemmon, and Schallheim (1998), Shivdasani and Stefanescu (2009)), affect the firm's financial activities. In addition, this paper introduces an alternative forward-looking measure of

[3] See, for example, theoretical models by Brander and Lewis (1986) and Bolton and Scharfstein (1990).

[4] Literature in psychology has provided extensive evidence that strong attitudes are resistant to change, persistent over time, and predictive of behavior (Pomerantz et al. (1995)).

cash flow volatility and addresses the mixed empirical conclusions on the relations between cash flow volatility and capital structure.[5]

Lastly, this study contributes to a small number of finance papers that map marketing concepts, such as advertising and brand perception, into financial theory. Most of those studies look at the link between firm characteristics and advertising (Grullon, Kanatas, and Weston (2004)), Chemmanur and Yan (2010a, 2010b). Additional studies examine the relations between advertising and capital structure decisions (Chemmanur and Yan (2009), Grullon, Kanatas, and Kumar (2006)). Finally, Frieder and Subrahmanyam (2005) examine the impact of brand on a firm's ownership structure. Our study incorporates a new data set that captures consumer subjective evaluation of a firm's products and demonstrates that, in addition to visibility created by advertising, marketing characteristics interact with firm's financial decisions through other channels. More broadly, the study emphasizes the link 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.

The rest of the paper is organized as follows: Section I develops the main hypotheses of the paper; Section II describes the data; and Section III presents the main results. In Section IV we address the endogeneity concerns, and Section V verifies the robustness of our conclusion, replicating the main results across different subsamples and variable definitions. Section VI concludes.

I. Theory and Empirical Hypotheses

In this section we develop the hypotheses of the paper. We start by explaining how consumer opinions about firm products translate into characteristics of a firm's demand. We then separately discuss two potential channels through which the demand function can affect managerial decisions to hold debt, retain cash, and pay out to shareholders and generate a set of testable predictions for each channel.

Marketing and economic research has long attempted to identify and estimate the demand curve of a product. The best possible way to measure demand is through scanner data, through which researchers observe actual sales at the level of an individual purchase. The problem is that while providing precise estimates of price-quantity relations, the data usually do not have

[5] Parsons and Titman (2008) provide an overview of existing literature on the topic (pp. 14–16).

sufficient product cross-section and typically focus on only 2 to 3 types of brands. These studies are also conducted over a short period of time and are often limited to certain geographic locations. Consumer surveys are the second best solution. While the degree of precision is somewhat lower (for example, a consumer can report a favorable opinion about a brand, but still purchase a different one), these surveys allow a substantial expansion of the sample across different products, geographical regions, and time periods.

Marketing studies have used consumer surveys to show that favorable consumer evaluations of a brand are associated with their perception of quality, loyalty, price they are willing to pay, and the probability of switching to competitors. Using survey questions, Starr and Rubinson (1978) allocate consumers into loyalty groups and find that loyal consumers have higher repeat rates of purchase, lower probability of switching, and lower price elasticity of the demand function.[6] Based on an experimental approach, Dodds et al. (1991) show that when brand perception is more favorable, consumers attribute higher quality to the product, and their perception of the product's value and the overall willingness to purchase is greater. Rao and Monroe (1989) perform a meta-analysis of previous studies and conclude that brand name has an impact on a consumer's evaluation of product quality. Finally, Aaker (1996, p. 17) summarizes a set of studies, based on detailed data of business units (PIMS) that show that perceived quality contributes to a firm's profitability by enhancing prices and market share.

The marketing studies above demonstrate that consumer surveys provide valuable information about characteristics of a product demand even if they do not precisely capture the demand curve. First of all, consumer brand perception indicates how shifted out the demand curve is: the higher the subjective value of the unit of good for a consumer is, the more he or she is willing to pay for a unit of it. Some marketing studies actually use the difference in prices of a specific product among different brands to derive a quantitative measure of consumer loyalty (Aaker (1996), p. 320). Another important characteristic of demand is its sensitivity to price changes by the firm and competitors, as well as other factors, such as combat advertising. Elasticity is important in a context of monopolistic competition, when a firm observes down-sloping, rather than infinitely elastic demand, consistent with perfect competition. The individual characteristics of each brand separate the overall demand for a product into individual firm's

[6] Since the demand curve is typically downward sloping, elasticity and slope of the demand curve take on negative values. For the sake of clarity we will always refer to the absolute values of elasticity and slope when discussing the characteristics of the demand curve.

demands, and impose firms with a maximization problem of a monopoly (Chamberlin (1933)). Consumer loyalty, characterized by inelastic demand, allows a firm to set higher prices. In addition, it reduces the probability that a consumer will switch to a different brand, insulating the firm from predatory behavior and entries of new firms into the industry.

In the remainder of the section, we incorporate the characteristics of consumer demand into the theory of financial decisions and establish its impact on leverage, cash holdings, and payout policy.

1. Costs of financial distress

Costs of financial distress are one of the most fundamental frictions of financial markets. While the original framework of Modigliani and Miller (1958) does allow for liquidation of a firm in the case of low cash flow realization, it is the indirect costs associated with the distress states that create the distortion. As a result, firms care both about the overall costs of financial distress and about the probability of getting into it. Strong consumer demand, in terms of a higher and more inelastic demand curve, reduces costs of financial distress for several reasons. First, firms are less likely to face low states of cash flow realization, for example, during market downturns. Loyal consumers will rebalance their consumption baskets in a way that minimizes the cut of products that they value the most. In addition, firms with strong demand are less prone to predatory behavior by competitors, who can strategically drive them into bankruptcy.

While the link between characteristics of consumer demand and a firm's stability has not been directly addressed in financial studies, substantial marketing literature has explored the impact of consumer satisfaction and brand perception on the overall riskiness of a firm. Several studies have examined the impact of the American Customer Satisfaction Index on systematic and idiosyncratic risk of the firm (Fornell, Mithas, Morgenson, and Krishnan (2006), Madden, Fehle, and Fournier (2006), Tuli and Bharadwaj (2009)) and the volatility of the cash flow (Gruca and Rego (2005)) and found that higher consumer satisfaction reduces both types of risks. McAlister, Srinivasan, and Kim (2006) show that advertising and R&D expenses also reduce systematic risk of a firm. Finally, studies by Anderson and Mansi (2009) and Rego, Billett, and Morgan (2009) find that higher customer satisfaction and brand value improve credit ratings and Z-scores and lead to a lower cost of debt capital. Overall, marketing literature provides robust evidence that brand perception indeed reduces the riskiness of a firm.

Taken together, the evidence above suggests that firms that have stronger demand in terms of having a loyal pool of satisfied consumers who value the brand more experience more stable cash flow. As a result, the expected costs of financial distress are lower and the debt capacity of a firm can be higher.

Hypothesis 1a: Firms with stronger consumer demand have higher leverage.

The impact of consumer demand on a firm's cash holding decision mirrors the decision of capital structure: Firms will choose to insure themselves against losses associated with distress state realization by holding more liquid assets (Opler, Pinkowitz, Stulz, and Williamson (1999), Bates, Kahle, and Stulz (2009)). Since raising external capital is typically costly (either because of the direct fees to the intermediary or as an outcome of asymmetric information problems between the firm and outside investors), firms hold a certain proportion of their retained earnings in cash and other liquid assets as a cushion. When a firm has a secure stream of future cash flows, as proxied by the characteristics of the product demand, the need to hold cash for precautionary reasons lessens: Operating cash flow provides a ready source of liquidity and allows firms to maintain lower levels of cash at any given point (Kim, Mauer, and Sherman (1998)). In addition, firms usually hoard cash as a means to fight peer predation. A loyal consumer base implies that predatory behavior is costly for competitors, and as a result, a firm with strong demand can hold less cash.

Hypothesis 1b: Firms with stronger consumer demand have lower cash holdings.

If firms with strong demand are more profitable and do not need to hold much cash, they can distribute more to their shareholders in terms of dividends or repurchases. This leads to the last hypothesis of this subsection:

Hypothesis 1c: Firms with stronger consumer demand pay out more.

2. Agency costs

Another potentially important market friction is agency costs of managerial discretion, in cases in which managers do not operate in the best interests of the shareholders. While substantial literature in corporate finance has addressed the overall determinants of agency

problems, Allen and Gale (2000) summarize a theoretical framework that shows that competition among firms may serve as an effective corporate governance mechanism. Managers of firms, operating in a competitive industry, cannot engage in suboptimal behavior, maximizing their utility at the expense of shareholders, as it impairs the power of a firm to compete in the product market and can eventually drive the firm into financial distress. Grullon and Michaely (2007) find empirical support for the validity of this argument by showing that disciplinary forces of market competition force managers of firms, operating in less concentrated industries, to pay out more.

A strong demand for a firm's products insulates it from the competitive environment of the rest of the industry and reduces the firm's sensitivity to peer strategic behavior. As a result, for any given level of industry competition, a firm with stronger demand is subject to less competitive force. Reduced competition may have an impact on managerial behavior and intensify agency problems. As a result, the channel of agency costs generates a different set of predictions about the link between consumer demand and financial policy.

The implications for debt are as follows. Previous research has shown that debt disciplines managers by improving the shareholder information about a firm's operations and managerial skills, and imposing a liquidation threat (Harris and Raviv (1990)). As a result, if managers have control over the debt level, they will prefer less leverage. Higher debt also increases the probability of a firm going into distress, and this is an outcome that a risk-averse manager would like to avoid. As an outcome, if strong demand for a firm's products intensifies the agency problems, managers will try to reduce their debt holding.

Hypothesis 2a: Firms with stronger consumer demand have lower leverage.

Finally, managers who are not properly monitored will try to hoard more cash and pay out less to shareholders. Since managers are risk-averse, they put more emphasis on precautionary motives of holding liquid assets. They also prefer to keep more cash within the firm for their personal benefits (Opler et al. (1999)). As managers try to retain a higher proportion of the earnings, they become reluctant to pay out dividends to the shareholders, or repurchase stock. Therefore, if stronger demand intensifies conflicts between managers and shareholders, managers will have higher cash reserves and smaller payouts.

Hypothesis 2b: Firms with stronger consumer demand have higher cash holdings.

Hypothesis 2c: Firms with stronger consumer demand have lower payouts.

II. Data

1. Brand perception versus advertising

An extensive work in industrial organization has examined how advertising affects demand, share stability, and consumer loyalty. However, while advertising can be a good proxy for a firm's overall visibility, it is just one of many inputs that a firm uses to affect consumer view of a product. At the same time, brand perception measures the outcome of all the cumulative efforts of a firm to market the product, as well as all other exogenous factors, such as the fit between consumer preferences and product characteristics.

Moreover, advertising is clearly an endogenous variable of a firm. For example, while there may be a link between profitability and advertising, it is not clear whether advertising leads to higher profit margins, or profitable firms can spend more on advertising. Consumer brand perception, on the other side, conveys the goodness of fit between style and general characteristics of a brand and individual preferences of consumers, and as a result, carries a larger exogenous component.

Overall, using consumer views of a brand provides a cleaner measure of their actual preferences. The higher the consumer's opinion of the brand, the higher the price he or she is willing to pay and/or the larger the amount purchased. As a result, consumers' regard for a brand directly translates into how far out is its demand curve shifted. Similar logic applies to brand loyalty. The higher a consumer's satisfaction with the product, the less likely he or she is to switch to the products of competitors. As a result, consumer responses provide additional information about the elasticity of the demand curve. Unfortunately, the data that records cross-industry variation in consumer responses are very limited. BAV is one of a few databases that provide panel-type data on consumer brand perception, and its contribution to reconciling different theories of advertising is yet to be established. The next subsection describes the nature of the BAV data in more detail.

2. 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 their brand and improve the strategic direction of its management by analyzing different aspects of brand image. The model is widely known among both marketing researchers and practitioners and is incorporated in major marketing textbooks (see, for example, Aaker (1996) and Keller (2008)).

The BAV model has several advantages over other marketing models that measure brand value. Most importantly, it relies on a customer-based approach. This is in contrast to a financial valuation approach, which relies on 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, B/M ratios, and revenues. Second, the model has a wide base of respondents: It is a survey of nearly 16,000 US households[7] who evaluate each brand with respect to a wide range of characteristics. The sample of US households is constructed and managed to represent the US population, according to the following factors: gender, ethnicity, age and income groups, and geographic location. Households are offered a $5 compensation for their participation, and the response rates are more than 65%. The pilot surveys have been 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 2009 included more than 4,000 US and international brands and subbrands.[8] The survey is not limited to companies that are customers of Brand Asset Consulting and is continuously updated to include new brands and remove the brands that exit the market. Overall, the sample of firms is representative of all industries and is not biased towards the clients of Brand Asset Consulting. In order to make the questionnaires manageable, the overall sample of brands is split into 30 groups, so that the average number of brands to be evaluated per questionnaire does not exceed 120.[9] BAV metrics uses a randomization approach in organizing the brands in the questionnaires in order to not impose associations with a certain industry or firm competitors.

BAV questionnaire consists of two types of questions. The first type asks respondents to evaluate the following aspects of a brand on a 7-point scale: general knowledge of the brand, personal regard and relevance. The second type evaluates different aspects of brand image and

[7] In addition to US studies, BAV also conducts international studies of consumers.

[8] Additional models, based on customer based approach, are 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.

[9] See Appendix 1 for an example of a questionnaire page.

asks participants to mark an "X" if a certain characteristic applies. The examples of the characteristics are: unique, innovative, traditional, good value. Additional questions ask respondents about the frequency of use of a certain brand, and also some demographic information.

The overall results are aggregated across respondents for any given brand-year, so that we observe the overall score on a certain brand's image characteristics but cannot identify individual respondents. Some of the brand-image results are aggregated into pillars that capture different aspects of brand value, and some are used for additional marketing analysis of brand characteristics. Brand *Knowledge* and *Esteem* constitute brand *Stature*, which we use as our main measure of brand 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"; (2) brand score on *Regard* ("how highly you think and feel about the brand" on a 7-point scale). Bronnenberg, Dhar, and Dube (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. We follow their approach, but use all the components of *Esteem*, as well as consumer's *Knowledge* of the brand ("how well are you familiar with the brand and its products?" on a 7-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), pp. 44–45), and we do not have a theoretical reason to exclude any of its components. Second, the knowledge of a brand is an essential part of building a demand curve, as consumers who are not familiar with the brand should not be included in the demand function. While we believe that brand *Stature* is a more general measure of consumer demand than the one that includes only selective components of *Esteem*, we address additional definitions in the robustness section.

Stature is computed as a product of *Esteem* and *Knowledge*. Since the two components are estimated on different scales its absolute value is meaningless. For convenient interpretation of the results, we transform the measure into a z-score.

The BAV questionnaire is constructed at a brand level, so in order to merge it with the commonly used financial data, which is reported at a firm level, we have manually created a bridge that links between BAV and Compustat. Appendix 2 provides a detailed description of the algorithm we apply to construct the link.

3. Financial variables

The financial variables are selected based on the commonly cited literature on capital structure, payout policy, and cash holdings.[10] We merge several different databases to construct them. First, we use Compustat data to obtain accounting and financial variables. *Size* is the overall book assets, expressed in millions of constant 1993 dollars. *Age* of the firm is calculated starting from the first year the firm appeared in the Compustat database. Market to book ratio (*M/B*) is the market value of equity plus the book value of assets minus preferred stock[11] plus deferred taxes, all divided by the book value of assets. *EBITDA* is the ratio of operating income before depreciation to total assets. *Leverage* is the sum of short-term and long-term debt, scaled by book assets. We measure the tangibility of a firm's assets with two measures. First, we use *Tangibility*, defined as net property, plant, and equipment, divided by book assets. We also use *Depreciation*, scaled by assets, as an additional measure of tangible assets.

We measure advertising and R&D expenses in two ways. For the sample description, we scale advertising expenses and R&D by assets. For multivariate analysis, we use the natural logarithm of the overall amount of advertising and R&D (in millions of constant 1993 dollars) (variables *log(advertising)* and *log(R&D)*, respectively).[12] Following Grullon et al. (2004), we do not scale advertising by assets or sales to capture its overall scope.[13] If advertising affects consumer demand, it should be captured by the overall amount of advertising consumers were exposed to. An advertising campaign of a large firm can be effective even if it represents only a small proportion of a firm's revenues. For the same reason, we use *log(R&D)* rather than its ratio over assets or sales to capture a potential impact of a firm on the demand curve through improving the quality of its products. Using the overall amount of advertising and R&D in our empirical estimations will better differentiate the effect of exogenous brand characteristics from

[10] See, among others, Hovakimian, Opler, Titman (2001), Fama and French (2002), Faulkender and Petersen (2006), Opler, Pinkowitz, Stulz, and Williamson (1999), Kim, Mauer, and Sherman (1998), Grullon and Michaely (2002), Grinstein and Michaely (2005).

[11] The book value of equity is the book value of total assets minus book liabilities minus preferred stock plus deferred taxes. Preferred stock equals to the liquidation value if not missing; otherwise I use redemption value if not missing; otherwise the carrying value.

[12] We add a value of 1 to advertising and R&D expenses, before converting them to logarithms, to capture the values of zero.

[13] Differently from Grullon et al. (2004), we assign values of zero for missing values of advertising expenditures. Since firms do not have to report advertising expenses (following the SEC's Financial Reporting Release No. 44 FRR44)), this is not entirely accurate. However, it preserves the number of observations. For robustness, we repeat the main analysis using only nonmissing values of advertising expenses, and the results are almost the same.

the firm's attempts to alter consumer demand through advertising and R&D and make our tests more conservative.

We measure cash holdings in two ways. Our main measure is *Cash*, the ratio of cash and short-term investments to total assets. For robustness, we also scale cash by sales (*CashSales*). Following Opler et al. (1999), we use working capital net of cash holdings (*Wcap*), scaled by assets, to capture additional liquid asset substitutes available to a firm. Since a firm with more projects to finance should hold more cash, we use a measure of capital expenditures (*CapEx*) to proxy for required investments. We capture how easily a firm can access external markets by using *Access,* which is a dummy variable that equals to one if a firm has a credit rating for any of the debt it holds and zero otherwise. *S&P500* is a dummy variable that equals one if a firm belongs to the S&P 500 index and zero otherwise. This dummy variable is another proxy for size and also a reflection of additional stock characteristics, such as visibility, liquidity, and institutional holding.

We construct several measures of payout. We define dividends as total dollar amount of dividends declared on the common stock of the firm during the year. *DivDummy* is a dummy variable that equals one if a firm pays out dividends, and zero otherwise. Similarly, *RepoDummy* takes a value of one if a firm repurchases and zero otherwise; and *TotDummy* takes a value of 1 if either dividends or repurchases are positive and zero otherwise. Following Grullon and Michaely (2002), we define repurchases as total expenditure on the purchase of common and preferred stocks minus the reduction in the value (redemption value) of the net number of preferred stocks outstanding.

A potential concern of any study that relies on brand data is that conceptually, the idea of a brand is industry specific. To avoid capturing industry, rather than firm product characteristics, we control for industry characteristics in several ways. First, we include the Herfindahl industry concentration ratio in all our regressions. We create a Herfindahl index (*HHI*) by summing up squared market shares of all the publicly traded companies in each two-digit SIC code.[14] Second, we include industry fixed effects in all our specifications to capture additional unobserved industry-related factors that can potentially affect both brand value and a firm's financial

[14] Ali, Klasa, and Yeung (2009) advocate the use of the Herfindahl index published by the Bureau of Census. While conceptually more precise, it is reported only for manufacturing industries and eliminates about 70% of the BAV sample. We reestimate our main specifications using the census Herfindahl index and find that using the alternative measure does not change our results in a material way (unreported). We also reestimate the main specifications using three- and four-digit SIC codes. The results are similar to the ones presented here, but are based on a fewer number of observations, as we remove industries with one firm only to avoid capturing firm fixed effects.

decisions. It is important to note, though, that characteristics of consumer demand are not another proxy for market concentration. While industry concentration is an important determinant of a firm's financial and operational decisions, there is still a potential variation in consumer demand characteristics among different firms for any degree of industry concentration.

We obtain turnover and stock performance information from CRSP. We use average monthly stock returns (*Return*) over a year as an additional control variable used in our robustness tests. We compute *Turnover* by, first, dividing the average monthly number of shares traded during a year by the average number of shares outstanding during the year and, then, taking a logarithm of the resulting ratio.

We use Thompson Financial's database of 13F filings to obtain data on institutional holdings. We first sum all the shareholding for each firm-year across all institutions. We then calculate the percentage of shares held by institutions, by dividing the resulting sum by the total number of shares outstanding, to obtain the overall ratio of institutional holding in a given stock.

For the multivariate analysis, the variables *Size*, *Sales*, *Age*, and *Turnover* and institutional holdings are converted into natural logarithms.

Before merging the Compustat data with BAV, we remove all observations with missing values for the following variables: *Size*, *Cash*, *EBITDA*, *Tangibility*, *M/B*. We also winsorize the top and bottom 1% of those variables to mitigate the effect of outliers. After merging BAV data with financial variables from Compustat, the final sample consists of 469 firms and 2,606 firm-year observations.

4. Sample characteristics

Table 1 presents the descriptive statistics of the financial variables for BAV sample (Panel A) and the overall Compustat universe (Panel B). The BAV sample is clearly different from the sample of Compustat firms. Firms in the BAV sample are larger and more profitable: an average BAV firm has an EBITDA of 14.3% and a book asset value of $7.92 million, compared to 6.6% EBITDA and $5.44 million asset value for an average Compustat firm. BAV firms also have a higher average *MA/BA* ratio, consistent with the marketing view that brand value is an intangible asset: branded products enjoy higher prices than the generic products, resulting in higher market valuation of firm assets, even if the production technology is somewhat similar. About half of the BAV firms belong to the S&P index and over two-thirds have access to external capital markets, as proxied by having a credit rating. Finally, firms in the BAV sample

have a higher propensity to pay out, as measured by both dividends and repurchases. While this comparison raises some concerns about the representativeness of the sample, several things should be noted. First, the concept of brand is not applicable to every industry. Industries based on business-to-business approach (such as mining, construction, and agricultural production) do not need to conceptually differentiate their products, as they either work based on contracts with customers or operate as suppliers to other industries. Therefore, the mere idea of product differentiation is potentially relevant only to a subset of firms. Second, even though the sample is relatively small in terms of the number of firms, its market capitalization represents 20% of the market capitalization of all Compustat firms.

We also examine the distribution of the BAV sample by industry. Table 2 summarizes the results. The first two columns present the distribution by the number of firms. BAV is more biased towards consumer nondurables and retail sectors, which is not surprising given the nature of the business: most of the firms in these sectors are business-to-consumer firms. Financial services and utilities are underrepresented, but these industries are typically excluded from the sample in most financial papers. The rest of the segments are quite comparable to the overall Compustat universe of firms. The results become more similar to the overall sample when the distribution is constructed based on market capitalization. The gap between the BAV sample and Compustat in the non-durables sector is less significant, and the rest of the segments have weights similar to the overall sample of firms.[15] The evidence in Table 2 suggests that even though the BAV sample is rather restricted by definition, the distribution of the market capitalization of the firms that it includes is representative of the overall industry.[16]

Table 3 presents a correlation matrix of *Stature* with the major control variables. Larger, more mature, and more profitable firms are associated with stronger demand, as measured by *Stature*. Interestingly, tangibility is only weakly correlated with Stature, supporting the argument that demand characteristics are not just another proxy for the amount of intangible assets within the firm. Advertising has a positive correlation of 0.32 when measured in logs and has almost no correlation with *Stature* when scaled by sales. These results are consistent with the idea that from the consumers' perspective, it is the overall amount of advertising rather than its relative share of revenues, which increases their familiarity with the firm and affects their preferences. This

[15] In unreported results, we 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%.

[16] To verify that our results are not driven by overrepresentation of firms in non-durables sector, we repeat the main results after removing non-durables from the sample. The results are very similar.

provides additional evidence for using the overall advertising expenses, rather than the scaled version, in the multivariate regressions. Interestingly, R&D does not have a significant impact on demand (*R&D/Sales* has a negative correlation because of the impact of *Sales* in the denominator). This may be explained by the fact that consumers do not shape positive opinions about products based merely on their quality, and other factors, such as brand image and personal taste, are more influential in determining consumer loyalty and quality perception.[17]

III. Results

1. Leverage

We start with a univariate analysis of the relationships between consumer demand and capital structure. First, we examine the relationship pattern between demand characteristics and capital structure, controlling for size, which captures a significant part of cross-sectional differences among firms. We partition the sample into five quintiles, based on size, and then form five brand *Stature* quintiles within each size group. Panel A of Table 4 presents equally weighted average leverage levels for each *Size-Stature* group. Consistently with previous studies, we find that size affects leverage levels: large firms hold at least 50% more leverage than the firms in the lowest size quintile, and the differences are even more pronounced for firms in the lowest *Stature* quintile. At the same time, there is a significant variation in the average leverage level across brand value groups. Even controlling for size, the leverage level increases for firms with higher *Stature*, and the differences are statistically and economically significant. Thus, the difference in leverage between low- and high-stature firms is 7% for the firms in the largest quintile and 16.1% for firms in the smallest quintile.

We then turn to a multivariate analysis and estimate leverage as a function of demand for a firm's products and a variety of control variables drawn from a set of variables used in previous capital structure research. We estimate each specification using two econometric models: Tobit, which accounts for observations with zero leverage (about 10% of the sample), and a standard OLS model, confined to observations with positive leverage only. Both models include year and industry fixed effects to control for time-series effects in the variables of

[17] Experimental marketing studies provide additional evidence that consumer differential perception of brands is not based on objective differences between products. For example, Keller (2008, pp. 61–62) shows that consumers report different opinions regarding branded and unbranded versions of identical products.

interest and industry fixed effects (at SIC two-digit level) to control for systematic differences in leverage across industries.

The results are presented in Table 5. Consistent with the univariate analysis, we find a positive and significant effect of *Stature* on *Leverage*. Its magnitude ranges from 2.9% to 3.4% in different specifications, which is also economically significant: a one standard deviation increase in *Stature* is associated with 14% to 16% higher leverage, compared to the unconditional mean. The one standard deviation in *Stature* can have several interpretations. Cross-sectionally, it is equivalent to the difference in brand perception between Tyson Foods and ConAgra Foods, or Campbell and General Mills. Firms can also increase/decrease their brand *Stature* by one standard deviation over time. Examples of firms that enhanced the consumer perception by one standard deviation over time are Canon and Starbucks. At the same time, the brand perception of Hilton and McDonalds eroded by one standard deviation over the sample period.[18]

The rest of the control variables are in line with the previous studies. M/B and profitability (EBITDA) have a negative impact on leverage, consistent with other capital structure findings. Firms that have better access to capital markets, as proxied by the availability of a credit rating, take on more debt, in line with results by Faulkender and Petersen (2006). Size has a positive, but insignificant effect, which can be attributed to the fact that our sample already consists of relatively large firms. Interestingly, we find that advertising has a negative impact on capital structure, confirming our previous discussion about fundamental differences between advertising and brand loyalty and consumer demand.

To verify the robustness of our results, we repeat the main analysis using additional definitions of leverage. First, we exclude the short-term debt component and define leverage as long-term debt, scaled by assets. Our results remain unchanged. Second, we reestimate the main specifications using liabilities-to-assets. Welch (2010) points to fundamental flaws in using financial debt-to-assets as a leverage proxy and advocates the use of the ratio of total liabilities to assets as a more precise measure, capturing non-financial liabilities. We do not find any material differences in the coefficient of brand *Stature*, using total liabilities-to-assets. We repeat the estimation, scaling all the leverage measures mentioned above by market rather than book value of assets and find that our results are not sensitive to using book versus market leverage. Finally,

[18] About 20% of the firms in the sample experience a change in *Stature* of at least one standard deviation during the sample period.

we rerun the main specifications using additional control variables: *log(age)*, *DivDummy*, sales growth in years *(t-1)* and *(t-2)*, *Depreciation*, *Return*, and *NYSE*. While some of the coefficients appear to be statistically significant, and have the predicted sign (for example, *log(age)*, *Depreciation*, and *NYSE* dummy have a positive impact on leverage), they do not affect the magnitude and statistical significance of brand *Stature*.

Overall, the results of the capital structure estimation are consistent with the hypothesis that demand characteristics have an economically and statistically significant impact on capital structure, even after controlling for other commonly used determinants of the capital structure. The positive impact of *Stature* on *Leverage* indicates that consumer demand affects leverage by reducing the bankruptcy risk and guaranteeing higher and more stable cash flows rather than by alleviating agency problems.

2. Cash holding

Consistent with the methodology in the previous subsection, we start with a univariate analysis of cash holdings (*Cash*) across *Size-Stature* groups. The results are presented in Panel B of Table 4. Consistent with previous studies, we find that size plays an important role in cash-holding policy and larger firms hold significantly smaller amounts of cash than small firms, and the pattern linearly declines across size groups. Keeping size constant, cash holdings decrease across *Stature* groups, and the difference is the most pronounced for the smallest size quintile: while firms in the bottom of the *Stature* quintile hold more than 34% of their assets as cash and liquid securities, firms in the top *Stature* group hold only 11.7%.

We proceed with multivariate analysis and estimate cash holdings as a function of *Stature* and common control variables. The results are presented in Table 6. Panel A uses *Cash* (scaled by assets) as a dependent variable, and Panel B uses *CashSales*. Consistent with previous findings, we find that cash holdings decrease with size and net working capital, which can be considered a substitute for cash. More profitable and tangible firms hold less cash, as they have a reduced probability and cost of financial distress. At the same time, firms with more growth opportunities, as captured by M/B, accumulate more cash to be able to finance future projects. We alter the baseline specification by adding the industry concentration ratio as well as advertising and R&D expenses. The coefficients of *log(advertising)* and *log(R&D)* are positive and significant, suggesting that both variables can be viewed as proxies for investment opportunities. Similar to the leverage estimation, the opposite signs of advertising and brand

Stature in our estimation suggest that both variables play very different roles and are not substitutes for each other. Finally, specifications (3) and (6) include *Access* to capture the costs of accessing external capital markets and *Capex* and *DivDummy* to control for additional reasons for holding more cash.

We find very robust evidence that *Stature* has a negative and statistically significant effect of a firm's cash holdings, which is also economically significant. The magnitude of the coefficient is stable across different specifications and ranges from -0.02 to -0.026, implying that a one standard deviation increase in brand stature allows a firm to hold 13% to 17% less cash. The results are consistent with the hypothesis that having higher and more inelastic consumer demand allows a firm to hold less cash on a daily basis.

To verify the robustness of our results, in unreported regressions we include additional control variables (*log(age), DivDummy*, sales growth in years *(t-1)* and *(t-2), Depreciation, Return* and *NYSE)* and obtain results similar to the ones reported here.

3. Payout

Panel C of Table 4 provides the results of the univariate analysis of *Stature-Payout* relations, where we average the ratio of dividends to total assets across each of the *Size-Stature* groups. The results are somewhat mixed. Overall, there is a trend of higher dividend payouts in the top *Stature* quintile, compared to the bottom one, but the differences are statistically significant only for large firms. Interestingly, while we observe higher dividend payments by large firms, the pattern is not linear, suggesting that additional factors, potentially correlated with size, impact the results.

To examine the relations between product demand and payout in the multivariate setting, we perform two types of estimation. The results are summarized in Table 7. First, we use a logit regression to estimate the probability of a firm to pay out dividends (Panel A). Second, we use the subsample of dividend-paying firms to estimate the dollar amount of dividend payouts (Panel B). Obviously, we could estimate both equations together using a Tobit model. However, since the variables of interest can potentially have different effects on the probability of paying dividends and their magnitude, we prefer to separate the two effects. Grinstein and Michaely (2005), for example, show that while institutional investors prefer dividend-paying firms, they avoid firms with high levels of dividend payouts.

The coefficients of control variables are in line with previous studies. Consistent with Grullon, Michaely, and Swaminathan (2002), we find that large, mature and profitable firms with low growth opportunities pay out more dividends. The coefficients of *Access* and *HHI* are negative and significant in the level specification, suggesting that firms in competitive industries and with expensive access to external capital markets avoid payouts. There is also evidence of a clientele effect: firms that have long-term investors, as proxied by low turnover of their stocks, pay out more.

At the same time, the effect of brand *Stature* on both the propensity to pay and the level of dividends is only marginally significant. While the coefficient, consistent with the findings for leverage and cash holdings, is positive, its magnitude is low and statistical significance is sensitive to inclusion of different control variables. We repeat the analysis using additional payout variables, such as repurchases, payout ratio, and different scaling methods (*DivMarket*), and find similar results: while we observe some positive relation between *Stature* and payout, we cannot claim robustness and high significance of the results.

There can be several potential explanations for the results above. One reason could be the indirect effect of brand perception through other variables, such as institutional holdings. For example, Frieder and Subrahmanyam (2005) show that institutional holdings are smaller for strong brands. Since institutions do not like high dividends (Grinstein and Michaely (2005)), firms may cut their dividend payouts to attract them back. As a result, our estimation could suffer from potential endogeneity biases, while a correct model should have considered a system of equations with dividends and institutional holdings as functions of each other and the brand value. Since this estimation would require finding a proper instrument for institutional holdings, we leave this idea for future research. Another potential link of a brand to dividend policy may be through signaling. Firms can pay dividends to distinguish themselves from the rest of the pool and to signal their prospects (see, among others, Bhattacharya (1979), Miller and Rock (1985) and John and Williams (1985)). Since firms with strong brands are already perceived as efficient and high-quality firms, firms may use the positive perception of their product as a substitute for dividends. As a result, while the direct effect of consumer demand is positive, potential indirect implications through other variables operate in the opposite direction, reducing the significance of the results.

4. Agency problems: substitution versus outcome

The results above are in line with the predictions of distress costs hypothesis, as they show that firms with strong demand hold more leverage and less cash. However, the results may still be consistent with an agency explanation if a firm decides to use higher debt and lower cash holdings as an alternative mechanism of agency problems mitigation. Thus, managers may voluntarily restrict themselves from potential overuse of a firm's funds by choosing higher debt levels, lower cash reserves, and higher payouts to maintain a favorable reputation of operating in the best interests of the shareholders. This concern is common to many studies of agency problems, which can potentially result in outcome and substitution channels of managerial behavior (La Porta, Lopez de Silanes, Shleifer, and Vishny (2000)). According to the outcome model, intensified agency problems lead managers to use the firm funds for their personal benefit, take less risk, and accept negative NPV projects. According to the substitution model, managers anticipate that agency problems may destroy some of the company's value and imply alternative self-monitoring mechanism, such as stricter corporate governance rules or less cash hoarding.

Empirical findings so far have provided robust evidence, consistent with outcome, rather than substitution, model (La Porta et al. (2000), Grullon and Michaely (2007)). However, in this subsection we formally examine whether the substitution effect, associated with intensified agency problems, can be the actual driver of our results. To test the substitution model, we use the entrenchment index of the corporate governance provisions, suggested by Bebchuk, Cohen and Ferrell (2009).[19] The index is based on the most important components of the governance index by Gompers, Ishii, and Metrick (2003) and consists of six provisions: staggered boards, limits to shareholder bylaw amendments, poison pills, golden parachutes, and supermajority requirements for mergers and charter amendments. If the substitution hypothesis is correct, we should find that firms with stronger demand have lower entrenchment index.

We start with a univariate analysis and compute an average of the entrenchment index for each quintile of firms, constructed based on the *Stature* measure. The results are presented in Table 8. This preliminary analysis shows that there is no pattern between the entrenchment index and *Stature*, although the difference between the top and the bottom quintiles is positive. Still, the results indicate that firms with stronger demand are not characterized by better corporate governance. Next, we perform a double-sorting analysis and examine the entrenchment index

[19] The entrenchment index data were obtained from the Web site of Lucian Bebchuk at http://www.law.harvard.edu/faculty/bebchuk/data.shtml.

across size-*Stature* groups of firms. The entrenchment index increases with Stature for the smallest two size quintiles, consistent with the outcome, rather than substitution, model. There is no clear pattern between entrenchment and *Stature* for size quintiles 3 and 4, and there is a decrease in entrenchment, which is statistically insignificant, only for the largest firms. Taken together, the results do not provide evidence of a potential substitution effect. As a last step of our analysis, we add the entrenchment index to our main regression specifications and find that it does not influence the main results (unreported). Overall, the results of this section confirm that our main conclusions are an outcome of reduced bankruptcy costs, rather than a substitution effect of agency problems.

5. Variance decomposition

The results so far have established an economically and statistically significant relationship between consumer demand characteristics, as captured by brand *Stature*, and a firm leverage and cash holding policy. In this section we turn to a variance decomposition analysis and examine how much *Stature* contributes to explaining the overall variation in each of the dependent variables, compared to other control variables, commonly used in empirical research.

Following Lemmon et al. (2008), we perform an analysis of covariance (ANOVA). Specifically, we use Type III sum of squares, which is the increase in model sum of squares due to adding the variable of interest to a model that already contains all the other control variables. For our analysis, Type III sum of squares is more appropriate than Type I sum of squares, since the former does not depend on the order in which the explanatory variables are entered into the model. To calculate the Type III sum of squares, we use the regression specifications identified in of tables 5 and 6. We first compute partial sum of squares and then normalize the vector obtained by dividing the partial sum for each variable by the total Type III partial sum of squares. The normalization procedure eases the interpretation of the results by demonstrating the relative importance of each factor. It is important to note, though, that Type III partial sum of squares do not add up to the regression sum of squares but, rather, capture a marginal increase in explanatory power as a result of adding another variable.

The results of the variance decomposition are presented in Table 9. Panel A estimates book leverage (*Leverage*), while Panel B estimates cash holdings (*Cash*) as the dependent variable. Regression specifications (1) through (6) in each panel exclude industry fixed effect, which is added in specifications (7) through (12). Panel A demonstrates that when *Stature* and

industry fixed effect is not included, most of the variation in leverage is explained by tangibility and access to external capital (*Access*). This is consistent with previous studies, suggesting that tangibility is one of the important factors determining debt capacity. Access to capital markets has also been shown to be an important indicator of how costly it is to raise capital in the external markets (Faulkender and Petersen (2006)). Specifications (4) through (6) demonstrate that *Stature* explains 23% to 35% of the overall sum of squares and alleviates the explanatory power of tangibility and access to capital. Incorporating industry fixed effects shifts most of the explanatory share from the control variables to the fixed effect components, which is responsible for 60% to 82% of the explained variation in leverage (specifications (7) through (12)). As industry fixed effect reduce the explanatory power of *Stature*, it still explains more of the variation than any of the control variables. In fact, the sum of squares explained by brand *Stature* roughly equals the explained sum of squares of all the major explanatory variables: *Size*, *EBITDA*, *M/B*. Taken together, the results provide evidence that *Stature* accounts for a significant portion of explained variation in leverage, equivalent to the fraction, explained by the standard accounting characteristics of a firm.

A somewhat different picture emerges from Panel B, which decomposes the explained variance of cash holdings. Overall, M/B, tangibility, and net working capital are the important drivers of the explained sum of squares. Industry fixed effects, while still explaining a large portion of the variation, contribute 20% to 26%. Stature accounts for 10% to 12% of the variation when fixed effects are excluded (specifications (4) through (6)) and 7% in specifications that account for industry fixed effects (specifications (10) through (12)). While this is a smaller portion than the portion in the leverage regressions, it is still quite substantial compared to other control variables. For example, specifications (6) and (12) indicate that *Stature* explains more of the variation than the standard deviation of *EBITDA*, a commonly used measure of a firm's riskiness, and suggests once again that demand characteristics are not another proxy for cash flow volatility. In addition, the explanatory power of *Stature* is larger than that of other important control variables, such as *EBITDA* and *Tangibility*, and also that of additional product market-related variables, such as advertising and R&D.

IV. Endogeneity and Reverse Causality

In this section, we address concerns regarding the causality direction and the impact of omitted variables. The analysis so far has documented a positive and significant association

between product demand and leverage and a negative relationship between demand and cash holding. A reverse causality argument regarding the relationship between capital structure and consumer demand would predict the opposite: firms with higher leverage compete more aggressively and, as result, may be willing to invest more resources in altering the firm's demand. While this explanation is plausible by itself, the negative relation between brand value and cash holdings undermines it. Previous studies show that deep-pocketed firms increase their output and future market share gains at the expense of industry rivals (Telser (1966), Bolton and Scharfstein (1990), Fresard (2010)). We demonstrate that firms with stronger demand hold less cash, which is inconsistent with the reverse causality arguments that link strategic debt and cash holdings to product competition.

It is plausible, however, that the relations between consumer demand and financial decisions are driven by omitted variables. For example, more established and mature firms can have easy access to external capital markets, which will provide them with resources to advertise heavily, invest in enhancing the quality of their products, or use some other strategies of altering consumers' demand. To address this concern, we use an instrumental variable approach. A good instrumental variable in this case should be correlated with consumer demand but, at the same time, be orthogonal to other factors that a firm can potentially control.

To find an instrumental variable that meets those requirements, we use consumer brand usage responses. In addition to brand image questions, BAV asks respondents about their actual usage of brands. The scale ranges from the most loyal usage ("the one that I prefer") to the most negative one ("would never buy/use"). The examples of responses within the range are: "buy/use occasionally," "buy/use only if there is no alternative," and "one of several I buy/use." We use the percentage of households who chose the extreme responses as instruments for exogenous consumer demand. The two variables have several advantages. First, they measure consumers' brand usage habits directly, instead of asking about their overall satisfaction and quality perception, which may not necessarily translate into an actual purchase behavior (Keller (2008)). For example, while some people may have a very favorable view of premium brands, such as Rolex or Cartier, they cannot realistically afford them and, therefore, do not consider them in their purchasing decisions. Second, these variables reflect an extreme positive/negative personal attitude towards the brand. Strong personal attitude is typically formed throughout a long-term experience with the product and, therefore, is not likely to be affected by contemporaneous product market policy of a firm, such as price cuts or extensive advertising, which a stable and

mature firm can apply more aggressively. Third, actual usage measures are less likely to be affected by familiarity/exposure to the products. For example, more established and mature firms can be better known to consumers through word-of-mouth. They may also have a wider variety of product types (such as different flavors, sizes, colors, etc.) and, as a result, be more noticeable on the shelves. However, while established firms can create more visibility for their products, increasing consumer propensity to try them, the long-term usage behavior is determined through personal experience with the products and is mainly affected by individual tastes. This argument is especially strong for the answer "would never use/buy," which means that while consumers are familiar with the brand and its products, they consciously avoid it. Finally, the usage responses are, ex ante, industry and price neutral.

Statistical analysis of these instruments supports our assumptions. Table 3 demonstrates that both usage variables have strong correlation with *Stature*: "one I prefer" has a correlation of 0.72, and "would never use" has a correlation of -0.67, satisfying the first necessary requirement for the instrument's validity. While the correlations of both responses with major control variables are weaker than the correlation of control variables with *Stature*, it may still be somewhat high for some variables. For example, both variables are still correlated with firm age and size, suggesting that consumers become familiar with firms as they grow in size. Therefore, we construct another instrumental variable by taking into account the argument that consumers may avoid unfamiliar firms. Specifically, we orthogonalize "would never use" by regressing it on a "never used" variable and use obtained residuals as our alternative instrumental variable. This exercise helps to capture those consumers who have heard about the product or have used it in the past but decided to never consider it again. Table 3 demonstrates that the orthogonalized measure has almost no correlation with age, profitability, and advertising of the firm but still correlates with brand *Stature*.

Next, we reestimate the main regressions using 2SLS technique. The results for leverage and cash as dependent variables are provided in tables 10 and 11, respectively. In Panels A and B, we use the extremely positive and extremely negative consumer usage responses as our instruments, and in Panel C we use the orthogonalized "would never consider" response. We do not report the results of the first-stage estimation. Overall, our findings are consistent with the main results, described above, and provide additional empirical support to the main results that brand *Stature* has a positive impact on capital structure and a negative impact on cash holdings.

V. Robustness tests

In this section, we perform additional robustness tests to verify that our main results hold across different subsamples and are robust to additional variable definitions.

1. Established firms

One potential concern that may weaken our link between consumer demand and a firm's financial decisions is that the results are driven by established brands: firms that entered the industry early and established their reputation in the product market as authentic, classic, and original brands. Those brands are likely to have strong demand on one side (Bronnenberg et al. (2009)) and, at the same time, develop a good reputation in the finance markets that would allow those firms to hold more leverage and less cash.

To address this concern, we remove market leaders from the sample and repeat our analysis. We use several definitions to identify market leaders. Our first definition is based on a firm's age. Using the overall Compustat universe, we classify the oldest firm in each SIC four-digit industry as a market leader. Our second definition uses the market share of a firm. For each year we denote the firm with the largest sales in the industry as a market leader. Since the largest firm in the industry is most likely publicly traded, our definition is not likely to be biased by reliance on the sample of publicly traded firms in defining the market leader. Overall, only 6.8% of the firm-year observations fall into the category of market leaders using the definition of age and about 7.6%, using the definition of market share. We repeat the main estimations of leverage and cash holdings, removing market leaders, and obtain similar results. For additional robustness, we define both categories more broadly and assign the oldest/largest 1%, 5%, and 10% of firms to the category of market leaders. While we eliminate more firm-year observation by expanding the market leader criteria, the results of all estimations remain very similar to the ones presented here.

2. Access to capital markets

Another potential concern is that the significant impact of the brand measure on a firm's financial decisions is driven by variation between a group of financially constrained firms, which cannot easily access external capital markets to invest in brand management, and a group of financially stable firms, which can easily obtain financing and, therefore, do not have to forego projects, increasing their brand perception.

Following Opler et al. (1999), we use the availability of a debt rating as a proxy for how easily external capital can be obtained. Since about 70% of our firms in the sample do have a credit rating (*Access* equals one), we remove the firms that do not have a rating and reestimate our results. Our overall conclusion remains the same, and we do not find that limiting the sample to firms with access to public capital markets drives the relations between brand perception and a firm's financial decisions.

3. Additional definitions of consumer demand

We also verify that our results are not sensitive to using *Stature* as our main measure of brand perception and loyalty. Since the *Knowledge* pillar may capture additional effects, such as elements of information asymmetry, rather than personal attitude as a consumer, it may introduce additional noise to the variable. We re-estimate our analysis using only the *Esteem* pillar and find very similar results.

Next, we use the measure of brand performance, as suggested by Bronnenberg, Dhar, and Dube (2009). The authors use a simple average of positive response rates to the following brand characteristics: "high quality," "good value," and "best brand in the category" as a proxy for perceived quality. While "high quality" response is one of the components of "*Esteem*," the other two questions are not included in the brand *Stature* construct and may potentially affect our results. We reestimate our specifications for leverage and cash holdings using the new index and find results similar to the ones obtained with the overall brand *Stature* measure.

4. Data imputations

Since the BAV surveys were not performed on a constant basis before 2001, our sample has gaps for the years 1994 to 1996, 1998, and 2000. The gaps originate from technical reasons of establishing and analyzing a new survey methodology for a large sample of firms and a wide respondent base and, therefore, are unlikely to bias the sample. Still, as a robustness check, we correct the sample by imputing the missing BAV data. As most of the BAV survey components are extremely persistent, we use the linear function to obtain data between two data points to fill in missing data. As a result of the imputation, our sample increases to between 2,600 and 2,800 observations (depending on the specified regression). The main results remain very similar to the ones presented here. We also use a step function as an alternative imputation method and assign

the values of the most available survey until we obtain new data. Again, we obtain results similar to the ones presented.

VI. Conclusion

This paper demonstrates that characteristics of a consumer demand for a firm's product have an impact on financial policy. Firms with strong brands have loyal consumers with high subjective value for the firm's products and who are willing to pay more and stick with the product despite higher prices or price cuts by competitors. As a result, those firms can enjoy a higher and more stable stream of future profits and have a more secure market share.

Using those properties, we generate two predictions that map demand characteristics into financial theory. The first hypothesis relies on the bankruptcy cost frictions. If this is the channel of interaction between real and financial markets, then firms with stronger consumer demand have lower distress probabilities and, as a result, can hold more leverage, retain less cash, and pay out more. At the same time, stable consumer demand may diminish the disciplinary role of the market and intensify the agency problems between managers and shareholders. As an outcome, managers prefer to hold less debt, hoard cash, and pay out less.

To empirically test the link between brand value and a firm's financial decisions, we use a marketing database of brand asset valuation (BAV), which summarizes the responses of a wide sample of US households across different brand characteristics. We find that brand *Stature*, the measure of consumer attitude towards the brand, has a positive impact on leverage and a negative impact on cash flow. Our results are robust to different specifications and hold across subsamples. We also find that brand *Stature* has a positive impact on pay-out policy, but the results are not statistically significant.

Our results are not likely to be driven by omitted variables. To address endogeneity concerns, we perform an instrumental variable analysis. We use extreme consumer usage responses ("the one I prefer" and "would never consider") as instruments for consumer demand, driven by consumer tastes and preferences. We find that our main results hold after we repeat the main analysis using the 2SLS technique.

Overall, our findings indicate that product market characteristics have an impact on financial management of a firm. The results are especially important given the recently documented trend of increased cash flow volatility (Irvine and Pontiff (2009), Bates et al. (2009)), attributed to harsher competition in the US economy. Overall, our paper shows the

importance of the interaction between marketing and finance fields and suggests that a firm's real policy, such as investment in brand management, can have a spillover effect beyond the product market and benefit the firm's financial flexibility.

References

Aaker, David. A., 1996, *Building strong brands* (The Free Press, New York, NY).

Ali, Ashiq, Sandy Klasa, and Eric Yeung, 2009, The limitations of industry concentration measures constructed with Compustat data: Implications for finance research, *Review of Financial Studies* 22, 3839-3871.

Allen, Franklin, and Douglas Gale, 2000, Corporate governance and competition, in Vives, Xavier, ed: *Corporate Governance: Theoretical and Empirical Perspectives* (Cambridge University Press, Cambridge, UK).

Anderson, Eugene W., and Sattar A. Mansi, 2009, Does customer satisfaction matter to investors? Findings from the bond market, *Journal of Marketing Research* 46, 703-714.

Bates, Thomas W., Kathleen M. Kahle, and René M. Stulz, 2009, Why do U.S. firms hold so much more cash than they used to? *Journal of Finance* 64, 1985-2021.

Bebchuk, Lucian, Alma Cohen, and Allen Ferrell, 2009, What matters in corporate governance? *Review of Financial Studies*, 22, 783-827.

Benmelech, Efraim, 2009, Asset salability and debt maturity: Evidence from nineteenth-century American railroads, *Review of Financial Studies* 22, 1545-1584.

Benmelech, Efraim, and Nittai K. Bergman, 2009, Collateral pricing, *Journal of Financial Economics* 91, 339-360.

Bhattacharya, Sudipto, 1979, Imperfect information, dividend policy and "the bird in the hand" fallacy, *Bell Journal of Economics* 10, 259-270.

Bolton, Patrick, and David S. Scharfstein, 1990, A theory of predation based on agency problems in financial contracting, *American Economic Review* 80, 93-106.

Brander, James A., and Tracy R. Lewis, 1986, Oligopoly and financial structure: The limited liability effect, *American Economic Review* 76, 956-970.

Bronnenber, Bart J, Sanjay K. Dhar, and Jean-Pierre H. Dube, 2007, Consumer packaged goods in the United States: National brands, local branding, *Journal of Marketing Research* 44, 4-13.

Bronnenber, Bart J, Sanjay K. Dhar, and Jean-Pierre H. Dube, 2009, Brand History, Geography, and the Persistence of Brand Shares, *American Economic Review* 117, 87-115.

Campello, Murillo, and Erasmo Giambona, 2010, Asset tangibility and capital structure, *Working paper, University of Illinois.*

Chamberlin, Edward, 1933, *The theory of monopolistic competition* (Harvard University Press, Cambridge, MA).

Chemmanur, Thomas, and An Yan, 2009, Product market advertising and new equity issues, *Journal of Financial Economics* 92, 40-65.

Chemmanur, Thomas, and An Yan, 2010a, Product market advertising, IPO valuation, and long-run stock returns, *Working paper, Boston College.*

Chemmanur, Thomas, and An Yan, 2010b, Advertising, attention, and stock returns, *Working paper, Boston College.*

Chevalier, Judith A., 1995a, Capital structure and product-market competition: Empirical evidence from the supermarket industry, *American Economic Review* 85, 415-435.

Chevalier, Judith A., 1995b, Do LBO supermarkets charge more? An empirical analysis of the effects of LBOs on supermarket pricing, *Journal of Finance* 50, 1095-1112.

Dodds, William B., Kent B. Monroe, and Dhruv Grewal, 1991, Effect of price, brand, and store information on buyers' product evaluations, *Journal of Marketing Research* 28, 307-319.

Fama, Eugene F., and Kenneth R. French, 2002, Testing trade-off and pecking order predictions about dividends and debt, *Review of Financial Studies* 15, 1-33.

Faulkender, Michael, and Mitchell A. Petersen, 2006, Does the source of capital affect capital structure? *Review of Financial Studies* 19, 45-79.

Fornell, Claes, Sunil Mithas, Forrest V. Morgeson III, and M.S. Krishnan, 2006, Customer satisfaction and stock prices: High returns, low risk, *Journal of Marketing* 70, 3-14.

Fresard, Laurent, 2010, Financial strength and product market behavior: The real effects of corporate cash holdings, *Journal of Finance* 65, 1097-1122.

Frieder, Laura, and Avanidhar Subrahmanyam, 2005, Brand perception and the market for common stock, *Journal of Financial and Quantitative Analysis* 40, 57-85.

Gerzema, John, and Ed Lebar, 2008, *The Brand Bubble* (Jossey-Bass, San Francisco, CA).

Gompers, Paul, Joy Ishii, and Andrew Metrick, 2003, Corporate governance and equity prices, *Quarterly Journal of Economics* 118, 107-155.

Graham, John R., Michael Lemmon, and James S. Schallheim, 1998, Debt, leases, taxes, and the endogeneity of corporate tax status, *Journal of Finance* 53, 131-162.

Grinstein, Yaniv, and Roni Michaely, 2005, Institutional holdings and payout policy, *Journal of Finance* 60, 1389-1426.

Gruca, Thomas S., and Lopo L. Rego, 2005, Customer satisfaction, cash flow, and shareholder value, *Journal of Marketing* 69, 115-130.

Grullon, Gustavo, George Kanatas, and Piyush Kumar, 2006, The impact of capital structure on advertising competition: An empirical study, *Journal of Business* 79, 3101-3124.

Grullon, Gustavo, George Kanatas, and James P. Weston, 2004, Advertising, breadth of ownership and liquidity, *Review of Financial Studies* 17, 439-461.

Grullon, Gustavo, and Roni Michaely, 2002, Dividends, share repurchases, and the substitution hypothesis, *Journal of Finance* 57, 1649-1684.

Grullon, Gustavo, and Roni Michaely, 2007, Corporate payout policy and product market competition, *Working paper, Rice University*.

Grullon, Gustavo, Roni Michaely, and Bhaskaran Swaminathan, 2002, Are dividend changes a sign of firm maturity? *Journal of Business* 75, 387-424.

Harris, Milton, and Artur Raviv, 1990, Capital structure and the informational role of debt, *Journal of Finance* 45, 321-439.

Hovakimian, Armen, Tim Opler, and Sheridan Titman, 2001, The debt-equity choice, *Journal of Financial and Quantitative Analysis* 36, 1-24.

Jensen, Michael C., 1986, Agency costs of free cash flow, corporate finance, and takeovers, *American Economic Review* 76, 323-329.

John, Kose, and Joseph Williams, 1985, Dividends, dilution, and taxes: A signaling equilibrium, *Journal of Finance* 40, 1053-1070.

Irvine, Paul J., and Jeffrey Pontiff, 2009, Idiosyncratic return volatility, cash flows, and product market competition, *Review of Financial Studies* 22, 1149-1177.

Keller, Kevin L., 2008, *Strategic brand management: Building, measuring and managing brand equity* (Pearson Education, Upper Saddle River, NJ).

Khanna, Naveen and Sheri Tice, 2000, Strategic responses of incumbents to the new entry: The effect of ownership structure, capital structure, and focus, *Review of Financial Studies* 13, 749-779.

Kim, Chang-Soo, David C. Mauer, and Ann E. Sherman, 1998, The determinants of corporate liquidity: Theory and evidence, *Journal of Financial and Quantitative Analysis* 33, 335-359.

Kovenock, Dan, and Gordon Phillips, 1995, Capital structure and product-market rivalry: How do we reconcile theory and evidence? *American Economic Review* 85, 403-408.

Kovenock, Dan, and Gordon Phillips, 1997, Capital structure and product market behavior: An examination of plant exit and investment decisions, *Review of Financial Studies* 10, 767-803.

La Porta, Rafael, Florencio Lopez-De-Silanes, Andrei Shleifer, and Robert W. Vishny, 2000, Agency problems and dividend policies around the world, *Journal of Finance* 55, 1-33.

Lemmon, Michael L., Michael R. Roberts, and Jaime F. Zender, 2008, Back to the beginning: Persistence and the cross-section of corporate capital structure, *Journal of Finance* 63, 1575-1608.

Lyandres, Evgeny, 2006, Capital structure and interaction among firms in output markets: Theory and evidence, *Journal of Business* 79, 2381-2421.

MacKay, Peter, 2003, Real flexibility and financial structure: An empirical analysis, *Review of Financial Studies* 16, 1131-1165.

MacKay, Peter, and Gordon M. Phillips, 2005, How does industry affect firm financial structure? *Review of Financial Studies* 18, 1433-1466.

Madden, Thomas J., Frank Fehle, and Susan Fournier, 2006, Brand matters: An empirical demonstration of the creation of shareholder value throughout branding, *Journal of the Academy of Marketing Science* 34, 224-235.

McAlister, Leigh, Raji Srinivasan, and MinChung Kim, 2007, Advertising, research and development, and systematic risk of the firm, *Journal of Marketing* 71, 35-48.

Miller, Merton H., and Kevin Rock, 1985, Dividend policy under asymmetric information, *Journal of Finance* 40, 1031-1051.

Mizik, Natalie, and Robert Jacobson, 2008, The financial value impact of perceptual brand attributes, *Journal of Marketing Research* 45, 15-32.

Mizik, Natalie, and Robert Jacobson, 2009, Valuing branded businesses, *Journal of Marketing Research* 73, 137-153.

Modigliani, Franco and Merton H. Miller, 1958, The cost of capital, corporation finance and the theory of investment, *American Economic Review* 48, 261-297.

Opler, Tim C., and Sheridan Titman, 1994, Financial distress and corporate performance, *Journal of Finance* 49, 1015-1040.

Opler, Tim, Lee Pinkowitz, René Stulz, and Rohan Williamson, 1999, The determinants and implications of corporate cash holdings, *Journal of Financial Economics* 52, 3-46.

Parsons, Christopher, and Sheridan Titman, 2009, *Empirical capital structure* (Now Publishers Inc., Hanover, MA).

Phillips, Gordon, 1995, Increased debt and industry product markets: An empirical analysis, *Journal of Financial Economics* 37, 189-238.

Pomerantz, Eva M., Shelli Chaiken and Rosalind S. Tordesillas, 1995, Attitude strength and resistance processes, *Journal of Personality and Social Psychology* 69, 408-419.

Rao, Akshay R., and Kent B. Monroe, 1989, The effect of price, brand name, and store name on buyers' perceptions of product quality: An integrative review, *Journal of Marketing Research* 26, 351-357.

Rampini, Adriano A., and S. Viswanathan, 2010, Collateral and capital structure, *Working paper, Duke University*.

Rego, Lopo L., Matthew T. Billett, and Neil A. Morgan, 2009, Consumer-based brand equity and firm risk, *Journal of Marketing* 73, 47-60.

Romaniuk, Jenni, Byron Sharp, and Andrew Ehrenberg, 2007, Evidence concerning the importance of perceived brand differentiation, *Australasian Marketing Journal* 15, 42-54.

Shivdasani, Anil, and Irina Stefanescu, 2009, How do pensions affect corporate capital structure decisions? *Review of Financial Studies*, forthcoming.

Starr, Martin K., and Joel R. Rubinson, 1978, A loyalty group segmentation model for brand purchasing simulation, *Journal of Marketing Research* 15, 378-383.

Telser, Lester G., 1966, Cutthroat competition and the long purse, *Journal of Law and Economics* 9, 259-277.

Tuli, Kapil R., and Sundar G. Bharadwaj, 2009, Customer satisfaction and stock returns risk, *Journal of Marketing* 73, 184-197.

Welch, Ivo, 2010, A bad measure of leverage: The financial-debt-to-asset ratio, *Working paper, Brown University*.

Appendix 1

An Example of a BAV Questionnaire Page

Familiarity

By "familiarity" we mean your overall awareness of the brand as well as your understanding of what kind of product or service the brand represents.

Please put an "X" in the box next to each brand that best describes how familiar you are with it. All brands in the section must be rated. Remember, you do not have to have used or purchased the brand to rate it.

	Never Heard of 1	2	3	4	5	6	Extremely Familiar 7		Never Heard of 1	2	3	4	5	6	Extremely Familiar 7
Herbal Essences	☐	☐	☐	☐	☐	☐	☐	Hungry Man	☐	☐	☐	☐	☐	☐	☐
Miller Lite	☐	☐	☐	☐	☐	☐	☐	Michelob	☐	☐	☐	☐	☐	☐	☐
Duracell	☐	☐	☐	☐	☐	☐	☐	Vijay Singh	☐	☐	☐	☐	☐	☐	☐
Alfa Romeo	☐	☐	☐	☐	☐	☐	☐	Marshalls	☐	☐	☐	☐	☐	☐	☐
Vidal Sassoon	☐	☐	☐	☐	☐	☐	☐	Chrysler	☐	☐	☐	☐	☐	☐	☐
World Cup (soccer)	☐	☐	☐	☐	☐	☐	☐	Heineken Lite	☐	☐	☐	☐	☐	☐	☐
Energizer	☐	☐	☐	☐	☐	☐	☐	Bergdorf Goodman	☐	☐	☐	☐	☐	☐	☐
Lance Armstrong	☐	☐	☐	☐	☐	☐	☐	Alex Rodriguez	☐	☐	☐	☐	☐	☐	☐
Mike's Hard Lemonade	☐	☐	☐	☐	☐	☐	☐	Kotex	☐	☐	☐	☐	☐	☐	☐
Wal-Mart	☐	☐	☐	☐	☐	☐	☐	Mercury	☐	☐	☐	☐	☐	☐	☐
	1	2	3	4	5	6	7		1	2	3	4	5	6	7
Saran Wrap	☐	☐	☐	☐	☐	☐	☐	Harp	☐	☐	☐	☐	☐	☐	☐
Radica	☐	☐	☐	☐	☐	☐	☐	Armour	☐	☐	☐	☐	☐	☐	☐
Barry Bonds	☐	☐	☐	☐	☐	☐	☐	Nice `N Easy	☐	☐	☐	☐	☐	☐	☐
Lord & Taylor	☐	☐	☐	☐	☐	☐	☐	Swanson	☐	☐	☐	☐	☐	☐	☐
Michelob Lite	☐	☐	☐	☐	☐	☐	☐	Foster`s	☐	☐	☐	☐	☐	☐	☐
Tampax	☐	☐	☐	☐	☐	☐	☐	Monopoly	☐	☐	☐	☐	☐	☐	☐
Beck`s	☐	☐	☐	☐	☐	☐	☐	Ford Taurus	☐	☐	☐	☐	☐	☐	☐

Appendix 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 firms manage different products across different brand groups.[21] There are four major types of branding strategies. In this appendix, we describe the merging rule that we apply for each type of brand portfolio.

The simplest, and actually the rarest, case is a "monobrand": firms in which one brand represents all or most of the firm's business (for example, Starbucks, Walmart, and Martha Stewart Living Omnimedia). In this case the identification of brand and company it belongs to 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, General Electric, 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 using a separate entrance 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, Diageo, the world's largest beer, wine, and spirit company (whose brands include Guinness, Smirnoff, and Johnnie Walker), keeps the company name only at the background of its product labels. BAV typically asks about the overall brand name, as well as about each of the company brands, in a separate entry. The problem that arises in this case is that the combination of brands, composing 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, our purpose in this paper is to get the best approximation 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 problem is data availability: not all companies report the distribution of their balance of statement at a brand level. Second, it is not clear which weights are appropriate to use: revenues, gross profits, net profits, etc. The advantage of our data is that for most of the house-of-brand

[21] Rao, Agarwal, and Dahlhoff (2004) provide a comprehensive overview of different branding strategies.

firms, BAV includes the company name, as well as the names of the brands it owns, as a separate entry. As a result, we 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-brand 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. We use the brand with the same, or most similar, name to the company as a proxy to the firm's core business.[22] 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) document the association of the branding strategy with firm's value), so 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, so that consumers associate it with the firm.

Since the data is a time-series, we 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, we create the link of Gillette brand to the Gillette Company, but discontinue it in 2005, when the company was acquired by Proctor & Gamble.

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

We still 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, we use a simple average of the *Stature* of all the brands that belong to a firm. As

[22] Some firms have double names (for example, Molson-Coors). In this case we use a simple average of the BAV pillars and other variables (usage, brand image) as a proxy for the firm's overall brand value.

an alternative approach, we 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, we weigh the *Stature* of each brand 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 we use the brand with the maximum *Stature* as the 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 always go back to its core business in a case of unsuccessful development of a new brand, the *Stature* of the most valuable brand may be the important one. We repeat the main analysis using each of the alternative merging approaches and find that using alternative matching techniques does not change our conclusions in a material way.

Table 1
Descriptive Statistics

This table presents the distribution of main variables of interest for BAV sample in Panel A and the overall Compustat universe in Panel B for the period 1993–2008. *Size* is the overall book assets, expressed in millions of constant 1992 dollars. *Cash* is the ratio of cash and short-term investments to total assets. *EBITDA* is the ratio of operating income before depreciation to total assets. *Leverage* is the sum of short-term and long-term debt, scaled by book assets. *Tangibility* is defined as net property, plant, and equipment, divided by book assets. *M/B,* market to book ratio, is the market value of equity plus the book value of assets minus preferred stock plus deferred taxes. *S&P500* is a dummy variable that equals one if a firm belongs to the S&P 500 index and zero otherwise. *Advertising/Sales* and *R&D/Sales* are advertising and R&D expenses, scaled by total sales. *Access* is a dummy variable that equals one if a firm has a credit rating for any type of debt it holds and zero otherwise. *DivDummy* is a dummy variable that equals one if a firm pays out dividends and zero otherwise. *DivBook* and *Repo* are the ratios of common dividends and repurchases to total assets, respectively.

Panel A: BAV Sample

Variable	N	Mean	Std. Dev.	25th Pct.	Median	75th Pct.
Size	2,606	7.921	1.600	6.894	8.059	9.205
Cash	2,606	0.152	0.155	0.034	0.103	0.216
EBITDA	2,606	0.143	0.113	0.086	0.142	0.206
Tangibility	2,606	0.279	0.200	0.122	0.235	0.395
M/B	2,606	2.139	1.371	1.239	1.697	2.574
S&P500	2,606	0.488	0.500			
Access	2,606	0.696	0.460			
Advertising/Sales	1,856	0.052	0.057	0.018	0.033	0.061
RD/Sales	1,611	0.048	0.070	0.000	0.016	0.066
DivDummy	2,606	0.582	0.493			
DivBook	2,596	0.016	0.043	0.000	0.005	0.021
Repo	2,455	0.039	0.073	0.000	0.006	0.048

Panel B: Compustat Sample

Variable	N	Mean	Std. Dev.	25th Pct.	Median	75th Pct.
Size	92,100	5.442	2.049	3.942	5.404	6.843
Cash	92,100	0.165	0.199	0.025	0.076	0.235
EBITDA	91,458	0.066	0.174	0.022	0.091	0.154
Tangibility	92,100	0.245	0.242	0.047	0.160	0.373
M/B	92,100	1.857	1.440	1.037	1.327	2.086
S&P500	92,100	0.075	0.263			
Access	92,100	0.227	0.419			
Advertising/Sales	31,564	0.030	0.058	0.006	0.013	0.030
RD/Sales	42,195	0.094	0.146	0.004	0.035	0.126
DivDummy	92,100	0.378	0.485			
DivBook	91,708	0.009	0.036	0.000	0.000	0.005
Repo	76,791	0.014	0.046	0.000	0.000	0.005

Table 2
Industry Distribution

This table presents the distribution of BAV and Compustat samples (firm-year observations) by industry for the period 1993–2008. Industries are defined according to the Fama-French 12-industry classification. Panel A reports the ratio of the number of observations in each industry to the overall number of observations in the sample. Panel B reports the ratio of the market capitalization of each industry to the overall market capitalization of the sample.

Industry Number	Industry Name	Industry Description	Panel A Number of firms		Panel B Market Cap	
			BAV	Compustat	BAV	Compustat
1	Consumer Nondurables	Food, tobacco, textiles, apparel, leather, toys	0.223	0.054	0.164	0.078
2	Consumer Durables	Cars, TV's, Furniture, Household appliances	0.033	0.025	0.015	0.016
3	Manufacturing	Machinery, trucks, planes, off furn, paper, com printing	0.097	0.105	0.098	0.098
4	Energy	Oil, gas and coal extraction	0.007	0.039	0.005	0.054
5	Chemicals	Chemicals and allied products	0.030	0.022	0.027	0.029
6	Business Equipment	Computers, software, electronic equipment	0.156	0.188	0.234	0.169
7	Telecommunications	Telephone and television transmission	0.049	0.032	0.080	0.111
8	Utilities	Utilities	0.002	0.029	0.002	0.058
9	Shops	Wholesale, retail and some services	0.209	0.098	0.095	0.061
10	Healthcare	Healthcare, medical equipment and drugs	0.038	0.091	0.174	0.129
11	Money	Financial services	0.047	0.188	0.044	0.094
12	Other	Other	0.110	0.130	0.063	0.105

Table 3
Correlation Matrix of Instrumental and Control Variables

This table reports simple correlation between instrumental and control variables. "One I Prefer," "Would Never Consider," and "Never Used" are the percentages of respondents who marked these answers in their questionnaires. "Would Never Consider" orthogonalized is the residual variables, obtained from the estimation of "Would Never Consider" as a function of "Never Used" variable. *Size* is the overall book assets, expressed in millions of constant 1992 dollars. *log(Age)* is the age of the firm since its first record in the Compustat database. *EBITDA* is the ratio of operating income before depreciation to total assets. (*M/B*) is the market value of equity plus the book value of assets minus preferred stock plus deferred taxes. *log(R&D)* and *log(Advertising)* are natural logarithms of the overall amount of R&D and advertising expenses, respectively, in millions of constant 1993 dollars. *Tangibility* is defined as net property, plant, and equipment divided by book assets. *HHI* is Herfindahl index, created by summing up squared market shares of all the publicly traded companies in a two-digit SIC code.

Variable	Stature	One I prefer	Would Never Consider	Never Used	Would Never Consider orthogonalized
Size	0.22	0.17	-0.21	-0.16	-0.14
log(Age)	0.31	0.23	-0.23	-0.34	-0.01
EBITDA	0.17	0.16	-0.10	-0.21	0.04
M/B	0.05	0.04	0.02	0.00	0.02
Advertising/Sales	0.02	0.03	0.05	0.01	0.05
R&D/Sales	-0.24	-0.21	0.27	0.37	0.05
log(Advertising)	0.32	0.21	-0.18	-0.34	0.05
log(R&D)	0.06	0.11	0.03	0.03	0.01
Tangibility	0.08	0.07	-0.14	-0.14	-0.07
HHI	0.21	0.15	-0.11	-0.17	0.00
Stature		0.73	-0.67	-0.76	-0.24
One I prefer			-0.56	-0.68	-0.17
Would Never Consider				0.64	0.77
Never Used					0.00

Table 4
The Effect of Brand Value of Financial Policy: Univariate Analysis

This table presents a comparison of equally weighted group means for measures of leverage (Panel A), cash holding (Panel B) and dividend payout (Panel C) by quintiles of *Size* and *Stature*. The groups are formed by first partitioning the BAV sample by *Size* (log of assets in dollars 1993), and then partitioning each quintile by *Stature* quintiles. Reported averages are cross-sectional equally weighted averages. *Leverage* is the sum of short-term and long-term debt, scaled by book assets. *Cash* is the ratio of cash and short-term investments to total assets. *Dividends* is the dividend payout, scaled by total assets.

Panel A: Leverage across Size-Stature groups

	Small	2	3	4	Large
Stature quintile			***Leverage***		
Low	0.07	0.14	0.21	0.22	0.22
2	0.15	0.17	0.24	0.25	0.21
3	0.16	0.15	0.26	0.31	0.24
4	0.17	0.24	0.22	0.23	0.28
High	0.23	0.26	0.33	0.29	0.28
Difference (High-Low)	0.16	0.12	0.12	0.07	0.07
t-stat (High-Low)	5.65	4.87	4.20	3.29	2.94

Panel B: Cash across Size-Stature groups

	Small	2	3	4	Large
Stature quintile			***Cash***		
Low	0.34	0.28	0.20	0.15	0.13
2	0.21	0.20	0.12	0.14	0.15
3	0.21	0.14	0.12	0.11	0.13
4	0.18	0.13	0.14	0.12	0.12
High	0.12	0.10	0.06	0.09	0.10
Difference (High-Low)	-0.22	-0.17	-0.14	-0.06	-0.03
t-stat (High-Low)	-7.88	-7.73	-6.53	-3.78	-1.82

Panel C: Dividend payout across Size-Stature groups

	Small	2	3	4	Large
Stature quintile			***Dividends***		
Low	0.015	0.008	0.015	0.014	0.015
2	0.016	0.007	0.015	0.022	0.019
3	0.014	0.021	0.013	0.017	0.019
4	0.010	0.015	0.017	0.021	0.023
High	0.004	0.012	0.021	0.019	0.027
Difference (High-Low)	-0.011	0.005	0.006	0.005	0.012
t-stat (High-Low)	-1.24	1.28	1.25	1.78	3.12

Table 5
Cross-Sectional Regression of Leverage on Brand Value Estimates

This table reports regression results for Tobit regression in Panel A and OLS regression in Panel B. Tobit regression is based on the overall sample of BAV firms, while OLS regression includes only firms with positive leverage as of year t. *Size* is the overall book assets expressed in millions of constant 1992 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. *EBITDA* is the ratio of operating income before depreciation to total assets. *Leverage* is the sum of short-term and long-term debt scaled by book assets. *Tangibility* is defined as net property, plant, and equipment divided by book assets. *Depreciation* is depreciation expenses scaled by assets. *log(R&D)* and *log(Advertising)* are natural logarithms of the overall amount of R&D and advertising expenses, respectively, in millions of constant 1993 dollars. *Access* is a dummy variable that equals one if a firm has a credit rating for any type of debt it holds and zero otherwise. *S&P500* is a dummy variable that equals one if a firm belongs to the S&P 500 index and zero otherwise. *HHI* is Herfindahl index, created by summing up squared market shares of all the publicly traded companies in a two-digit SIC code. Both estimation models include year and industry fixed effects (at SIC two-digit level). Standard errors are reported in parentheses and are based on heteroskedastic consistent errors adjusted for clustering across firms (Rogers (1993)). ***, **, and * indicate p-values of 1%, 5%, and 10%, respectively.

	Tobit Model			OLS Model		
	(1)	(2)	(3)	(4)	(5)	(6)
Intercept	0.102	0.055	0.137**	0.023	0.07	0.09
	(0.064)	*(0.066)*	*(0.064)*	*(0.062)*	*(0.064)*	*(0.063)*
Size	0.019***	0.0002	0.005	0.0102*	-0.0038	-0.0004
	(0.006)	*(0.006)*	*(0.006)*	*(0.006)*	*(0.006)*	*(0.006)*
S&P500	0.002	-0.024	-0.023	-0.004	-0.022	-0.022
	(0.016)	*(0.016)*	*(0.016)*	*(0.016)*	*(0.016)*	*(0.016)*
M/B	-0.025***	-0.02***	-0.018***	-0.019**	-0.016**	-0.015**
	(0.007)	*(0.006)*	*(0.006)*	*(0.007)*	*(0.007)*	*(0.007)*
EBITDA	-0.154*	-0.161**	-0.167**	-0.12	-0.133	-0.138*
	(0.088)	*(0.078)*	*(0.077)*	*(0.092)*	*(0.085)*	*(0.084)*
Tangibility	0.079	0.088	0.073	0.078	0.081	0.069
	(0.058)	*(0.055)*	*(0.055)*	*(0.06)*	*(0.057)*	*(0.057)*
Depreciation	-0.063	-0.199	-0.099	-0.126	-0.232	-0.141
	(0.278)	*(0.248)*	*(0.248)*	*(0.307)*	*(0.279)*	*(0.277)*
Access		0.149***	0.15***		0.112***	0.114***
		(0.019)	*(0.019)*		*(0.02)*	*(0.02)*
HHI		0.007	-0.003		-0.028	-0.036
		(0.036)	*(0.036)*		*(0.034)*	*(0.034)*
log(advertising)			-0.006**			-0.006**
			(0.003)			*(0.003)*
log(R&D)			-0.005			-0.004
			(0.004)			*(0.004)*
Stature	0.034***	0.029***	0.032***	0.034***	0.031***	0.034***
	(0.008)	*(0.008)*	*(0.009)*	*(0.008)*	*(0.008)*	*(0.008)*
Obs.	*2219*	*2219*	*2219*	*2007*	*2007*	*2007*
R-squared adj.				0.296	0.340	0.345
Chi-squared	1010.1	1249.2	1269.1			
P(Chi-squared)	0	0	0			

Table 6
Cross-Sectional Regression of Cash Holding on Brand Value Estimates

This table reports regression results for OLS regression where *Cash* is a dependent variable. Panel A uses the ratio of cash to assets as a dependent variable, and Panel B, cash to sales. *M/B*, market to book ratio, is the market value of equity plus the book value of assets minus preferred stock plus deferred taxes. *EBITDA* is the ratio of operating income before depreciation to total assets. *Leverage* is the sum of short-term and long-term debt scaled by book assets. *Tangibility* is defined as net property, plant, and equipment divided by book assets. *Wcap* is working capital and net of cash, scaled by assets. *CapEx*, capital expenditures, is the ratio of capital expenditures to total assets. *DivDummy* is a dummy variables that equals one if a firm pays out dividends and zero otherwise. *log(R&D)* and *log(Advertising)* are natural logarithms of the overall amount of R&D and advertising expenses, respectively, in millions of constant 1993 dollars. *Access* is a dummy variable that equals one if a firm has a credit rating for any type of debt it holds and zero otherwise. *S&P500* is a dummy variable that equals one if a firm belongs to the S&P 500 index and zero otherwise. *HHI* is Herfindahl index, created by summing up squared market shares of all the publicly traded companies in a two-digit SIC code. Both estimation models include year and industry fixed effects (at SIC two-digit level). Standard errors are reported in parentheses and are based on heteroskedastic consistent errors adjusted for clustering across firms (Rogers (1993)). ***, **, and * indicate p-values of 1%, 5%, and 10%, respectively.

	Panel A			Panel B		
	(1)	(2)	(3)	(4)	(5)	(6)
Intercept	0.427***	0.405***	0.396***	0.166**	0.405***	0.152*
	(0.045)	*(0.047)*	*(0.048)*	*(0.073)*	*(0.047)*	*(0.078)*
Size	-0.0191***	-0.0263***	-0.021***	-0.001	-0.026***	-0.007
	(0.005)	*(0.005)*	*(0.005)*	*(0.007)*	*(0.005)*	*(0.009)*
S&P500	-0.014	-0.015	-0.007	-0.029	-0.015	-0.017
	(0.011)	*(0.01)*	*(0.011)*	*(0.02)*	*(0.01)*	*(0.022)*
M/B	0.028***	0.024***	0.023***	0.033***	0.024***	0.025***
	(0.004)	*(0.004)*	*(0.004)*	*(0.006)*	*(0.004)*	*(0.007)*
EBITDA	-0.158***	-0.142***	-0.137***	-0.437***	-0.142***	-0.383***
	(0.053)	*(0.051)*	*(0.05)*	*(0.075)*	*(0.051)*	*(0.073)*
Tangibility	-0.15***	-0.141***	-0.136***	-0.126**	-0.141***	-0.125*
	(0.036)	*(0.036)*	*(0.038)*	*(0.057)*	*(0.036)*	*(0.066)*
Wcap	-0.266***	-0.254***	-0.248***	-0.196***	-0.254***	-0.145**
	(0.043)	*(0.042)*	*(0.041)*	*(0.058)*	*(0.042)*	*(0.058)*
HHI		-0.005	-0.004		-0.005	-0.012
		(0.025)	*(0.024)*		*(0.025)*	*(0.038)*
log(advertising)		0.008***	0.008***		0.008***	0.002
		(0.002)	*(0.002)*		*(0.002)*	*(0.003)*
log(R&D)		0.01***	0.009***		0.01***	0.022***
		(0.003)	*(0.003)*		*(0.003)*	*(0.005)*
Capex			-0.027			0.06
			(0.102)			*(0.151)*
Access			-0.037***			-0.044
			(0.012)			*(0.028)*
DivDummy			-0.011			-0.005
			(0.016)			*(0.017)*
Stature	-0.02***	-0.022***	-0.021***	-0.026***	-0.022***	-0.02***
	(0.005)	*(0.005)*	*(0.005)*	*(0.007)*	*(0.005)*	*(0.007)*
Obs.	*2112*	*2112*	*2103*	*2112*	*2112*	*2103*
R-squared adj.	0.501	0.519	0.528	0.395	0.409	0.412

Table 7
Cross-Sectional Regressions of Dividend Payout on Brand Value Estimates

This table reports regression results for logit regressions where *DivDummy* is the dependent variable in Panel A, and OLS regression for dividend-paying firms where *DivBook* is the dependent variable. *DivDummy* is a dummy variables that equals one if a firm pays out dividends and zero otherwise. *DivBook* is dividend payout scaled by total assets. *log(InstHold)* is the logarithm of the percentage of institutional holdings. *log(turnover)* is the average monthly number of shares traded during a year divided by the average number of shares outstanding during the year expressed in logarithms. See Table 5 for the description of the rest of the variables. Both estimation models include year and industry fixed effects (at SIC two-digit level). Standard errors are reported in parentheses and are based on heteroskedastic consistent errors adjusted for clustering across firms (Rogers (1993)). ***, **, and * indicate p-values of 1%, 5%, and 10%, respectively.

	Panel A - DivDummy			*Panel B -DivBook*		
	(1)	(2)	(3)	(4)	(5)	(6)
Intercept	13.143	13.306	13.431	-0.034**	-0.034**	-0.032**
	(1.173)	*(1.205)*	*(1.235)*	*(0.014)*	*(0.014)*	*(0.014)*
Stature	0.111*	0.115*	0.069	0.001	0.001*	0.002*
	(0.065)	*(0.068)*	*(0.07)*	*(0.0009)*	*(0.0009)*	*(0.0009)*
Size	0.494***	0.505***	0.69***	0.0016	0.0021*	0.002*
	(0.123)	*(0.135)*	*(0.14)*	*(0.001)*	*(0.001)*	*(0.001)*
S&P500	0.443	0.463	0.428	0.003	0.003	0.003
	(0.308)	*(0.311)*	*(0.319)*	*(0.002)*	*(0.002)*	*(0.002)*
log(age)	0.674***	0.685***	0.727***	0.001	0.001	0.001
	(0.147)	*(0.146)*	*(0.145)*	*(0.001)*	*(0.001)*	*(0.001)*
M/B	-0.356***	-0.364***	-0.287***	0.005***	0.004***	0.004***
	(0.1)	*(0.102)*	*(0.108)*	*(0.001)*	*(0.001)*	*(0.001)*
EBITDA	8.352***	8.389***	7.928***	0.054***	0.059***	0.06***
	(1.638)	*(1.642)*	*(1.633)*	*(0.015)*	*(0.015)*	*(0.015)*
Tangibility	0.08	0.081	0.057	0.007	0.006	0.006
	(1.056)	*(1.049)*	*(1.055)*	*(0.008)*	*(0.008)*	*(0.008)*
log(InstHold)	-0.564	-0.553	-0.687	-0.006	-0.004	-0.004
	(0.774)	*(0.786)*	*(0.8)*	*(0.006)*	*(0.005)*	*(0.006)*
log(turnover)	-0.456***	-0.463***	-0.44***	-0.006***	-0.006***	-0.006***
	(0.174)	*(0.173)*	*(0.169)*	*(0.001)*	*(0.001)*	*(0.001)*
Access		-0.11	-0.174		-0.005*	-0.005*
		(0.326)	*(0.324)*		*(0.003)*	*(0.003)*
HHI		-0.391	-0.533		-0.009**	-0.009**
		(0.808)	*(0.816)*		*(0.004)*	*(0.004)*
log(R&D)			-0.245***			-0.0001
			(0.084)			*(0.001)*
log(advertising)			0.069			-0.0002
			(0.055)			*(0.0004)*
Obs.	*2020*	*2020*	*2020*	*1142*	*1142*	*1142*
R-squared adj.				0.510	0.515	0.515
Likelihood Ratio	1018.7	1006.87	1320.55			
P(LR)	0	0	0			

Table 8
Entrenchment Index across Stature Quintiles

This table presents equally weighted group means for entrenchment index across *Stature* quintiles. In Panel A we partition the sample into quintiles of *Stature* and present the average value of the entrenchment index. In Panel B the groups are formed by first partitioning the BAV sample by *Size* (log of assets in dollars 1993) and, then, partitioning each quintile by *Stature* quintiles. Reported averages are cross-sectional equally-weighted averages. Entrenchment index is suggested by Bebchuk, Cohen, and Ferrel (2008) and consists of six provisions: staggered boards, limits to shareholder bylaw amendments, poison pills, golden parachutes, and supermajority requirements for mergers and charter amendments

Panel A: Entrenchment Index across Stature quintiles

1	2	3	4	5	diff(5-1)	t-stat(5-1)
2.63	2.82	2.66	2.85	2.71	0.08	0.70

Panel B: Entrenchment Index across Size-Stature groups

	1	2	3	4	5	diff(5-1)	t-stat(5-1)
Size Quintiles			***Stature***				
Small	2.76	2.46	2.62	3.25	3.60	0.84	3.09
2	2.42	2.88	2.84	2.92	3.14	0.71	3.10
3	2.76	2.94	2.31	2.93	2.89	0.13	0.46
4	2.55	3.02	2.87	2.82	2.66	0.12	0.49
Large	2.74	2.80	2.64	2.49	2.17	-0.57	-0.93

Table 9
Variance Decomposition

This table presents the results of Type III variance decomposition analysis where the dependent variables are book leverage (Panel A) and cash holdings (Panel B). To calculate the Type III sum of squares, we use the regression specifications of tables 5 and 6. We first compute partial sum of squares, and then normalize the vector obtained by dividing the partial sum for each variable by the total Type III partial sum of squares. See tables 5 and 6 for the description of the variables.

Panel A: Leverage

Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Size	0.08	0.00	0.00	0.05	0.00	0.00	0.02	0.00	0.00	0.01	0.00	0.00
S&P500	0.00	0.03	0.03	0.03	0.06	0.07	0.01	0.00	0.00	0.00	0.01	0.01
M/B	0.17	0.07	0.06	0.10	0.05	0.05	0.08	0.06	0.03	0.06	0.04	0.02
EBITDA	0.00	0.01	0.02	0.02	0.03	0.02	0.01	0.02	0.03	0.02	0.03	0.03
Tangibility	0.62	0.39	0.36	0.39	0.28	0.26	0.03	0.03	0.02	0.03	0.03	0.02
Depreciation	0.03	0.02	0.02	0.02	0.01	0.01	0.01	0.01	0.01	-	0.01	0.00
HHI	-	0.00	0.00	-	0.01	0.01	-	0.00	0.00	-	0.00	0.00
Access	-	0.43	0.44	-	0.31	0.33	-	0.26	0.24	-	0.18	0.17
log(advertising)	-	-	0.01	-	-	0.00	-	-	0.00	-	-	0.02
log(R&D)	-	-	0.00	-	-	0.00	-	-	0.02	-	-	0.01
Std.Dev(EBITDA)	-	-	0.00	-	-	0.00	-	-	0.00	-	-	0.00
Stature	-	-	-	0.35	0.23	0.23	-	-	-	0.13	0.10	0.10
Year FE	0.10	0.05	0.06	0.04	0.02	0.02	0.02	0.01	0.01	0.01	0.01	0.01
Industry FE	-	-	-	-	-	-	0.82	0.60	0.64	0.74	0.59	0.62

Panel B: Cash Holding

Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Size	0.10	0.17	0.02	0.08	0.14	0.02	0.11	0.17	0.07	0.10	0.15	0.07
S&P500	0.01	0.01	0.00	0.00	0.00	0.00	0.02	0.02	0.01	0.01	0.01	0.00
M/B	0.19	0.14	0.10	0.18	0.13	0.10	0.24	0.17	0.15	0.24	0.17	0.15
EBITDA	0.05	0.05	0.02	0.04	0.04	0.01	0.05	0.04	0.02	0.04	0.03	0.01
Tangibility	0.36	0.25	0.26	0.35	0.23	0.23	0.08	0.06	0.06	0.08	0.07	0.05
Wcap	0.21	0.21	0.20	0.19	0.20	0.19	0.20	0.16	0.17	0.20	0.17	0.18
HHI	-	0.02	0.01	-	0.00	0.00	-	0.00	0.00	-	0.00	0.00
log(advertising)	-	0.00	0.00	-	0.02	0.03	-	0.03	0.04	-	0.05	0.06
log(R&D)	-	0.07	0.08	-	0.06	0.07	-	0.07	0.06	-	0.05	0.05
Capex	-	-	0.01	-	-	0.01	-	-	0.00	-	-	0.00
Access	-	-	0.08	-	-	0.07	-	-	0.05	-	-	0.04
DivDummy	-	-	0.06	-	-	0.04	-	-	0.01	-	-	0.00
Std.Dev(EBITDA)	-	-	0.09	-	-	0.07	-	-	0.06	-	-	0.05
Stature	-	-	-	0.12	0.12	0.10	-	-	-	0.07	0.07	0.07
Year FE	0.07	0.09	0.08	0.05	0.06	0.06	0.05	0.04	0.04	0.05	0.04	0.04
Industry FE	-	-	-	-	-	-	0.25	0.23	0.26	0.22	0.20	0.22

Table 10
IV Estimation of Leverage

This table reports the results of the second step of the 2SLS estimation of *Leverage*, when *Leverage* is the sum of short-term and long-term debt scaled by book assets. The specifications (1) through (6) are equivalent to specifications (1) through (6) in Table 5, and the coefficients of control variables are not reported. Panel A uses "*The One I prefer*" as instrument for Stature in the first-step regression (unreported); Panel B uses "*Would never consider*" as an instrument. For the orthogonalized instrument in Panel C we first estimate "Would never consider" as a function of the "Never used" variable. We then perform the 2SLS analysis, using the residuals of the regression as an instrument. All estimation models include year and industry fixed effects (at SIC two-digit level). Standard errors are reported in parentheses and are based on heteroskedastic consistent errors adjusted for clustering across firms (Rogers (1993)). ***, ** and, * indicate p-values of 1%, 5%, and 10%, respectively.

Panel A: "The one I prefer" as IV

	Tobit Model			OLS Model		
	(1)	(2)	(3)	(4)	(5)	(6)
(The One I prefer) IV	0.032***	0.027***	0.027***	0.028***	0.026**	0.026**
	(0.011)	*(0.01)*	*(0.01)*	*(0.01)*	*(0.01)*	*(0.01)*
Obs.	*1937*	*1937*	*1937*	*1733*	*1733*	*1733*
R-squared adj.				0.300	0.347	0.349
Chi-squared	1146.2	1146.5	1153.1			
P(Chi-squared)	0	0	0			

Panel B: "Would never consider" as IV

	Tobit Model			OLS Model		
	(1)	(2)	(3)	(4)	(5)	(6)
(Would never consider) IV	0.033***	0.025**	0.026**	0.027**	0.021*	0.021*
	(0.012)	*(0.013)*	*(0.013)*	*(0.012)*	*(0.012)*	*(0.012)*
Obs.	*1937*	*1937*	*1937*	*1733*	*1733*	*1733*
R-squared adj.				0.352	0.410	0.412
Chi-squared	1010.1	1249.2	1145.69			
P(Chi-squared)	0	0	0			

Panel C: "Would never consider", orthogonalized by "Never used", as IV

	Tobit Model			OLS Model		
	(1)	(2)	(3)	(4)	(5)	(6)
(Would never consider orthogonalized) IV	0.076***	0.069**	0.07**	0.051*	0.051*	0.052*
	(0.03)	*(0.029)*	*(0.029)*	*(0.03)*	*(0.029)*	*(0.029)*
Obs.	*1937*	*1937*	*1937*	*1733*	*1733*	*1733*
R-squared adj.				0.319	0.366	0.368
Chi-squared	914.19	1136.6	1143.18			
P(Chi-squared)	0	0	0			

Table 11
IV Estimation of Cash Holding

This table reports the results of the second step of the 2SLS estimation of cash, when cash is scaled by book assets in specifications (1) through (3) and by Sales in specifications (4) through (6). The specifications (1) through (6) are equivalent to specifications (1) through (6) in Table 6, and the coefficients of control variables are not reported. Panel A uses "*The One I prefer*" as instrument for *Stature* in the first-step regression (unreported); Panel B uses "*Would never consider*" as an instrument. For the orthogonalized instrument in Panel C we first estimate "Would never consider" as a function of the "Never used" variable. We then perform the 2SLS analysis, using the residuals of the regression as an instrument. All estimation models include year and industry fixed effects (at SIC the-digit level). Standard errors are reported in parentheses and are based on heteroskedastic consistent errors adjusted for clustering across firms (Rogers (1993)). ***, **, and * indicate p-values of 1%, 5%, and 10%, respectively.

Panel A: "The one I prefer" as IV

	Cash/Assets			Cash/Sales		
	(1)	(2)	(3)	(4)	(5)	(6)
(The One I prefer) IV	-0.028***	-0.027***	-0.026***	-0.033***	-0.031***	-0.029***
	(0.006)	*(0.006)*	*(0.006)*	*(0.01)*	*(0.01)*	*(0.01)*
Obs.	*1844*	*1844*	*1844*	*1844*	*1844*	*1844*
R-squared adj.	0.531	0.539	0.546	0.415	0.421	0.422

Panel B: "Would never consider" as IV

	Cash/Assets			Cash/Sales		
	(1)	(2)	(3)	(4)	(5)	(6)
(Would never consider) IV	-0.027***	-0.027***	-0.024***	-0.042***	-0.039***	-0.038***
	(0.008)	*(0.008)*	*(0.008)*	*(0.012)*	*(0.011)*	*(0.012)*
Obs.	*1844*	*1844*	*1844*	*1844*	*1844*	*1844*
R-squared adj.	0.527	0.536	0.542	0.416	0.422	0.423

Panel C: "Would never consider" orthogonalized by "Never used" as IV

	Cash/Assets			Cash/Sales		
	(1)	(2)	(3)	(4)	(5)	(6)
(Would never consider orthogonalized) IV	-0.044**	-0.047***	-0.04**	-0.075***	-0.084***	-0.078***
	(0.018)	*(0.018)*	*(0.018)*	*(0.027)*	*(0.028)*	*(0.028)*
Obs.	*1844*	*1844*	*1844*	*1844*	*1844*	*1844*
R-squared adj.	0.538	0.547	0.555	0.432	0.440	0.442