

**Do brands matter in private firms? An empirical study of the association
between brand equity and financial performance**

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ABSTRACT

Brands differentiate firms from the competition. The conceptualisations of consumer-based brand equity have mainly derived from cognitive psychology and information economics. The dominant stream of research has been grounded in cognitive psychology, focusing on memory structure (Christodoulides and Chernatony, 2010). 1993). Despite this appealing theoretical notion, a number of recent studies have tested the links between brand equity (and its components) and firm value, failing to provide a unifying body of evidence on this issue (Madden et al., 2006; Rego et al., 2009; Johansson et al., , 2012). Furthermore, Johansson et al. (2012) find that the strength of the relationship between brand equity and financial performance differs according to the measure applied and how each captures the equity. Indeed, there is a scarcity of prior research on the links between brand equity and financial performance, particularly, in private firms.

Our study contributes to prior research along a number of dimensions. First, it provides evidence on the relevance of brands for private firms, by showing that brand equity is associated with financial performance even in firms that are not quoted and do not have world-recognized brands. Second, we contribute to the literature that links brand equity and firm value, by providing evidence on the association between brands and accounting-based measures of performance, across different windows and financial indicators. Finally, the evidence on earnings persistence is particularly relevant, as it potentially sheds light on the existing debate on the association between brand equity and stock markets. To the extent that firms with greater brand equity have more persistent earnings, current earnings contain greater information about future earnings, thus potentially leading to stronger association between brand measures and market returns.

1. Introduction

Brands differentiate firms from the competition. The conceptualisations of consumer-based brand equity have mainly derived from cognitive psychology and information economics. The dominant stream of research has been grounded in cognitive psychology, focusing on memory structure (Christodoulides and Chernatony, 2010). Aaker (1991) identified the conceptual dimensions of brand equity as brand awareness, brand associations, perceived quality, brand loyalty, and other proprietary brand assets such as patents, trademarks and channel relationships. The former four dimensions of brand equity represent consumer perceptions and reactions to the brand, while proprietary brand assets are not pertinent to consumer-based brand equity (CBBE). Keller (1993) defined the consumer-based brand equity as ‘the differential effect of brand knowledge on consumer response to the marketing of the brand’ (p. 2) and brand knowledge is a key antecedent of CBBE. It is in turn conceptualised as a

brand node in memory to which a variety of associations have been linked. Brand knowledge is then decomposed into two separate constructs: brand awareness and brand image (associations).

From the perspective of cognitive psychology, the CBBE occurs when consumers hold some favorable, strong, and unique brand associations in memory, which in turn leads to incremental utility or valued added. Thus, investing in brand equity is expected to lead to differential consumer response that may positively affect firm value (through greater consumer retention, price tolerance, or word-of-mouth recommendations, for example). So far most empirical studies from the conceptual approach of cognitive psychology have measured the CBBE with the Aaker's dimensions or an adaptation of them (Yoo and Donthu, 2003) regardless that visions of Aaker (1991) and Keller (1993) differ in the dimensions that recognize in the CBBE concept.

Despite this appealing theoretical notion, a number of recent studies have tested the links between brand equity (and its components) and firm value, failing to provide a unifying body of evidence on this issue (Madden et al., 2006; Rego et al., 2009; Johansson et al., , 2012)¹.

As noted in Ittner et al. (2009), a potential weakness of this prior work is that it hinges crucially on the often untested assumption that brand equity leads to enhanced firm performance, and thus much is still not known about the short- and long-window consequences of enhanced brand equity. Furthermore, Johansson et al. (2012) find that the strength of the relationship between brand equity and financial performance differs according to the measure applied and how each captures the equity².

Indeed, there is a scarcity of prior research on the links between brand equity and financial performance, particularly, in private firms.

This lack of evidence is potentially explained because prior literature on brand equity and the determinants of performance indicators have developed separately, with the possible exception of a limited number of accounting-based studies. This prior research in accounting attempts to clarify whether brand names are economic assets and should therefore be recognized in the balance sheet,³ that is, whether they are associated with firm performance. In this paper, we build on this prior research in accounting that suggests that brands are intangible assets that influence firm value and results (e.g., Barth et al., 1998) and study the association between brand equity and financial

¹ Particularly, the study of the links between customer satisfaction and stock market's pricing has attracted much controversy, providing mixed views and conflicting evidence (see, e.g., Aksoy et al., 2008; Ittner et al. 2009; Jacobson and Mizik, 2009; Tuli and Bharadwaj, 2009).

² The authors work with listed companies and two brand equity proprietary metrics models, Interbrand and EquiTrend.

³ By definition, this implies that brand equity is associated with earnings. An asset is a resource controlled by the entity as a result of past events and from which future economic benefits are expected to flow (IASB, 2010).

performance. As noted above, understanding how precisely brand equity impacts on firm performance is particularly relevant for private firms. These firms represent a unique challenge because of data availability issues, but also, a perfect setting for a test of brand equity and firm performance.

Tests conducted on private firms do not suffer from the confounding effects that are pervasive in market-based research, particularly when studying intangible assets, such as brand equity (Ohlson, 1998; Ittner et al., 2009). Our setting thus allows us to provide new evidence that permits understanding the interrelations between brand equity and financial indicators. This is a key to better distribute marketing efforts towards the construction of a brand equity that serves to optimize firm profitability. Also, by focusing on private firms we can explore brand equity in firms that do not have world-wide recognized brands (such as those surveyed by Interbrand and generally analyzed in prior research.)

If investment in brand equity leads to greater consumer retention, loyalty, inelasticity to price increases, and lower volatility of sales, it is expected that it will lead to greater firm profitability, and greater earnings persistence. We study if this is the case by looking at the association between brand equity (and its components: awareness, image, quality, and loyalty) and financial performance for a large sample of Spanish private firms. Brand equity is measured from similar perspectives of Aaker (1991) and Keller (1993). In our main tests, we use the models in Ittner and Larcker (1998) and Ittner et al. (2009) to study the association between financial performance as measured by a number of accounting-based measures and brand equity. This study represents a progress in the research on the effects of brand equity in the financial performance of firms.

The remainder of the paper is structured as follows. Section two reviews the literature and presents our predictions. Section 3 details the methods and section 4 presents the results. Finally, section 5 concludes.

2. Literature review and hypotheses development

The debate on whether marketing investments constitute intangible assets and how to value them has been present in the accounting literature for decades (e.g., Abdel-khalik, 1975; Hirschey and Weygandt, 1985). More recently, calls for greater emphasis on the reporting and disclosure of non-financial measures, such as on customer satisfaction, are motivated by the widespread perception that marketing efforts are key drivers of firm value.

In particular, recent research emphasizes the importance of brand equity. The concept of brand equity has its origins in cognitive psychology (Aaker, 1991, 1996; Keller, 1993) as a measure of the long-term results achieved by the investment made in the creation and strengthening of brands. Brand equity represents the consumers' perceptions and attitudes towards it. As noted in Campo et al. (2013), perceptions are, in turn, a function both of organic sources, such as word-of-mouth recommendations, and

of induced sources, like the brand positioning created by the firm and its marketing communication. Prior literature indicates that brand equity is a good measure of the effectiveness of brand investments. In particular, Keller (2003) interprets brand equity as a bridge between the marketing efforts dedicated in the past to the creation of a brand and their future results.

Albeit definitions of brands differ, the underlying notion is that a brand is a distinctive name with which consumers have a high level of awareness and a willingness to pay either higher than otherwise average prices or make higher than otherwise purchase frequency. Some of the benefits of a brand name would be: greater loyalty, less vulnerability to competitive marketing actions and economic crises, larger margins, less (more) elastic response to price increases (decreases), greater trade cooperation and support, increased marketing communication effectiveness, or greater supply chain power.

As argued in Barth et al. (1998), the net effect of all these positive consequences would be that brand equity provides a firm with a higher level of operating earnings over time (relative to otherwise unbranded firms.) However, not all expenses incurred in promoting a brand result in brand equity. Advertising efforts can misfire with dire consequences, and it is less obvious what the benefits of brand equity are in smaller, private firms, which do not have world-renown brands, bringing into question how brand equity increases operating performance and value for these firms.

Recent research in marketing has started to address related issues, by studying the links between marketing and firm value (Srinivasan and Hanssens, 2009), and more specifically, between brand equity and stock performance. However, despite some evidence on the positive effect of brand equity on firm market performance and risk (Madden et al., 2006; Rego et al., 2009), these prior studies generally provide mixed results and inconclusive evidence on the links between brand equity and financial measures. Although the studies that indicate a positive association between brand equity and stock returns or profit efficiency are important for understanding the link between branding and shareholder value, they do not unequivocally demonstrate how precisely branding affects performance directly, thereby leading to positive market consequences.

We expect that brand equity improves financial performance by increasing loyalty of existing customers, reducing price elasticities, lowering marketing costs through positive word-of-mouth, enhancing firm reputation and lowering transaction costs. Thus, we expect that brand equity leads to greater consumer satisfaction and loyalty, and thus, to smoother, more predictable streams of earnings. Not directly looking at brand equity, but studying the influence of marketing efforts on profitability, prior research by Krasnikov et al. (2009) is consistent with the view that marketing efforts can affect profitability. These authors show that firms that deploy consumer relationship management have greater profit efficiency.

Given the above discussion, we test the following hypothesis:

H1: *Brand equity is positively associated with firm financial performance in private firms*

This hypothesis is tested using two different indicators of CBBE. The first indicator based on the four dimensions of Aaker (1991) and the second indicator based on the approach of Keller (1991). This is to establish whether the relationship between CBBE and financial performance is independent or not of the indicators used to measure brand equity.

3. Methods and data

We study the association between brand equity and firm performance, and also, whether firms that invest more in brand equity benefit from smoother earnings streams, by looking at earnings persistence. In this section, we first describe our proxy of brand equity, then, we explain the models used to test our hypotheses.

3.1. Measuring brand equity

The proxies used to measure CBBE are two. Both are measured with a set of items from a survey conducted in 2011 to marketing managers of firms. The items come from previously validated scales. All items are measured using a Likert scale of 11 points from 0 (total disagreed) to 10 (total agree). Specifically, the items are: Awareness (in its market, its brands are well known); Image (among their clients, their brand image is very good); Perceived Quality (among their customers, the perceived quality of their brands is very good); Loyalty (their customers are very loyal to their brands).

The first proxy is a variable that derives from the scale of Aaker (1991), which is calculated as an average score of items that reflect the four components of the concept: awareness, image, perceived quality, and loyalty. The second proxy is based on the model of Keller (1993), which is calculated as an average score of items that reflect the two main components of the concept: awareness and image.

3.2. Association between brand equity, firm performance and earnings persistence

We predict that firms that invest in brand equity will benefit from better performance. Prior work by Johansson et al. (2012) provides evidence consistent with this claim, although their evidence is indirect and focuses only on public firms. To ascertain the association between brand equity and firm performance, we run the following simple model, based on the work of Ittner and Larcker (1998) and Ittner et al. (2009):

$$\text{Performance} = \alpha + \beta \text{BrandEQ} + \delta \text{Controls} + \varepsilon \quad (1)$$

where, Performance is a proxy of firm performance, defined as accounting return-on-assets measured as the decile rank of earnings before interest and tax expenses scales by lagged assets, BrandEQA is our proxy of Aaker's brand equity and BrandEQK is our proxy of Keller's brand equity. In sensitivity analyses we also use as indicators of brand

equity its individual components as well as an average score of quality and loyalty. Finally, controls is a vector of control variables derived from Ittner and Larcker (1998) and Ittner et al. (2009) that may affect financial performance. In particular, in our first specification, we control for firm size, measured as the natural logarithm of total assets; age, measured as the number of years since the firm was first incorporated; and leverage as the ratio of total liabilities to total assets.

If brand equity is positively associated with enhanced firm performance, we expect that β will be significantly positive in model (1), indicating that those firms that invest more in brand equity have greater performance as measured by firm profitability.

3.3. Sample selection and data

To conduct our analysis we base our work on a sample of Spanish private firms that responded to a questionnaire on brand equity. Our brand equity proxies come from this questionnaire, which is described in detail in section 3.1 above. Accounting data comes from Orbis. The questionnaire was passed in 2011 and the original sample consisted of 201 firms. For this sample, we collect all financial data from 2005 to 2012. We require at least three years of consecutive data available to calculate earnings persistence measures (from $t-2$ to t). This results on a final sample of 182 firms, and 1,338 firm-year observations, albeit sample sizes change slightly in some of our tests.

Insert Tables 1 and 2 about here

Table 1 provides descriptive statistics of the main variables of interest. Aaker's brand equity is composed of four elements: awareness, image, perceived quality and loyalty and Keller's brand equity is composed of two elements: awareness and image. We provide descriptive statistics both for the separate elements and two average scores, BrandEQA and BrandEQK, we also present evidence on an average score, BrandEQ_QL, which aggregate perceived quality and loyalty. Table 1 also contains descriptive evidence on the financial proxies of interest and controls. The sample is composed of healthy firms. The mean firm is profitable, with a mean (median) ROA of 0.04 (0.04), has low leverage and an age of 19 years. The evidence reported in table 1 indicates that there are a number of extreme values in the distribution of ROA and validates the use of a decile rank measure to assess financial performance.

Table 2 contains the correlation matrix. As expected, all four components of brand equity are positively associated with firm performance, with all correlations being statistically significant. Also, as expected, there are high correlations between the individual components of brand equity and between the individual components and the aggregate measure (BrandEQA). The strongest individual correlation is between quality and perform (corr=0.150, p -val <0.01). ROA is highly correlated to lagged ROA, indicating a high persistence of financial performance, consistent with the arguments in Ittner et al. (2009). All other correlations are as expected, and below 0.5. Indeed, the highest one is between Age and Size (corr=0.324, p -val <0.01), which is as expected, as with age, firms tend to grown larger.

4. Results

4.1. Association between brand equity and financial performance

In our main tests, we regress performance on measures of brand equity and controls. Table 3 Panel A reports results of running model (1) using the individual components of brand equity first, and then, the aggregate scores. We run model (1) using data-panel techniques and clustering the standard errors both at the firm and year level, following Petersen (2009). This is the same method used in Ittner et al. (2009) to correct for both serial and cross-sectional dependence. The coefficients reported are systematically positive, and with the exception of Awareness, they are also significant. The strongest results, consistent with the evidence reported in the correlation table is obtained for Quality (coeff=0.405, p-val<0.01). Between the two aggregate scores, BrandEQA presents highly significant results, while hardly any BrandEQK reaches an acceptable level of significance. Hereinafter we conduct all analyzes with the scale BrandEQA.

Insert Table 3 about here

Table 3 Panel B presents results from our main tests. The evidence is presented in four columns. The first column incorporates industry competition as an additional control, the second column contains the full model, as based on Ittner and Larcker (1998), where we also incorporate Age, Size and Leverage as controls for firm performance, finally, we run two additional variations of the model, including lagged performance and industry dummies. As before, all standard errors are clustered at the firm- and year- level. Our main variable of interest is BrandEQA. If firms that have greater brand equity have superior financial performance, we predict BrandEQA to be significantly positive. The results from Table 3 Panel B confirm this intuition. BrandEQA is consistently positive and significant across all model specifications. The last two specifications contain lagged Performance as a control. As predicted, the coefficient on this variable is positive and significant, confirming the importance of controlling for prior year performance, and consistent with prior research that indicates that performance is very persistent (see, e.g., Penman, 1992). In the last specification, where we include industry dummies included R-sq. rises to 0.40,⁴ indicating an adequate fit of the model. Also note that, in this model, IndComp is no longer significant, validating its use as a control for differences across industries. Overall, the results reported in Panels A and B of Table 3 strongly indicate a positive association between brand equity and financial performance, as measured by firm return on assets.

4.2. Sensitivity analyses

To check the robustness of our findings, we conduct a number of sensitivity analyses. First of all, we repeat our main analyses focusing on an alternative performance indicator: earnings persistence. Second, we look at a reduced subset of years, focusing

⁴ We use NACE Rev 2, level 2 industry classifications. In total, there are 28 industries.

our sample in the period 2010-2012. Finally, we use alternative definitions of performance. In this section, we explain each of these robustness checks in turn.

4.2.1. Analysis of earnings persistence

To further understand how brand equity affects financial performance, we look at the association between brand equity and earnings persistence. As argued in Frankel and Litov (2009), understanding the factors that drive earnings persistence is of practical importance, since such knowledge is key for earnings prediction and thus, for equity valuation. To test whether brand equity is one such factor, we modify the simple method described in Frankel and Litov (2009) and Dichev and Tang (2009) and regress current earnings on 1-year lagged earnings and brand equity, as follows:

$$Performance_t = \alpha + \beta_1 ROA_{t-1} + \beta_2 BrandEQA + \beta_3 ROA_{t-1} * BrandEQA + \varepsilon_t \quad (2)$$

where ROA is defined as earnings before interest and tax expenses deflated by lagged total assets and BrandEQA has already been defined. The coefficient of interest in model (2) is β_3 which captures the incremental persistence of earnings in firms that invest in brand equity. This coefficient is expected to be significantly positive, indicating that firms that invest in brand equity have more persistence earnings streams. Given our prior prediction, we expect β_2 will be also positive, indicating that, overall, greater investment in brand equity is associated with greater firm performance. In additional specifications, we add control variables to model (2) following prior research, and consistent with model (1) above.

The results from this analysis are reported in Table 4 Panel A. We report three specifications, one with only the main variables of interest, one with controls, and a final one with industry dummies. As before, we use panel data estimation technique, clustering the standard errors at the firm- and year- levels. Our main coefficient of interest is β_3 that captures the incremental persistence of earnings in firms that have greater brand equity. If brand equity leads to greater earnings persistence, this coefficient is expected to be significantly positive. The results from this test confirm that brand equity is positively associated with earnings persistence. The interaction is significantly positive across all three specifications (coeff=3.378, p -val<0.01 in column 1, coeff=3.035, p -val<0.01 in column 2, and coeff=2.954, p -val<0.01 in column 3).

Insert Table 4 about here

4.2.2. Reduced sample

As a second sensitivity analysis, we focus only on years 2010, 2011 and 2012. This choice significantly reduces our sample size. There are 179 firms with data available to run the tests for these years. This test has the advantage of having the measure of brand equity be contemporaneous with the measure of performance. Results from running model (1) for this reduced subset of firm-year observations are presented in Table 4 Panel B. We run two model specifications, with and without industry dummies. The results from this test confirm the previous findings, brand equity is positively associated

with performance in both model specifications (coeff=0.130, p -val=0.04 in column 1, coeff=0.138, p -val=0.03 in column 2).

4.2.3. Alternative definition of performance.

In our final sensitivity analysis, we repeat our main analyses using three alternative definitions of performance, the first one is future profitability (defined as before, but measured in $t+1$), and the second and third ones are measures of profitability that incorporate after interest charges (profit before tax) and bottom line earnings (net income). Results from this test are reported on Table 4 Panel C and are consistent with our previous finding, confirming the positive association between brand equity and financial performance.

5. Summary and conclusions

We study the association between brand equity and financial performance in private firms. The association between marketing efforts and performance has not been explored in detail in prior work, albeit some recent research indicates that a positive association exists between brand equity and measures of market value and performance. Our results indicate that firms that invest more in brand equity have stronger financial performance, more earnings persistence and greater future profitability. This is consistent with brand equity serving to create value for firms.

We show that brand equity is strongly and positively associated with financial performance, both over long- and short- windows. The positive relationship between brand equity and financial performance is stronger and significant when measured with the model of Aaker (1991) that when modeled of Keller (1993). Our results indicate that, although all four components of brand equity load positively into this association, it is quality and loyalty that show the strongest association with financial performance. These results are robust to the inclusion of a number of additional control variables and alternative definitions of financial performance. We also show that firms with greater equity show greater earnings persistence, as measured using models consistent with Frankel and Litov (2009) and Dichev and Tang (2009).

Our study contributes to prior research along a number of dimensions. First, it provides evidence on the relevance of brands for private firms, by showing that brand equity is associated with financial performance even in firms that are not quoted and do not have world-recognized brands. Moreover, this association is stronger when the brand equity components of perceived quality and loyalty are included. In particular, we find that the quality component is mainly related to these positive economic consequences. Second, we contribute to the literature that links brand equity and firm value, by providing evidence on the association between brands and accounting-based measures of performance, across different windows and financial indicators. Finally, the evidence on earnings persistence is particularly relevant, as it potentially sheds light on the existing debate on the association between brand equity and stock markets. To the extent that firms with greater brand equity have more persistent earnings, current

earnings contain greater information about future earnings, thus potentially leading to stronger association between brand measures and market returns. Also, the results add to the growing literature on accounting on the determinants of earnings volatility and earnings predictability. This is relevant as a number of prior studies hinge on the prediction of earnings. Valuation research typically uses projections of earnings to derive estimates of firm and equity value. These studies are concerned with understanding what firm characteristics may help in the projection of future fundamentals, and particularly, of future earnings (Dichev and Tang, 2009). Analysts and other market participants are continuously looking for information that may help them more accurately predict earnings. The results reported in this paper would suggest brands are one such piece of information.

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Table 1. Descriptive evidence

	N	Min	Q1	Mean	Median	Std	Q3	Max
Awareness	1338	2.0	6.0	7.4	8.0	1.7	8.0	10
Image	1338	4.0	7.0	7.8	8.0	1.3	9.0	10
Quality	1338	5.0	7.0	7.9	8.0	1.1	9.0	10
Loyalty	1338	3.0	6.0	7.3	7.0	1.4	8.0	10
BrandEQA	1338	4.5	6.8	7.6	7.5	1.1	8.5	10
BrandEQK	1338	3.5	6.5	7.6	7.5	1.3	8.5	10
BrandEQ_QL	1338	5.0	7.0	7.6	7.5	1.1	8.5	10
IndComp	1338	0.0	3.3	4.7	4.7	1.9	6.0	9.3
ROA	1237	-1.68	0.00	0.04	0.04	0.15	0.08	0.66
ROA _{t-1}	1237	-1.27	0.00	0.05	0.04	0.14	0.09	0.66
Perform	1237	1.00	3.00	5.01	5.00	2.77	7.00	10.00
Age	1237	1	10	19	17	16	24	130
Size	1237	0.10	8.26	9.10	9.06	1.30	9.83	16.10
Leverage	1237	0.00	0.01	0.17	0.09	0.21	0.27	1.21

The sample comprises 1,338 firm-year observations corresponding to 182 unique private firms across 28 different industries for the period 2005-2012. Awareness, Image, Quality and Loyalty are obtained directly from replies provided to a survey, and they take values between 0 and 10. (See Appendix 1, question 9, for details.) BrandEQA is the average of all four items. BrandEQK is an average of awareness and image. BrandEQ_QL is an average of quality and loyalty. IndComp is a composite measure of industry competition, also obtained from the survey (See Appendix 1, question 20). ROA is earnings before interest and tax expenses scaled by lagged assets. Perform is a decile rank transformation of ROA. Age is the number of years since the firm was incorporated. Size is the natural logarithm of firm total sales. Leverage is the ratio of firm total liabilities to total assets.

Table 2. Correlation matrix

	Perform	Awareness	Image	Quality	Loyalty	BrandEQA	IndComp	Perform _{t-1}	Age	Size
Awareness	0.079 <i>0.01</i>									
Image	0.101 <i>0.00</i>	0.624 <i>0.00</i>								
Quality	0.150 <i>0.00</i>	0.531 <i>0.00</i>	0.729 <i>0.00</i>							
Loyalty	0.096 <i>0.00</i>	0.547 <i>0.00</i>	0.580 <i>0.00</i>	0.496 <i>0.00</i>						
BrandEQA	0.124 <i>0.00</i>	0.843 <i>0.00</i>	0.874 <i>0.00</i>	0.803 <i>0.00</i>	0.793 <i>0.00</i>					
IndComp	0.119 <i>0.00</i>	0.017 <i>0.54</i>	-0.045 <i>0.11</i>	0.081 <i>0.00</i>	0.105 <i>0.00</i>	0.045 <i>0.12</i>				
ROA _{t-1}	0.554 <i>0.00</i>	0.047 <i>0.10</i>	0.049 <i>0.09</i>	0.103 <i>0.00</i>	0.068 <i>0.02</i>	0.077 <i>0.01</i>	0.057 <i>0.04</i>			
Age	-0.111 <i>0.00</i>	0.139 <i>0.00</i>	0.127 <i>0.00</i>	0.150 <i>0.00</i>	0.048 <i>0.09</i>	0.139 <i>0.00</i>	0.024 <i>0.40</i>	-0.052 <i>0.07</i>		
Size	0.008 <i>0.77</i>	0.126 <i>0.00</i>	0.056 <i>0.05</i>	0.095 <i>0.00</i>	0.027 <i>0.34</i>	0.094 <i>0.00</i>	0.136 <i>0.00</i>	0.016 <i>0.58</i>	0.324 <i>0.00</i>	
Leverage	-0.225 <i>0.00</i>	-0.098 <i>0.00</i>	-0.074 <i>0.01</i>	-0.101 <i>0.00</i>	-0.157 <i>0.00</i>	-0.130 <i>0.00</i>	-0.050 <i>0.08</i>	-0.131 <i>0.00</i>	0.000 <i>0.99</i>	-0.094 <i>0.00</i>

See Table 1 for variable definitions.

Table 3. Relation between Brand Equity and Performance**Panel A: Brand Equity (and components) and Performance**

	Coeff <i>t-stat</i>						
Intercept	3.865*** 4.07	3.038*** 2.78	4.416*** 5.52	4.416*** 5.52	3.825*** 4.16	2.292*** 2.18	3.981*** 4.54
BrandEQA	0.323** 2.19						
BrandEQK		0.215* 1.68					
BrandEQ_QL			0.381** 2.59				
Awareness				0.146 1.33			
Image					0.214* 1.80		
Quality						0.405*** 2.99	
Loyalty							0.206* 1.68
N	1338	1338	1338	1338	1338	1338	1338
R-sq	0.02	0.01	0.01	0.01	0.01	0.02	0.01

Panel B: Brand Equity and Performance, and controls

	Coeff <i>t-stat</i>	Coeff <i>t-stat</i>	Coeff <i>t-stat</i>	Coeff <i>t-stat</i>
Intercept	2.381** 2.22	3.401** 2.32	3.587*** 3.22	2.865*** 2.95
BrandEQA	0.298** 2.11	0.276** 2.00	0.186** 1.96	0.192** 2.08
IndComp	0.169** 2.39	0.157** 2.19	0.119** 2.47	0.030 0.58
Age		-0.024** -2.52	-0.017** -2.42	-0.008 -1.17
Size		0.015 0.11	0.010 0.10	-0.001 -0.01
Leverage		-2.812*** -4.46	-2.010*** -3.86	-1.321*** -2.93
ROA _{t-1}			10.28*** 6.88	9.63*** 7.88
Industry dummies				Included
N	1237	1237	1237	1237
R-sq	0.03	0.09	0.35	0.40

***, **, and * indicate coefficients are significant at the 1%, 5% and 10% or better levels, using a two-tail test. See Table 1 for variable definitions.

Table 4. Sensitivity analyses**Panel A.** Brand Equity and Persistence of Performance

	Coeff <i>t-stat</i>	Coeff <i>t-stat</i>	Coeff <i>t-stat</i>
Intercept	4.583*** 4.85	4.670*** 3.64	4.042*** 3.67
BrandEQA	0.032 0.26	0.029 0.24	0.012 0.10
ROA _{t-1}	-13.219 -1.55	-11.291 -1.43	-11.442 0.118
BrandEQA*ROA _{t-1}	3.378*** 3.14	3.035*** 3.03	2.954*** 3.14
IndComp		0.101** 2.43	0.021 0.47
Age		-0.015** -2.28	-0.007 -1.04
Size		0.014 0.14	0.01 0.15
Leverage		-1.943*** -4.01	-1.362*** -3.13
Industry dummies			Included
N	1237	1237	1237
R-sq	0.34	0.37	0.41

Panel B. Relation between Brand Equity and Performance (Reduced sample)

	Coeff <i>t-stat</i>	Coeff <i>t-stat</i>
Intercept	1.778*** 2.26	1.863* 1.79
BrandEQA	0.130** 2.01	0.138** 2.18
IndComp	0.139*** 3.06	0.105*** 3.02
Age	-0.023*** -2.84	-0.021*** -2.96
Size	0.242*** 3.08	0.181* 1.92
Leverage	-0.860* -1.84	-1.027** -2.39
ROA _{t-1}	13.196*** 14.66	11.718*** 10.95
Industry dummies		Included
N	463	463
R-sq	0.42	0.48

Table 4. Sensitivity analyses (continued)

Panel C. Alternative definitions of performance

	FutPerform	Perform2	Perform3
	Coeff	Coeff	Coeff
	<i>t-stat</i>	<i>t-stat</i>	<i>t-stat</i>
Intercept	3.494*** <i>3.51</i>	3.570*** <i>4.15</i>	4.067*** <i>4.55</i>
BrandEQA	0.227** <i>1.91</i>	0.185** <i>1.92</i>	0.158* <i>1.74</i>
IndComp	0.030 <i>0.53</i>	0.045 <i>0.88</i>	0.037 <i>0.66</i>
Age	-0.010 <i>-1.23</i>	-0.011 <i>-1.39</i>	-0.014 <i>-1.55</i>
Size	-0.049 <i>-0.45</i>	0.031 <i>0.30</i>	0.036 <i>0.36</i>
Leverage	-1.130*** <i>-2.97</i>	-2.465*** <i>-4.07</i>	-2.777*** <i>-5.16</i>
ROA _{t-1}	6.956*** <i>7.07</i>	7.802*** <i>8.01</i>	8.022*** <i>4.13</i>
Industry dummies	Included	Included	Included
N	1081	1237	1236
R-sq	0.33	0.44	0.40

***, **, and * indicate coefficients are significant at the 1%, 5% and 10% or better levels, using a two-tail test. See Table 1 for variable definitions.