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Branding Strategy and the Intangible Value of the Firm

Vithala R. Rao, Manoj K. Agarwal, and Denise Dahlhoff

What are the financial effects of different branding strategies? Using Tobin's q, *this study links specific branding strategies to investors' assessments of a firm's profit potential. Overall, firms that use corporate branding strategies are valued more highly than those that position brands individually.*

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Report Summary

While brands are widely acknowledged as important intangible assets of firms, there is little research on the financial effects of specific branding strategies.

In this study, Rao, Agarwal, and Dahlhoff seek to answer two questions: How are different branding strategies related to the intangible value of a firm? Do advertising expenditures interact with the relationship between the intangible value of a firm and its branding strategy?

They examine three types of branding strategies: corporate branding, in which the corporate name is dominant in product names; house of brands, in which individual brand names are used to market products; and mixed branding, in which a firm uses both corporate and house of brands strategies.

They outline advantages and disadvantages for each strategy. For example, corporate branding offers economies of scale in marketing and efficiency in creating brand equity, while the house of brands strategy creates distinctly positioned brands enabling firms to get more shelf space. A mixed branding strategy can help create separate product class associations for various brands.

To assess the intangible value of a firm, they use Tobin's *q*, which provides a market-based view of investor expectations concerning the firm's future profit potential. Using five-year data for 113 U.S. firms, they find that corporate branding strategy is associated with higher values of Tobin's *q*, and the house of brands and mixed branding strategies with lower values of Tobin's *q*. An increase in advertising expenditure increases Tobin's *q* for a firm using corporate branding, but decreases Tobin's *q* for a firm using a house of brands strategy.

Further, they find that a large majority of the firms could improve their Tobin's *q* with a branding strategy different than the one manifested by their brand portfolios.

Overall, the study offers a more specific understanding of the different effects of branding strategies on intangible firm value. Their findings can also assist managers in determining the level of advertising expenditures necessary to obtain a desired financial value for a particular branding strategy. ■

Introduction

Powerful brands are essential to growth in highly competitive markets. According to Aaker (1991), firms create brand equity [1] by delivering quality products and creating strong brand associations through appropriate communication and advertising strategies. Brands are widely acknowledged to have a financial value because they are able to generate future cash flows (Aaker and Jacobson 1994), based in part on customer loyalty, large margins, brand extension and licensing opportunities, and increased marketing efficiency of strong brands (Keller 2002, p. 46). In fact, in recognition of the long-term financial contribution of brand equity, financial markets seem to consider brands in their stock valuations (Barth et al. 1998; Simon and Sullivan 1993).

Extensive research has been conducted on the estimation of brands' financial value and measurement techniques, as well as on brand extensions (Haigh 1998; Keller and Aaker 1992; Murphy 1989; Reddy, Holak, and Bhat 1994). There is ongoing debate in the accounting community about the admission of brands in financial accounts (Barth et al. 1998; Kallapur and Kwan 2004; Lev and Sougiannis 1996). However, there is no doubt that brands are intangible assets of a firm (Lev 2001).

Whenever a firm launches a new product or acquires a firm, it has to make a strategic decision as to what type of branding strategy it should adopt so as to maximize its intangible value, which in turn will affect how it is viewed by the financial market.

Further, advertising expenditures generally impact the financial markets (Chauvin and Hirschey 1993; Cheng and Chen 1997), and these expenditures depend on the branding strategy followed by the firms. While a change in advertising expenditure is related to a change in the stock price (Cheng and Chen 1997), will the impact of a change be different for different branding strategies?

Despite extensive research on branding in the marketing literature, there is little research on the financial effects of types of branding strategies, and the role of advertising expenditures, and thus little guidance for managers. This report is an attempt to fill this gap in the literature. We seek to answer two questions:
1. How are different branding strategies related to the intangible value of a firm?
2. Do advertising expenditures interact with the relationship between the intangible value of a firm and its branding strategy?

Branding Strategies

The literature contains several taxonomies for classifying branding strategies; the most important are those by Olins (1989), Murphy (1987, 1989), and Laforet and Saunders (1994). Olins uses a three-category scheme of (1) corporate identities only, (2) corporate name with the name of a subsidiary, and (3) branded identities. Murphy suggests four categories: corporate-dominant, brand-dominant, balanced systems, and mixed systems. Finally, based on a comprehensive content analysis involving brands of major U.S. and European grocery products, Laforet and Saunders (1994) propose three categories of brands, based on the use of the name of the corporation in products' brand names: (1) the name of the corporation or its subsidiary is prominent in the brand names of the companies' products or services, (2) the corporation's name is combined with another name, and (3) the corporation's name is not used at all to mark products or services.

We adopt a three-category taxonomy based on the Laforet and Saunders' (1994) scheme: corporate branding, house of brands, and mixed branding as follows:

Corporate branding: With this strategy, the corporate name is dominant in endorsing all or part of its product and service brands. At the least, the corporate name is an element of the product brand names. This holds throughout all its

Table 1
Examples of Manifested Branding Strategies*

Corporate Branding	**House of Brands**		**Mixed Branding**	
Company and brand	Company	Selected brands	Company	Selected brands
Nike	Procter & Gamble	Pampers, Crest, Ariel, Tide, Bounty, Always, Febreze	Gillette	Gillette, Oral-B, Duracell, Braun, Waterman
AT&T	Darden Restaurants	Red Lobster, Olive Garden, Bahama Breeze	The Gap	The Gap, Banana Republic, Old Navy
Dell Computer	Bristol-Myers Squibb	Clairol, Aussie, Herbal Essences, Viactiv, Boost	3M	3M, Scotch, Thinsulate, Scotchguard

* The examples represent facts according to the companies as of April 2000.

subsidiaries and at all company levels. Examples are Hewlett-Packard, McDonald's, and FedEx.

House of brands: With this strategy, the firm does not use its corporate name or the name of its subsidiaries for branding its products. Instead, it uses individual brand names to market its products. Companies such as Unilever, ConAgra, and Diageo keep their corporate name in the background and use individual brands for their product lines instead. Examples are brands such as Dove and Lipton marketed by Unilever, and Pampers and Crest marketed by Procter & Gamble.

Mixed branding: Here, firms typically employ a set of house or family brands, such as subsidiary names within their brand portfolio, in addition to using the corporate name for certain products. Brands with names other than the firm's name are typically strong and significant to the firm. For example, apart from the flagship brand, Pepsi operates with the Mountain Dew and Aquafina brands while its subsidiaries, Tropicana and Frito-Lay, use single brands at the product level (e.g., Doritos, Ruffles).

See Table 1 for more examples.

In general, the type of branding strategy a firm is presently following can be inferred by examining all the brand names of a firm's products; we refer to this as "manifested" branding strategy and only occasionally use the prefix in this paper. More importantly, the manifested strategy is not necessarily a result of deliberate brand decision-making, but a result of other decisions (e.g., mergers and acquisitions) that the firm may have made.

The stock markets presumably value firms differently and impute different brand equity potential with each type of branding strategy. For example, corporate branding may be viewed as having higher equity because the firm can build and leverage its overall reputation, while a house of brands strategy by definition requires the firm to build the reputation of each of its individual brands.

Brands and Financial Value of a Firm

Some studies in finance and accounting look at the connections between brand values and financial performance of a firm. For example, using two cross-sectional regression models, Barth et al. (1998) find that brand value estimates

of *Financial World's* annual brand evaluation survey are significantly and positively related to stock prices and returns and that brand value estimates represent valuation-relevant information beyond advertising expenses, operating margin, market share, and earnings forecasts.

Kallapur and Kwan (2004) also show the value-relevance of brand assets; they estimate a regression model for the market value of equity on cross-sectional data, using the book value of non-brand assets, net income, and brand assets (as disclosed in the firms' financial statements) as explanatory variables. The highly significant coefficient of the brand asset variable indicates that brand asset values constitute valuation-relevant information for the stock markets.

There is some related research in the marketing area, which relates firms' security prices and returns to brand attributes as predictor variables. For example, Simon and Sullivan (1993) report superior brand equity estimates for industries and firms with well-known brand names. Aaker and Jacobson (1994) use stock returns as a response variable in their research to examine the impact of perceived quality measures. Their models include a quality measure (using the EquiTrend Survey by the Total Research Corporation) and an array of other control variables such as return on investment, brand awareness, advertising expenditure, and time. Their analysis indicates that stock returns are positively associated with perceived brand quality.

Security price reactions are also examined in two event studies that incorporate news on major decisions on the brand strategy as events. Horsky and Swyngedouw (1987) find that company name changes have a positive impact with respect to a firm's return on assets. Likewise, Lane and Jacobson (1995) find that the stock market returns to brand extension announcements depends interactively on brand attitude and brand familiarity.

Complementing the academic research on the recognition of brands' financial value in security prices are the large premiums paid in mergers and acquisitions, representing goodwill, which are largely subscribed to the transferred brands (Buchan and Brown 1989).

In sum, the extant research clearly indicates that brands have a financial value. In addition, brand values are not fully accounted for in the book values of the firm. However, there is no research on the way different branding strategies are related to the financial value of a corporation.

Conceptual Framework

The value of a firm, consisting of both tangible and intangible assets, represents the collective future cash flows to the equity investors and the bondholders of the firm, discounted at an appropriate rate. These cash flows are generated by the firm's investment, financing, and dividend decisions (Damodaran 2001). The cash flows and their risk are impacted in part by the management of market-based assets such as customer and partner relationships (Srivastava, Shervani, and Fahey 1998). Brands and brand equity represent the relationship between the firm and its customers and can impact firm value by accelerating and enhancing cash flows or reducing risk. For example, corporate brands make it easier for a firm to introduce brand extensions and can enhance cash flows due to lower costs of promotions and co-branding. Strong brands can also reduce a firm's vulnerability to competition and in turn reduce the risk of the future cash flows. Thus, the branding strategies [2] of a firm create long-term brand equity via the customer responses they engender. This value is generally not measured in the tangible assets of the firm. It becomes part of the intangible assets of a firm.

Similarly, the three branding strategies are associated with different benefits and shortcomings, which arise from both the supply and demand sides. These advantages and disadvantages are summarized in Table 2.

Table 2
Branding Strategies' Advantages (+) and Disadvantages (–): Supply Side and Demand Side

Branding Strategy	Supply Side	Demand Size
Corporate branding	Economies of scale in marketing (+) Total costs of advertising/promotion can be lower (+) Lower costs of creating brand equity (+) Lower costs of new product introductions (+)	Easier extension of brands (+) Limits on firm's ability to expand into some categories (–) Higher cannibalization among firm's brands likely (–) Efficient means to communicate to various stakeholders (+)
House of brands	No identifiable economies of scale in marketing (–) Higher costs of advertising (–) Can command larger retail shelf space (+) Significantly higher costs of new product introductions (–)	Distinctly customized brands can be offered (+) Lower cannibalization (+)
Mixed branding	Combined advantages and disadvantages of two above	Combined advantages and disadvantages of two above

As the table outlines, for the corporate branding strategy, the major advantages are economies of scale in marketing and efficiency in creating brand equity, which can help lower per-item promotion costs. While this strategy can help brand extensions, there is a risk of dilution or loss of brand identity by overstretching a brand name to product categories that do not match the brand's established associations; it may, therefore, limit a firm's ability to expand into some unrelated categories. With this strategy, the total marketing budget across the portfolio of all products can generally be lower because of the spillover effects among the products with the same brand name, and because consumers are likely to transfer their loyalty between products carrying the same brand name. A corporate brand name offers an efficient means to communicate with a firm's stakeholders other than customers (e.g., shareholders, retailers, employees) to build public relations and investor relations.

The house of brands strategy offers significant possibilities for creating distinctly positioned brands that convey the personality of a firm's products by means of physical or perceptual benefits. Further, each brand creates its own brand equity. By using multiple brands rather than one corporate brand for marketing different products, a firm can usually command more total shelf space with retailers, leaving less shelf space for competitors. However, this strategy is quite costly to the firm in building brands and in introducing new products.

The mixed branding strategy can provide both the benefits of the corporate brand strategy and the possibility to create separate product class associations for various brands of the firm. Both the mixed branding and house of brands strategies can help prevent cannibalization if a firm wants to operate with more than one brand in the same market. Mixed branding allows the firm to better serve different market segments by customizing offers more precisely to the target segment's needs. Therefore, multiple brands are useful if a firm markets products targeted at different segments.

The intangible assets of the firm are affected by a number of firm-specific factors in addition to

branding strategy. Some factors reflect the past operations of the firm, while others reflect future growth opportunities; investors can use both of them to assess future cash flows and their risk. Variables like age of the firm, operating margin, leverage, advertising expenditures, and the focus of the firm reflect past operations of the firm. Similarly, factors that affect future growth include R&D expenditures, acquisitions, industry characteristics, and competition. Our analysis controls for these other variables while determining the relationship of branding strategy and intangible value.

We use Tobin's *q* ratio to measure the intangible assets. Tobin's *q* is the ratio of the market value of the firm to the replacement cost of assets of the firm. It is a forward-looking measure, because it provides market-based views of investor expectations concerning the firm's future profit potential. The long-run equilibrium market value of a firm must be equal to the replacement value of the firm. A *q* value higher than 1.0 reflects an unmeasured source of value attributed to the intangible assets. Beginning with Lindenberg and Ross (1981), empirical finance literature has used Tobin's *q* to study a large number of phenomena (e.g., barriers and concentration by Chen, Hite, and Cheng 1989; equity ownership by McConnell and Servaes 1990; managerial performance by Lang, Stulz, and Walking 1989; and dividend announcements by Lang and Litzenberger 1989). In marketing studies, this measure is used by Simon and Sullivan (1993) in the measurement of brand equity and is also recommended by Day and Fahey (1988) to measure the value of marketing strategies. Recently, Bharadwaj, Bharadwaj, and Konsynski (1999) used Tobin's *q* to analyze the effects of information technology on a firm's performance.

Hypotheses

We hypothesize the following:

H1: The corporate branding strategy is associated with higher values of Tobin's *q*.

Given that the measure is based on the reaction of the financial market, this hypothesis is justified because of the supply-side advantages of corporate branding strategy (e.g., lower costs of advertising, new product introduction, and economies of production that will enhance future cash flows). Further, the demand-side advantages also reinforce this justification. The disadvantages, if any, will not be dominant enough to make this effect negative.

H2: The house of brands strategy is associated with lower values of Tobin's *q*.

This hypothesis is essentially the converse of that for corporate branding strategy. Under this strategy, a firm will incur much higher costs of advertising its portfolio of brands and will incur enormous costs for introducing new products. Further, we conjecture that financial markets will pay limited attention to the demand-side advantages of unique positioning and minimal cannibalization. The market will find it hard to keep track of the idiosyncratic strategies of individual brands and will tend to value the firm lower because of the lower perceived future cash flows.

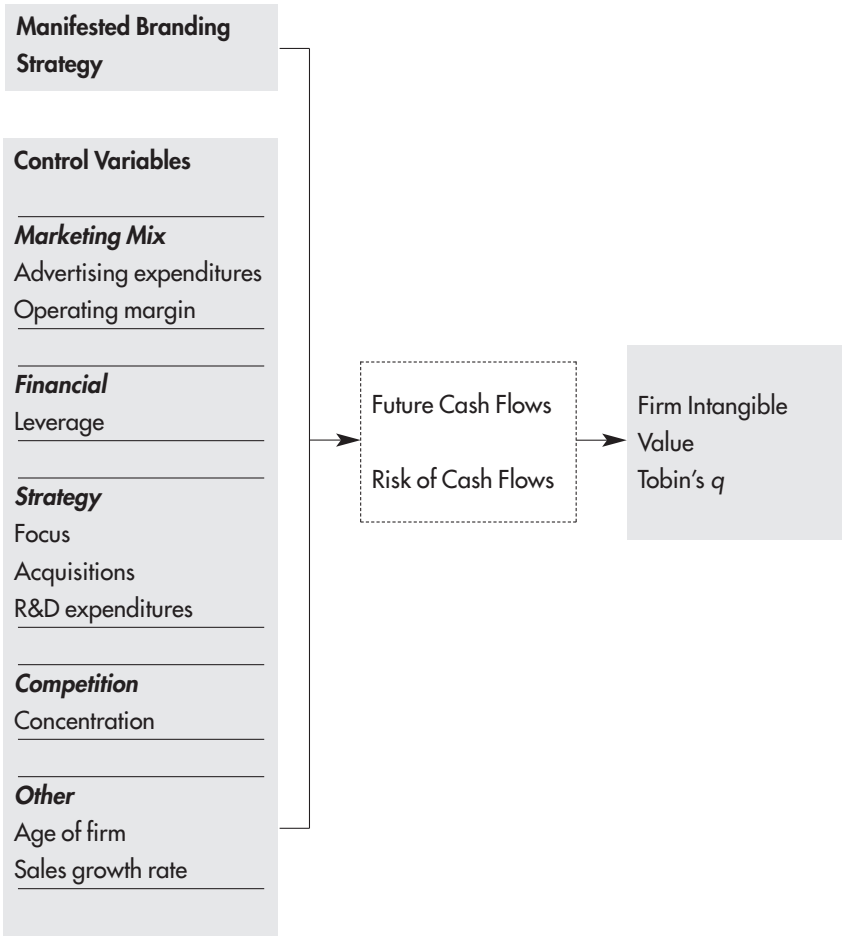
H3: Advertising expenditure interacts with the relationship between branding strategy and Tobin's *q*.

A specific expenditure on advertising will be more effective under the corporate branding strategy than the house of brands strategy due to the scale economies under the former strategy. Further, any announcement of such expenditure by a firm that follows the corporate branding strategy will become much more visible to the financial market. Thus, a much greater effect will be felt, leading to an interaction effect.

Tobin's *q*

(See Appendix 1 for more details.) The calculations for Tobin's *q* used by Lindenberg and Ross (1981) are quite cumbersome. In order to make the estimation of Tobin's *q* easier, Chung and Pruitt (1994) suggested a simpler formula.[3] They then compared their measure against that

Figure 1
Framework for Analysis



of Lindenberg and Ross (1981) and showed that the fit between the two measures over 10 years of cross-sectional data is extremely high, with an *R*-square ranging between .97 and .99. We use the following simpler formula:

Tobin's q = (MVE + PS + DEBT)/TA, where
MVE = share price * number of common stock outstanding;
PS = liquidating value of firm's preferred stock;
DEBT = (short term liabilities - short term assets) + book value of long term debt; and
TA = book value of total assets.

The numerator represents the total value of the firm and represents the collective cash flows to the equity investors and the bondholders of the firm. The denominator is the replacement cost of the assets, assumed to equal the book value. The higher the Tobin's q, the higher is the value of the intangible assets of the firm. We used the year-end data taken directly from the annual COMPUSTAT files for computing Tobin's q.

Our model for the relationship of branding strategy and Tobin's q is:
Tobin's $q = f$(branding strategy, control variables).

Control variables

We include the following control variables in our model to estimate the net effects of branding strategy on Tobin's q: (1) operating margin, (2) leverage of the firm, (3) focus, (4) concentration index, (5) R&D expenditures, (6) advertising expenditures, (7) age of the firm, (8) number of acquisitions, and (9) growth rate.[4] A detailed discussion of the control variables can be found in Appendix 2. Our selection is based on the discussion in the previous section and on the existing empirical evidence of their relationship to the intangible part of firms' assets (e.g., Chauvin and Hirschey 1993; Hirschey and Weygandt 1985; Lustgarten and Thomadakis 1987; Simon and Sullivan 1993). A subset of these variables (e.g., advertising expenditures, R&D expenditures, and concentration) also appears as determinants of profitability in extensive meta-analyses studies (Capon, Farley, and Hoening 1990; Szymanski, Bharadwaj, and Varadarajan 1993). The selection was also partly influenced by the availability of data. A framework for our analysis described in Figure 1 shows the variables used as controls before teasing out the relationship between branding strategies and Tobin's q. All variables reflect past operations and some (e.g., R&D expenditures) are more directly linked with future growth potential of cash flows and their risk. We have categorized the variables further into those relating to the marketing mix, financial, strategy, competition, and other aspects of a firm.

The relationship between our hypotheses and the control variables of our model are summarized in Table 3.

Table 3
Control Variables: Hypotheses

Variable	Measure	Expected Relationship to Tobin's *q*	Support for Expectation
Operating margin	Ratio of net income before depreciation to sales	Positive (+)	Triggers expectations of future income potential
Leverage	Ratio of long-term debt to total assets of the firm	Not clear-cut	Literature shows both types of relationships
Firm's focus	Number of industry segments in which the firm operates	Not clear-cut	Literature shows both types of relationships
Concentration index	Herfindahl index using four-digit SIC Codes	Negative (–)	Recent empirical evidence
R&D expenditures	R&D expenditures/total assets	Positive (+)	Future implied income due to R&D (past research)
Advertising expenditures	Advertising expenditures/ Total assets	Positive (+)	Literature shows that advertising affects market evaluation
Age of the firm	How long a firm has been in business	Negative (–)	Investors have more information on older firms
Acquisitions	Number of acquisitions in the preceding year	Negative (–)	Recent empirical evidence
Growth rate of sales	Compounded annual growth rate in sales for a three-year period	Positive (+)	Due to the forward-looking nature of Tobin's *q*

Estimating branding strategy effects

We estimate the relationship of branding strategy with the firm value (as measured by Tobin's *q*) while controlling for advertising expenses and other variables noted above. We employ two variants of a regression-like model. Our first model, M1, is a standard OLS model, which assumes that the regression coefficients are the same for all firms and industries. Our second model, M2, allows different firm-specific regression coefficients; this model is estimated using hierarchical Bayesian regression methods. Estimation methods are described in Appendix 3.

Data Collection

Sample

We looked for relevant financial and advertising data [5] for companies in the Standard & Poor's (S&P) list of the top 500 companies (as of December 2000) for five consecutive years (1996–2000). However, due to lack of data on several variables, our final sample consisted of 113 firms (23% of S&P 500 firms) whose total market value was about 38% of the total S&P 500 firms. The average market value of our firms is about twice that of the firms not in the sample. Nevertheless, our sample compares quite favourably with the S&P 500 firms on four variables (Tobin's *q*, operating margin, leverage, and focus as measured by the number of industry groups the firms operates in) on the basis of multivariate *t*-tests for each year of the sample. The values of Hotelling's T-square values range from .0525 (d.f. = 189.5) for year 1996 to 3.10 (d.f. = 185.5) for year 2000 and none of them is significant.

Branding strategy codes

We assigned to each firm one of the three codes of branding strategy (corporate branding, house

Table 4

Correlation Matrix for the Variables Included in Model M1

Means (Std. dev.)	Variable	Tobin's q	OM	Leverage	Focus	CI	RDR	AER	Age	NACQ	CAGR	CB	HB	CBXA	HBXA
1.38 (2.33)	Tobin's *q* *	1													
.11 (.12)	Operating Margin* (OM)	.387 0	1												
.029 (.14)	Leverage*	–.257 (.00)	.232 (.00)	1											
3 (3.85)	Focus*	–.056 (.20)	.146 (.00)	.194 (.00)	1										
.29 (.21)	Concentration Index (CI)	–.215 (.00)	–.21 (.00)	.046 (.00)	.144 (.00)	1									
–.018 (.05)	R&D Expenses/Total Assets * (RDR)	.121 (.01)	–.4 (.00)	–.435 (.00)	–.08 (.07)	–.03 (.53)	1								
.014 (.02)	Advertising Expenses/Total Assets (AER)	.095 (.03)	–.04 (.32)	–.016 (.72)	–.06 (.21)	.029 (.50)	.029 (.51)	1							
67.18 (43.79)	Age of the Firm	–.232 (.00)	.052 (.23)	.2 (.00)	.258 (.00)	.1 (.02)	–.31 (.00)	.14 (.00)	1						
1.69 (2.78)	Number of Acquisitions (NACQ)	.195 (.00)	–.04 (.03)	.308 (.00)	.001 (.97)	–.09 (.03)	.035 (.43)	–.17 (.00)	–.13 (.00)	1					
.15 (.31)	Three-year CAGR	.37 (.00)	–.08 (.06)	.182 (.00)	–.16 (.00)	–.16 (.00)	.031 (.47)	–.09 (.05)	–.38 (.00)	.098 (.02)	1				
–.096 (.94)	Corporate Branding Dummy (CB)	.254 (.00)	.095 (.03)	–.129 (.00)	–.11 (.01)	–.07 (.10)	.191 (.00)	–.2 (.00)	–.37 (.00)	–.13 (.00)	.224 (.00)	1			
–.38 (.67)	House of Brands Dummy (HB)	.23 (.00)	.181 (.00)	–.142 (.00)	.011 (.80)	.001 (.97)	.094 (.03)	–.03 (.54)	–.19 (.00)	.123 (.00)	.114 (.01)	.73 (.00)	1		
–.0055 (.02)	Corporate Branding Dummy x Advertising/Total Assets (CBXA)	.03 (.49)	.009 (.83)	–.168 (.00)	–.02 (.67)	.004 (.97)	.038 (.39)	–.72 (.00)	–.27 (.00)	.127 (.00)	.175 (.00)	.51 (.00)	.42 (.00)	1	
–.0058 (.02)	House of Brands Dummy x Advertising/Total Assets (HBXA)	.001 (.97)	.074 (.09)	–.131 (.00)	.048 (.27)	.085 (.05)	–.02 (.70)	–.55 (.00)	–.13 (.00)	.093 (.03)	.077 (.08)	.35 (.00)	.55 (.00)	.84 (.00)	1

* Median adjusted; (two-tailed significance levels are shown in parentheses for correlations)

of brands, or mixed branding) on the basis of a review of the firm's website, an analysis of the firm's structure, the firm's brands listed in the *Competitive Media Reporting* (CMR) report for the year 2000, and latest annual reports. We also consulted revenue data to uncover the significance of a firm's business units and to identify the brands marketed by these business units. Revenue analysis was especially relevant in cases where it was unclear which code to assign to the branding strategy of the firm. An ambivalent case occurred, for example, if a firm predominantly uses the corporate brand for its products and services, but also owns a minor brand. In such a case, the firm was categorized into the corporate branding category.

Two graduate students assigned the codes. There was a very high degree of consistency,

with a coder reliability measured by percent agreement of .867. In case of a divergence, one of the researchers looked at the information and assigned a branding strategy code. Overall, the classification was fairly straightforward and unambiguous. Operationally, we used two dummy variables for the branding strategies of the firms using effects coding as (1, 0) for corporate branding, (.1) for house of brands, and (–1,–1) for mixed branding strategies.

Normalization of the variables

Numerous studies with very diverse research objectives show that the affiliation with a particular industry explains a part of the cross-sectional variation of the respective response variable. In order to account for any systematic differences between industry groups and to make the measures comparable, we first calculated industry medians for the variables for groups based on two-digit NAICS codes and normalized each firm's data relative to the respective industry medians. More than 20,000 cases for each year were analyzed to obtain the year-specific medians for 30 industry groups. Median adjustment was done for Tobin's *q*, focus, operating margin, leverage, and R&D expenditures variables; this was possible because we had data at the industry group level from the COMPUSTAT files. There was no such normalization done for the remaining variables due to lack of data.

Results

Descriptive statistics

Table 4 shows the descriptive statistics and correlations. Considerable variation occurs in this response measure (the median-adjusted Tobin's *q*) but the mean across all firms is 1.38. (See Appendix 1 for more details.) The firms in our sample operate in a widely ranging number of industry segments (median-adjusted value is 3.00; see row "Focus"). Similar variation occurs in other predictors as well. This variation suggests that our sample is probably skewed toward better-performing firms than toward the population of firms included in the COMPUSTAT dataset. Most of the correlations are statistically significant from zero and the multicollinearity among the variables is very low.

Before we analyze the results, it is worth recalling that the dependent variable is Tobin's *q*, which represents the market's assessment of the future prospects for the firm compared to its book value. Thus the coefficients of the regression models signal to the financial community prospects for future cash flows. We only assess the results from this market signal perspective, not from any normative view of the optimum strategy for the firm.

Estimates of effects at the aggregate level

Fit. We first describe the analyses from Model M1, which provides estimates of effects of branding strategy at the aggregate level. We estimated this model with and without interactions of advertising and branding strategy dummies. In each model, we used the core set of nine control variables, namely, operating margin, leverage, focus, concentration index, R&D expenditures, advertising expenditures, age of firm, number of acquisitions, and growth rate. The results of fit are shown in Table 5. The fits are all significant. The inclusion of interactions between advertising and branding strategy dummy variables shows very small change (a slight decrease for M1A and a small increase for M1B) in the fit.

Predictive Testing. The correlation between the predicted values and the actual values for this subset of randomly withheld 20% observations is .621 for both the models with and without interactions. This is quite similar to the fit of the model to the data; therefore it shows a good degree of predictive validity.

Branding Strategy Coefficients. The coefficients of the branding strategies in our measurement model of Tobin's *q* (normalized) after correcting for the control variables are shown in Table 5 for models M1A and M1B. In both the specifications, we find consistently that the

Table 5

Estimates for the Two Specifications of the Aggregate Model M1

(*t*-values shown in parentheses)

	Conjecture on the sign of the coefficient	Model 1A: No Interactions	Model 1B: With Interactions
(Constant)		.52 (2.04)	.60 (2.29)
Operating Margin*	+	8.26 (1.23)	8.21 (1.07)
Leverage*	? (+/–)	–4.44 (–6.64)	–4.54 (–6.61)
Focus*	? (+/–)	.013 (.60)	.01 (.57)
Industry Concentration	–	–.70 (–1.76)	–.64 (–1.58)
R&D Expenditures/Assets*	+	6.05 (3.09)	5.84 (2.94)
Advertising/Assets	+	17.63 (4.57)	13.28 (2.20)
Age of Firm	–	–.003 (–1.37)	–.003 (–1.41)
No. of Acquisitions	–	.01 (.36)	.01 (.32)
Three-year CAGR	+	1.69 (5.87)	1.69 (5.87)
Corporate Branding Dummy	+	.32 (2.36)	.26 (1.47)
House of Brands Dummy	–	–.09 (–.51)	.11 (.44)
Interaction—Advertising and Corporate Branding Dummy		--	1.12 (.11)
Interaction—Advertising and House of Brands Dummy		--	–7.79 (–.92)
Number of Firms		113	113
Sample Size		531	531
Adjusted R^2		.393	.393
F-ratio; d.f. ; *p*-value		32.35; 11, 520; .000	27.40; 13, 518; .000

*These variables are median adjusted.

corporate branding coefficient is the largest and positive while the other two strategy coefficients (i.e., house of brands and mixed branding) are negative. Further, the mixed branding strategy coefficient is the most negative.[6] The relationships of branding strategy and Tobin's q are less pronounced when the interactions between the advertising variable and branding strategy dummy variables are included.

First, the estimated coefficients of the branding strategy variables (measured in the normalized Tobin's *q* values) in the model without interactions (M1A) are .32 for corporate branding, –.09 for house of brands, and –.41 for mixed branding strategies.[7] The coefficient of corporate branding is statistically significant; this result supports our Hypothesis 1. However, the coefficient of house of brands strategy, although negative, is not significant; this result does not support our Hypothesis 2. However, when corrected for the sample selection bias using Heckman's two-step model (Heckman 1979) with the first step being the selection of 113 companies, the revised estimates for the branding strategy dummy variables in Model M1A are somewhat lower but highly significant; the corrected values are .181 and –.052 with respective *t*-values of 5.12 and –4.23. Thus, we may conclude that our hypotheses 1 and 2 are supported by the data.

When interactions between advertising and branding strategy variables are introduced in

Model M1B, the estimates of the two branding strategy coefficients and interactions are not significant (even after correcting for the selection bias). Hypothesis 3 is not supported by the data. The magnitudes of the interactions, however, suggest that if a firm follows a corporate branding strategy, an increase in advertising expenditure will increase Tobin's *q* but that change will be negative if it follows a house of brands strategy. A potential reason could be that higher advertising expenditures under corporate branding are regarded as beneficial by investors for a portfolio of brands with a common brand name; such an increase under a house of brands strategy may actually be considered as harmful by investors (a company adopting the house of brands strategy in our sample spends an average of $285 million on advertising compared to an average of $74 million for corporate branding strategy).

Coefficients of Control Variables. The coefficients of most of the control variables (also shown in Table 5) are in the expected direction for both the specifications M1A and M1B of Model M1. All control variables are significant except for focus, industry concentration, age of the firm, and the number of acquisitions. It seems that the concentration of a firm on a small number of businesses has no influence on the firm's intangible value.

As could be expected, the growth rate coefficient is positive and significant, reaffirming the forward-looking nature of the response variable (Tobin's *q*). In a similar manner, the coefficients of operating margin, advertising, and R&D expenditures are all positive and significant, as expected.

The leverage variable has a negative coefficient and seems consistent with the ambiguity of its effect in the literature. The previous work by McConnell and Servaes (1990), who analyzed data for 1976 and 1986, shows a positive effect. Our analysis period (1996–2000) is characterized by much higher price-to-earnings ratios in the stock market. Thus, one explanation for our significant negative finding is that firms with a high Tobin's *q* are valued more by the market due to their high perceived future cash flows. The current cash flow for such firms is usually limited, and thus they cannot take on much debt, resulting in lower leverage. This might explain the strong negative correlation of leverage and Tobin's *q*. In addition, Smith and Watts (1992) find that firms with higher growth options have lower leverage, supporting this argument.

Firm-specific estimates

We now turn to Model M2, in which all regression coefficients specified are allowed to vary randomly around a mean value; further, the two branding strategy parameters are specified to be different for each firm. We estimated this random coefficient [8] hierarchical Bayesian model using the MCMC methods.[9] We estimated a total of 261 parameters in this analysis; 90% of them passed the Heidelberger and Welch (1983) stationarity test.[10] The results shown in Table 6 are for the subset of iterations after convergence has been reached.

Fit. Using the average of the residual sum of squares across iterations, we compute a pseudo *R*-square to examine the degree of fit. This pseudo *R*-square is .655, showing an excellent fit

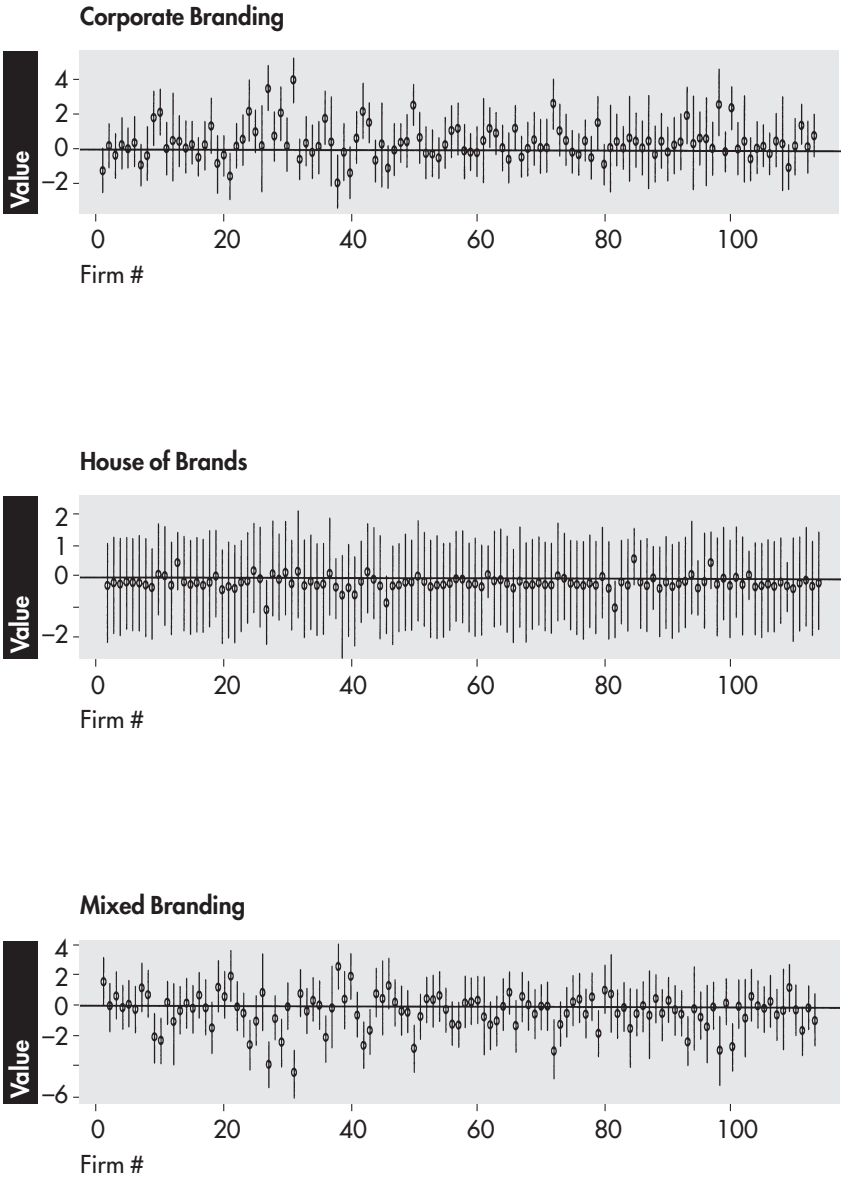
Table 6
Model M2 Results for Control Variables
(Pseudo *t*-values in parentheses)

Means and pseudo *t*-values

	Model 2	
Operating Margin*	7.840	(7.62)
Leverage*	–4.447	(–5.33)
Focus*	.037	(1.78)
Industry Concentration	–.902	(–1.60)
R&D Expenditures/Assets*	.265	(.11)
Advertising/Assets	19.920	(3.89)
Age of Firm	–.006	(–1.762)
No. of Acquisitions	.013	(.38)
Three-year CAGR	.660	(1.70)

*These variables are median adjusted.

Figure 2
Firm-level Estimates of Effects of Branding Strategy



of the Bayesian model to the data. A comparison with the *R*-square of .393 for Model M1A indicates that a considerable degree of heterogeneity among the sample firms was not accounted for by aggregate-level Model M1.

Predictive Validity. We re-estimated the hierarchical Bayesian regression model for a sample of 418 (80%) observations, after randomly deleting one observation for every firm. The estimates converged and the results were comparable to those from the full model. These results at the firm level were used to predict the value of the Tobin's *q* (median adjusted) for the prediction set. The Pearson's correlation between the actual and predicted values is quite high ($r = .805$, $p = .01$). This analysis shows high predictive value of our firm-specific results.

Effects of Branding Strategies. The summary statistics of the effects of the branding strategies across the 113 firms as estimated by Model M2 are shown below:

	Corporate Branding	House of Brands	Mixed Branding
Mean	.472	−.195	−.277
Standard Deviation	.965	.242	1.14
Range	(−1.80, 3.96)	(−1.09, .63)	(−4.20, 2.53)

Similar to the results in Model M1, the coefficient of corporate branding is the largest and positive, followed by those of house of brands (second), and mixed branding (third and negative).

Figure 2 shows the means and the 2.5%–97.5% intervals for the 113 firm-specific estimates of the three branding strategy effects. This figure attests to the existence of considerable variation among the sample of firms used in this study.

Effects of Other Variables. In Table 6, we show the overall parameter estimates and their standard errors of the posterior distributions for the control variables for Model M2. In general, these estimates correspond quite well with the Model M1 results for the control variables.

One way to visualize the impact of branding strategy on Tobin's *q* value is to actually calculate the predicted Tobin's *q* for a typical firm under the assumption that it follows each of the

three branding strategies. For Model M2, the predicted average across these strategies is 1.34, which compares quite well with the actual average of 1.38 (shown in Table 4). But these predictions vary by the type of branding strategy: 1.82 for the corporate branding strategy, 1.15 for the house of brands, and 1.05 for the mixed branding strategy. As compared to the corporate branding strategy, the house of brands and mixed branding strategies show reductions in Tobin's *q* of 37% and 42% respectively. It seems clear that investors do prefer corporate branding strategy for a firm.

Inferred Best Strategies. We did a similar analysis for all 113 firms and determined the best strategy for the firm to follow *if* the objective is to maximize the impact on the intangible value of the firm (Tobin's *q*). Below, we compare these best strategies based on Model M2 with the branding strategies manifested by the firms.

Manifested Branding Strategy	Best Strategy for Improving Tobin's *q* (Inferred)			Total
	Corporate branding	House of brands	Mixed branding	
Corporate branding	20	7	18	45
House of brands	6	2	4	12
Mixed branding	30	9	17	56
Total	56	18	39	113

It seems that firms might have been better off adopting either a corporate branding or a mixed branding strategy rather than following a house of brands strategy if their objective were to increase their intangible value. This analysis indicates that 39 (= 20 + 2 + 17) firms (or 35%) are manifesting the "best" branding strategy that maximizes Tobin's *q* (or the market value criterion). Further, it seems that 50% (56 out of 113) of firms might be better off using the corporate branding strategy, if their objective were to maximize Tobin's *q* values.

Estimates for Selected Firms. Looking at detailed estimates for various firms, we find that the three firms, EMC Corporation, Dell Computers, and Microsoft, have the highest corporate branding strategy coefficients; it is interesting to note that all these three firms manifest a corporate branding strategy. Also, these three firms have the most negative estimates for the mixed branding strategy, suggesting that they seem to be following an optimum strategy from the financial market perspective. Computer Associates, which follows a corporate strategy, has an estimated coefficient among the lowest for corporate branding but among the highest for a mixed branding strategy, suggesting that investors may evaluate this firm higher if it is able to implement a change in its branding strategy. We hasten to add that such a conjecture is quite speculative.

Most of the house of brands coefficients are not significant, except for PPG Industries and Darden Restaurants. They currently follow the house of brands strategy, but the estimates for this strategy are the most negative for them, implying that they might benefit from the investor perspective if they had the option of following a different strategy. The highest estimates for a mixed branding strategy are for Gap and Gillette, both of which have the same manifested strategy.

Summary

This paper reports the results of an empirical analysis to determine the relationship between a firm's branding strategy and its intangible value as measured by Tobin's *q*. We controlled for nine predictors (operating margin, leverage, focus, industry concentration index, R&D expenditures, advertising expenditures, age of the firm, acquisitions, and growth rate) and industry grouping variables while estimating the impact of branding strategies on Tobin's *q*. In order to account for the inter-firm variation in the measures used in the study, we normalized five variables (Tobin's *q*, operating margin, leverage,

focus, and R&D expenditures) by subtracting the median values of the firms' corresponding industry groups. We formulated two sets of models in this work and estimated one set by simple regression methods and the other by hierarchical Bayesian methods. The Bayesian methods enabled us to determine the impact of branding strategies at the firm level. In general, the results obtained from these two models are consistent. Further, the predictive validity of our second model is quite high.

Our results on the impact of the control variables are generally in line with what was reported in the literature. This finding gives us confidence in interpreting the effects of branding strategies on the financial value of a firm.

The coefficient of the corporate branding strategy measured in normalized Tobin's *q* values is highest, followed by the house of brands strategy; the mixed branding coefficient is the lowest. We find considerable stability in the order of effects of the three branding strategies. The effects of branding strategies become more pronounced when interactions between the type of branding strategy and advertising expenditures are included in the model. We also find that about 65% of the firms in our sample do not seem to be manifesting the best strategy possible if their objective is to improve their Tobin's *q* values.

Discussion

Our essential result, namely that corporate branding is more positively related to intangible firm value than both house of brands and mixed branding, may appear inconsistent with the concept of market segmentation which should essentially support a house of brands or mixed branding strategy. However, we recall that our dependent measure is an assessment by the financial community—specifically investors—of a firm's value. While investors have increasingly come to acknowledge the financial value of brands, it can be presumed that they are not familiar in detail as to which brands make up firms' brand portfolios. It is reasonable to assume that the financial community is more aware of corporate brands than of the individual brands of a firm that follows a house of brands strategy. Moreover, financial experts might not value house of brands strategies appropriately, perhaps underestimating the potential benefits of a differentiated branding approach for diverse target segments and products. Also, from a risk management perspective, the investment community might under-appreciate the fact that a multitude of brands (i.e., a house of brands strategy) distributes risk over more brands, thus improving firms' financial risk profile. This effect does not seem to be reflected in the financial evaluation of a firm that pursues a house of brands strategy.

The finding that financial valuations are not solely based on purely rational criteria is in line with that of Frieder and Subrahmanyam (2002) about investors' stock decisions. They find that the perceived quality of brands has an influence on stock holding decisions. In addition they point out that familiarity with brands influence investment decisions, and that a "home bias" (i.e., domestic stocks might be preferred) has been observed.

We classified the 113 firms into three broad groups: 40 in the B2C group (mainly consumer goods companies), 33 in the B2B group (mainly industrial goods companies), and 30 companies as mixed. We estimated Model M1 for these subgroups to examine if there are any systematic differences among these groups of companies. A B2B firm generally has organizations as its customers and they are small in number. Further, a B2B firm tends to build customer relationships at an organizational level. Accordingly, we conjectured that its customers would depend upon the name of the firm more than a specific brand name as a guide to making their purchase decisions. In a like manner, a B2C type firm will naturally devote its resources (e.g., advertising) to create distinct positions for its brands under the house of brands strategy

and will attempt to differentiate the firm's offering in a product category for the end-users (consumers). Thus we were interested in examining any differences across these broad categories. As before, the effect of corporate branding strategy was significant for B2C and B2B firms, with the coefficient higher for B2B firms. Further, the house of brands strategy effect was not significant for B2B firms, although it was significant and negative for the B2C firms.

A firm's manifested branding strategy largely depends on a variety of corporate decisions such as mergers and acquisitions, global expansion, and the selection of the business fields to compete in (Laforet and Saunders 1999). Therefore, general recommendations to firms regarding the type of branding strategy cannot be derived from this research. Nevertheless, our study shows how different branding strategies are associated with different effects on intangible firm value. Moreover, our analysis can assist an analyst in computing the level of expenditures on advertising necessary to get a desired financial value for a firm with a given branding strategy.

Future Research

The Bayesian regression model used in this study is quite versatile and is useful in estimating individual-level estimates of parameters. Our approach can be applied to various marketing situations, particularly those that estimate aggregate-level effects with replicated data on a sample of individual units. Our paper shows it is possible to estimate effects (of marketing variables) at the individual-unit level.

A related work by Hogan et al. (2002) suggests linking customer assets to financial performance of a firm using the basic customer lifetime value (CLV) model. Branding strategies should, in principle, increase the value of a firm's customer assets. However, no research has explored how different branding strategies affect customer assets. One may conjecture that corporate branding strategy adds more value to customer assets because of its higher effectiveness in cross-selling.

We must hasten to point out that our analysis is not free of limitations. For example, our sample of firms (n = 113) is not truly representative of the population of firms in the economy; but, as we showed, it is a good sub-sample of the largest 500 firms. In some industries, we have only a small number of firms. Our analysis looks at the level of the firm as a whole, while a firm may in fact adopt detailed branding strategies for each of its business units and products. Further, our coding of branding strategies is quite gross and is not as refined as one would like. A more refined brand strategy coding may involve multiple categories for the mixed branding strategy category.

Our analysis only indirectly considers competition effects via the use of concentration ratio. However, the direct effects of competition are not accounted for. As a firm's competitor expands into other products and categories with a particular branding strategy, the firm will almost necessarily adapt its own branding strategy to deal with any harmful effects to its own growth. This issue may have had a formative effect on the manifested branding strategies of firms like Procter & Gamble (vs. Unilever) and Coke (vs. Pepsi). While we cannot deal with this issue of competitive effects in our analysis due to lack of appropriate data, we believe that it is important for future research.[11]

Our empirical work is necessarily correlational because the branding strategy codes have not altered over the period of analysis. A topic for future research is to examine the interdependence of the branding strategy and firm's intangible value; this would call for a much longer time series of data and appropriate econometric methods (Granger 1969).

A natural extension of this work is to analyze the effect of a branding strategy using data at

the business-unit level. While the current accounting systems do not permit such an analysis, we expect that future systems will be more disaggregate.

Finally, it is critical to replicate this analysis and test whether these results hold for other samples of U.S. firms and for firms in other countries. Our analysis could be extended to include other descriptors of firms and for longer time periods. Further, examining the financial impact of branding strategies at the individual brand or strategic business unit (SBU) level, at least for a few companies, would be most beneficial; however, we realize that such an exercise is quite difficult due to the paucity of financial data at the level of business unit or brand. ■

Acknowledgements

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Appendix 1. Tobin's *q*

The variable *q*, the ratio of market value to replacement cost, was introduced by James Tobin (1969) as a predictor of a firm's future investments. He argued that if *q* exceeded unity, firms would have an incentive to invest, since the market value of their new capital investment would exceed its cost. Eventually, once all the investment opportunities were exhausted, the *q* ratio would tend to unity.

The use of Tobin's *q* in financial literature was promoted by Lindenberg and Ross (1981). They were interested in studying the cross-sectional values of *q* across firms, and used it to study monopoly powers. Following their lead, other academics have used the *q* ratio as an alternate measure of firm performance, a measure of returns from diversification, and a measure of brand equity.

We use Tobin's *q* as a measure of intangible value of the firm. This is based on the assumption that in the long run with an efficient market, the equilibrium market value of the firm must equal the replacement value of its assets, implying that *q* must be close to unity. If a firm has *q* ratio higher than 1, then the market is valuing it higher than its replacement cost, suggesting that the firm has some additional intangible value. This intangible value is attributed to various factors like R&D expenditures, patents, and consumer and brand equity.

While conceptually straightforward, the practical calculations of the ratio of market value to replacement costs are quite complicated. The original methodology proposed by Lindenberg and Ross (1981) defined the *q* ratio as follows:

q = (PREFST + VCOMS + LTDEBT + STDEBT - ADJ) / (TOTASST - BKCAP + NETCAP)

PREFST = Liquidating value of a firm's preferred stock
VCOMS = Price of firm's common stock * # of stocks outstanding at close of year
LTDEBT = value of firm's long-term debt adjusted for its age structure
STDEBT = Book value of firm's current liabilities
ADJ = Value of the firm's net short-term assets
TOTASST = Book value of the firm's total assets
BKCAP = Book value of the firm's net capital stock
NETCAP = firm's inflation adjusted net capital stock

The calculations for some of these terms were quite complex. A simplified formulation was suggested by Chung and Pruitt (1994), and most academic studies now use their formulation.

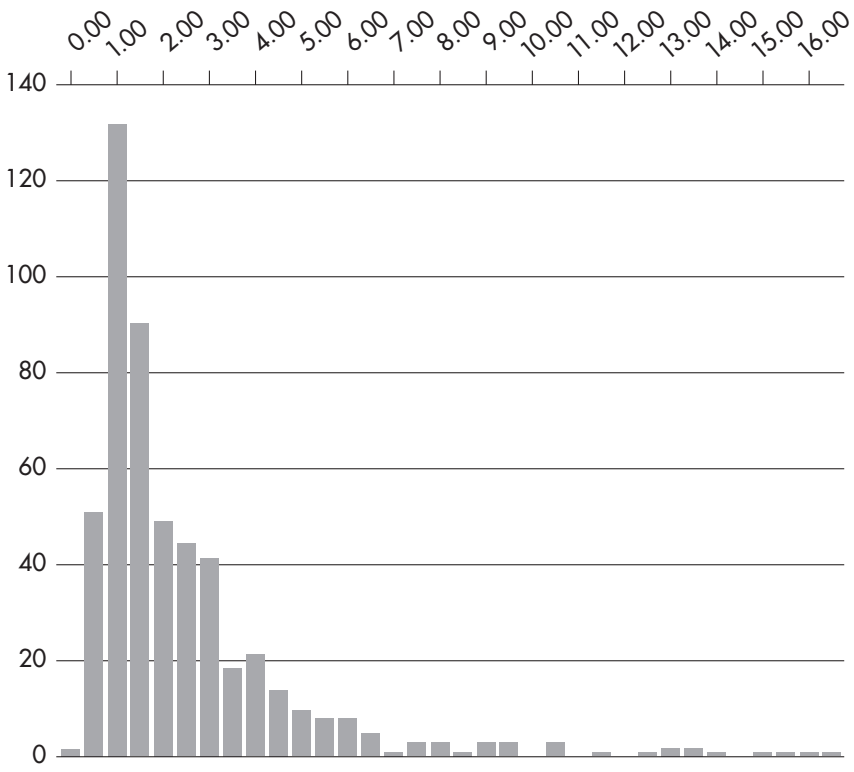
Approximate *q* = (MVE + PS + DEBT)/TA
MVE = Firm's share price * # of stocks outstanding at close of year
PS = Liquidating value of firm's outstanding preferred stock
DEBT = Value of short term liabilities – short term assets
TA = Book value of total assets

These values are readily available from the firm's basic accounting and financial information and in COMPUSTAT files. Additionally, the approximate *q* is highly correlated with the Lindengberg and Ross (1981) operationalization of *q* ratio, with an R^2 above .966.

In our data the unadjusted value of Tobin's *q* ranges from .18 to 15.77 with the mean of 2.54, and a median value of 1.66. We provide below a histogram.

The following chart shows the median-adjusted values of Tobin's *q* value.

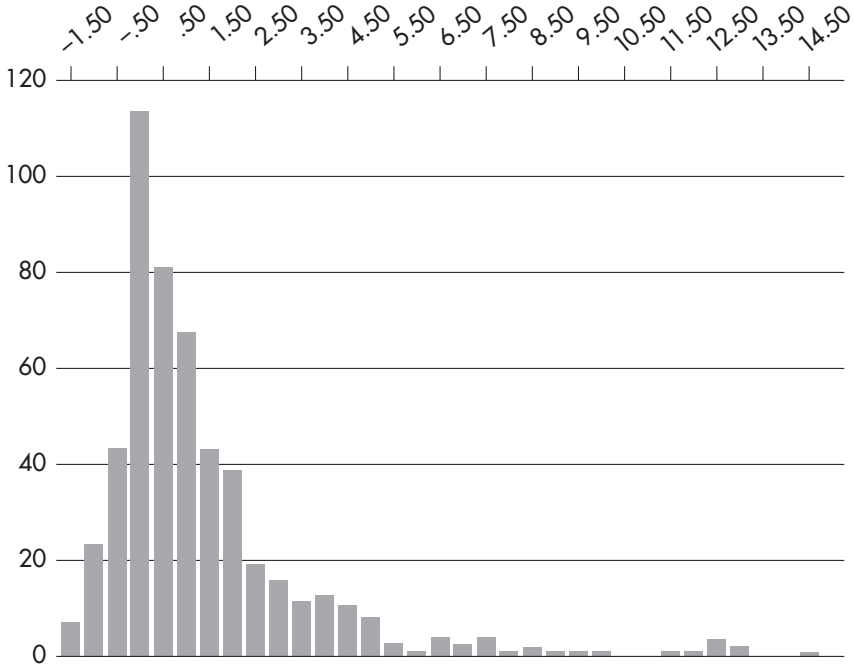
Tobin's *q*—Unadjusted



Std. dev. = 2.43, mean = 2.54, *n* = 531.00

The following chart shows the median-adjusted values of Tobin's *q* value.

Tobin's *q*—Median Adjusted



Std. dev. = 2.33, mean = 1.38, *n* = 531.00

Appendix 2. Control Variables

Operating Margin

In general, a higher operating margin of a firm triggers expectations with investors regarding higher cash flow potential and drives the intangible value. Further, there is evidence that higher brand values are significantly associated with higher operating margins and advertising expenses (Barth et al. 1998). Thus we expect that Tobin's *q* will be *positively* affected by the operating margins of the firm. The relevant data are from COMPUSTAT. Operating margin is calculated as the ratio of net income before depreciation to sales.

Leverage

Leverage has been used in a number of studies in corporate finance (Berger and Ofek 1995; Denis and Kruse 2000). We use the ratio of long-term debt to total assets of the firm as a measure of leverage. Firms with higher leverage can enjoy a tax benefit as they can deduct the interest costs, resulting in larger cash flow and thus a positive relation with Tobin's *q*. McConnell and Servaes (1990) find such a positive relationship. On the other hand, Smith and Watts (1992) expect firms with higher growth opportunities (and thus higher *q* value) to have lower leverage. We thus do not have any a priori expectation of the sign of the leverage coefficient.

Focus of the Firm

We measured this variable by the number of industry segments in which the firm is operating based on the information provided by COMPUSTAT. Comment and Jarrell (1995) find that at more diversified firms (or those with lower focus), the asset turnover is higher and thus asset values will be closer to market value, resulting in a lower *q* and a positive coefficient. In past studies, this coefficient has been found to have a positive effect in some and a negative effect in others (Lustgarten and Thomadakis 1987); thus we have no a priori expectation of the sign.

Concentration Index

In order to capture some effects of competition, we use an index to measure the concentration of the primary industry business in which the firm is operating based on its four-digit North American Industry Classification System (NAICS) codes. For this purpose, we compute the Herfindahl index as a measure of concentration. The actual measure is: $\sum_{i=1}^{I_{c(r)}} m^2{}_i$; where m_i is the revenue share of the i-th company in the primary industry of the r-th firm with $I_{c(r)}$ competitors. Since higher concentration can provide more market power, this can lead to a higher *q* (Domowitz, Hubbard, and Peterson 1986). Others contend that a higher *q* reflects better efficiency rather than market power (Smirlock, Gilligan, and Marshall 1984). We expect the effect of concentration index on Tobin's *q* to be *negative* based on recent empirical support (Bharadwaj, Bharadwaj, and Konsynski 1999; Montgomery and Wernerfelt 1988).

R&D Expenditures
Several studies support the premise that R&D expenditures affect a company's market valuation (e.g., Chauvin and Hirschey 1993; Chen, Hite, and Cheng 1989; Kim and Lyn 1990). Lev and Sougiannis (1996) showed that investors take R&D information into account when making investment decisions. We expect R&D expenditures to have a positive impact on the firm's intangible value, reflecting better prospects for the firm to generate cash flows. The R&D data we employ are taken from the COMPUSTAT file. Because companies are not legally obliged to disclose these data, much data are missing. This lack of data is one reason for our ending up with a small sample. Our operational measure of R&D expenditures is the ratio of R&D expenditures to total assets of the firm.

Advertising Expenditures
Advertising expenditures are commonly expected to have a positive impact on a company's performance. Several studies have supported this notion (e.g., Chauvin and Hirschey 1993; Chen, Hite, and Cheng 1989; Klock and Megna 2000). A part of the ample literature on the effectiveness and efficiency of advertising scrutinizes this relationship from a performance viewpoint (see Aaker 1993 on the relation between brand equity and advertising). In addition, since the advertising expenditures are typically written off in the period they are spent, but have a long-term effect on the brand equity, they will be valued as part of the intangible assets of the firm. Some studies uncover that higher advertising expenditures are associated with a better corporate performance. We accordingly expect the advertising variable to have a *positive* impact on Tobin's *q*.

We collected the advertising data from the publications by Competitive Media Reporting (CMR) for the years 1996–2000. Operationally, we use the ratio of advertising expenditures to total assets in our models.

Age of the Firm
When a firm has been in business for an extended period of time, investors will have extensive information about the firm and thus will value firms closer to the true potential. Despite the more accurate evaluation, the intangible value can be high still; with age, the intangible value of brands is actually likely to grow due to advertising, awareness, loyalty etc., resulting in a positive coefficient. However, the 1996–2000 years were characterized by a large speculative element for the newer Internet-based firms, resulting in high Tobin's *q*. Thus, we expect the age of the firm variable to have a negative impact on Tobin's *q*. We obtained data on how long a firm has been in business from the electronic source, Gale Group Business and Company Resource Center (http://galenet.galegroup.com).

Acquisitions
The financial market is influenced by the acquisitions made by a firm, reflecting higher growth opportunities in the future. We simply counted the number of acquisitions during the preceding year. In most cases, this variable is either one or zero. If acquisitions are priced at book value, then Tobin's *q* should not be affected. But the stock market typically evaluates acquisitions negatively, due in part to the difficulty of efficient merger of the operations. Andrade, Mitchell, and Stafford (2001) show that in 3,688 mergers between 1973 and 1998, the target firm gains 23.8% in the window beginning 20 days before acquisition announcement and ending on the close and the acquirer firms lose 3.8% over the same interval. Based on this evidence, we expect this variable to have a negative impact on Tobin's *q*.

Growth Rate
Higher past growth rate will be an indicator of higher future growth prospects resulting in higher Tobin's *q*. Our measure of growth is the compounded sales growth rate over the last three years (e.g., Barth et al. 1998). We expect this variable to have a positive impact on Tobin's *q*.

Appendix 3. Model Estimation

Aggregate Estimates
Our basic model at the aggregate level (called M1) is:

$$(1)\ Y_{rt} = \text{Tobin's } q \text{ for firm } r \text{ at time } t = \beta_0 + \beta_1 \text{Operating Margin}_{rt} + \beta_2 \text{Leverage}_{rt} + \beta_3 \text{Focus}_{rt} + \beta_4 \text{Concentration Index}_{rt} + \beta_5 \text{R\&D Expenditure}_{rt} + \beta_6 \text{Advertising Expenditure}_{rt} + \beta_7 \text{Age of the Firm}_{rt} + \beta_8 \text{Acquisitions}_{rt} + \beta_9 \text{Growth Rate}_{rt} + \gamma_{cb} \text{ Corporate Branding Dummy}_{rt} + \gamma_{hb} \text{ House of Brands Dummy}_{rt} + \varepsilon_{rt};$$
$$r = 1,\ldots, R \text{ (firms) and } t = 1,\ldots, T \text{ (years).}$$

Here, the βs, and γs are parameters to be estimated, and the error term ε_{rt} is assumed to be normally and independently distributed with common variance. The β-coefficients measure the effects of the control variables. The coefficients (γ_{cb} and γ_{hb}) measure the average impacts of branding strategy on firm value for the subset of companies employing the same branding strategy after accounting for the effects of several control variables shown in Figure 1. According to our hypotheses, we expect γ_{cb} to be positive and γ_{hb} to be negative. We estimate a second specification of this model with interaction terms between advertising expenditures and branding strategies; this variant enables us to examine whether there is a differential impact of advertising expenditures with different branding strategies.

Firm-level Estimates
We employ a hierarchical model (Model M2) with random coefficients to estimate firm-level effects of branding strategy on Tobin's *q*. This approach allowing for parameter variations across firms (Hildreth and Houck 1968; Swamy 1974) has become popular in marketing literature as a way to represent heterogeneity in parameters (Allenby and Ginter 1995; Bradlow and Rao 2000; Lenk

et al. 1996). Accordingly, we posit a hierarchical Bayesian model where the firm-level branding coefficients are estimated for each firm assuming that they are randomly distributed around a common mean. Our model at the firm level then is as follows:

(2) Y_{rt} = Tobin's *q* for firm *r* at time *t* = $\beta_0 + \beta_1$Operating Margin$_{rt}$ + β_2Leverage$_{rt}$ + β_3Focus$_{rt}$ + β_4 Concentration Index$_{rt}$ + β_5R&D Expenditure$_{rt}$ + β_6Advertising Expenditure$_{rt}$ + β_7Age of the Firm$_{rt}$ + β_8Acquisitions$_{rt}$ + β_9Growth Rate$_{rt}$ + $\gamma_{cb(r)}$ Corporate Branding Dummy$_{rt}$ + $\gamma_{hb(r)}$ House of Brands Dummy$_{rt}$ + ε_{rt};
r = 1,..., R (firms) and *t* = 1,..., T (years).

As before, we assume that the errors, ε_{rt}s, are normally and independently distributed with common variance; $\gamma_{cb(r)}$ and $\gamma_{hb(r)}$ are firm-specific coefficients

We also compare the results from Bayesian regression to those obtained from OLS regressions using a fixed-effects model. In addition, we test the predictive validity of these two methods. For this purpose, we withhold about one-fifth of the observations and re-estimate the model and compare the predictions from the model with the actual values for the withheld observations.

Notes

1. Firms frequently utilize the equity of their current brands in introducing brand extensions. These brand extensions are successful when the parent brand is seen as having favorable associations and there is a perceptual fit between the parent brand and the extension product (Keller 1998, p. 473). In efforts to understand the creation and effective utilization of brand equity, several techniques to measure brand equity have been suggested by consulting, advertising and investment firms as well as the academic community (Agarwal and Rao 1996; Kamakura and Russell 1993; Simon and Sullivan 1993; Swait et al. 1993).

2. A conceptual piece (Ambler et al. 2002) posits a brand value chain, which connects a firm's activities by marketing management to shareholder value. Their framework consists of several multipliers to marketing program investment to yield the shareholder value (that includes intangible assets). Such a detailed analysis requires a significant amount of data for operationalization. Our interest is to analyze the effect of one aspect of the marketing program (branding strategy) at a much-aggregated level.

3. The Chung and Pruitt (1994) formula differs from that of Lindenberg and Ross (1981) in that it assumes that the replacement values of a firm's plant, equipment, and inventories are equal to their book value. There is also a slight difference in the way the market value of the firm's long-term debt is calculated. Both methods assume that market and book values for short-term debt are identical.

4. A company's reputation has been acknowledged to affect its performance (*Fortune*'s website). Based on an annual survey among 10,000 executives, directors, and analysts, *Fortune* measures the reputation of the largest U.S. companies on a 10-point scale using the criteria of quality of management, quality of products/services, innovativeness, long-term investment value, financial soundness, employee talent, social responsibility, and use of corporate assets. We could not use these data due to lack of availability for our study period for all the companies in our sample.

5. We use mainly two data sources: the 2000 CD version of "COMPUSTAT North America Data for Standard & Poor's Research Insight" for financial data and the *Competitive Media Reporting* (CMR) annual books for advertising expenses.

6. In an analysis with a different sample of 75 firms, where we use the COMPUSTAT data for advertising expenses, we find that the corporate branding strategy has the most positive effect on Tobin's *q* and the order of the effects for the other two strategies is reversed. Thus, it seems that our result on corporate branding strategy is quite robust.

7. Our analysis assumes that the aggregate effects of the branding strategy are fixed because the strategies do not vary in the period of the data. We applied the Hausman-Taylor (1981) instrument variable method, which allows a consistent estimate of the time-fixed strategy variables using the cross-sectional time series nature of the data. Corporate brand coefficients were still the highest, with mixed branding the worst.

8. We compared the OLS Model M1 with fixed effects with a model in which the brand strategy coefficients are random and found that the model with random coefficients provides a better fit (the chi-square value for the model comparison is 112 with 2 degrees of freedom). This analysis gives some support for using a random coefficients Bayesian model to determine firm-specific effects.

9. We use WinBugs (Spiegelhalter, Thomas, and Best 1999) to do the estimation. We assume diffuse and non-informative prior distributions for the parameters so that the data primarily determine the posterior distributions.

10. In the MCMC iterations, we burned in 11,000 iterations and used the next 5,000 iterations, thinned by 10, to test for convergence using BOA (Smith undated). We use the last 1,000 iterations to report the results.

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