The Value Relevance and Reliability of Brand Assets Recognized by U.K. Firms

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ABSTRACT

We examine the value relevance and reliability of brand assets recognized by 33 U.K. firms, and the stock price reaction to the announcement of brand capitalization. We find that brand assets are value relevant, i.e., associated with market values. However, the market capitalization rates of brands of firms with low contracting incentives are higher than those of firms with high contracting incentives to capitalize and overstate brand values. Thus, there could be substantial differences in the extent of bias or error in brand valuations of firms with different levels of contracting incentives, i.e., brand asset measures might not be reliable. The stock price reaction during the 21 days surrounding the first announcement of brand recognition is significantly positively associated with the recognized brand amount. However, the brand coefficient is only a small fraction of what would be expected if markets did not impute any value to brands before firms recognized them. Few previous value-relevance studies have examined intangible assets recognized in financial statements, and none have examined the effects of contracting incentives on the reliability of the reported values of intangible assets.

Key Words: brand assets, intangible assets, contracting incentives, value relevance, and reliability.

JEL Classification Codes: M4.

Data Availability: The data are available from the public sources identified in the text.

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I. Introduction

Previous studies, including one on brands (Barth et al. 1998b), have found that intangible assets are value relevant (see Holthausen and Watts 2001, 21, and their Table 1 which lists eight value-relevance studies on intangible assets). All, except Barth and Clinch (1998) which examines Australian firms' revaluations of both tangible and intangible assets, examine intangible assets that are not recognized in the financial statements. In these studies, the intangible asset measures were constructed by researchers or other outside parties who, unlike managers, do not have contracting incentives to bias their valuations.

Our study adds to the literature by examining the relevance and reliability of brands recognized on the balance sheets of 33 U.K. firms beginning in 1985. Brand asset measurement in our sample is subject to managerial discretion—the sample firms acquired brands not in isolation but instead as part of business acquisitions, and valued them separately from goodwill. We examine three research questions. First, are recognized brand asset measures value relevant? Second, do the market capitalization rates of brand assets differ for firms that have high and low incentives to bias the recognized brand amounts? Third, does the news of brand capitalization convey information to stock markets?

Regressing market values on brand assets, with book values of net non-brand assets, net income, and fixed year- and firm-effects as control variables, we find a positive (+1.24) and significant (at better than the one percent level) coefficient on brand

assets. Our sample consists of 232 firm-year observations of the 33 brand capitalizing firms during the 1984-1998 period. As previous studies do (Barth et al. 2001), we interpret a significant coefficient to mean that managers' brand valuations are relevant and to some degree reliable.

By showing the value relevance of a recognized intangible asset we address one of Holthausen and Watts's (2001) criticisms of existing value-relevance studies: that results of studies examining outsiders' valuations cannot be generalized to predict the value relevance of managers' valuations of recognized intangible assets. Contracts—such as bonus plans, compensation based on stock price which can be temporarily affected by managerial misstatements, or debt covenants—give managers incentives to bias their valuations of recognized intangible assets. Contracting incentives are likely to be strong in our study because brand assets are a substantial fraction of net assets: the median firm's brand assets are 44.2 percent of book value of equity (including brands). Furthermore, brand accounting was controversial.[1] These factors suggest brand values might not be reliable, yet we find that they are value relevant.

Although value relevance implies that brand asset measures are not totally unreliable, we also test reliability further by investigating differences in brand capitalization rates of firms with strong and weak contracting incentives. If firms with high contracting incentives overvalue brands or introduce greater noise (as Holthausen and Watts 2001, 29, argue) then the stock markets should capitalize their brands at lower

[1]Farquhar, Han, and Ijiri (1992) quote a statement by the chairman of Britain's Accounting Standards Committee that brand accounting was the major accounting controversy of the last twenty years. Smith (1996) includes it among controversial accounting practices. A London Business School study commissioned by the Institute of Chartered Accountants in England and Wales (Barwise et al. 1989, 78) concludes that the problems facing brand valuation, including subjectivity and lack of precision, are "too intractable to produce useful and meaningful numbers."

rates. Predictable differences in valuation biases or noise would suggest a lack of consensus, violating verifiability, a component of reliability.[2] We base our measures of contracting incentives on Mather and Peasnell's (1991) and Muller's (1999) findings that brand recognition helped firms (1) avoid London Stock Exchange (LSE) rules requiring shareholder approval for large acquisition or disposal transactions and (2) reduce their leverage.[3] We thus partition our sample into subsamples according to (1) whether or not brand capitalization allowed the firm to avoid the LSE rule for at least one acquisition or disposal transaction, and (2) whether the firm's industry-adjusted debt-to-book-equity ratio was above or below the median.

Regressing market values on book values, net incomes, brand assets, the variables interacted with a dummy variable based on whether the firm avoided the LSE rule, and firm- and year-effects, we find that brand coefficients for firms with at least one and zero transactions that avoided the LSE rule are 0.35 and 1.94 respectively. Similarly, we find that brand coefficients for high- and low-leverage firms are 0.40 and 1.91. In both regressions the differences between brand capitalization rates of firms with low and high incentives, 1.59 (= 1.94 – 0.35) and 1.51 (= 1.91 – 0.40), are statistically significant, while the brand coefficients for firms with high contracting incentives (0.35 and 0.40) are insignificant. When we include dummies for both contracting incentives in the same regression, brand coefficients do not differ significantly between firms that avoided or

[2] *Statement of Financial Accounting Concepts (SFAC) 2: Qualitative Characteristics of Accounting Information* (1980) defines verifiability as "the ability through consensus among measurers to ensure that information represents what it purports to represent or that the chosen method of measurement has been used without error or bias." Differences in error and bias among different groups of firms would therefore signify a lack of verifiability. Besides verifiability, *SFAC* 2 mentions representational faithfulness and neutrality as the other components of reliability.

[3] These studies, however, do not provide any evidence regarding value relevance or whether these contracting incentives affect the market capitalization rates of the recognized amounts, the central questions in this study.

did not avoid the LSE rule, but the brand coefficient for low-leverage firms remains significantly higher than that for high-leverage firms. These findings suggest that managers' discretionary valuations of intangible assets recognized in financial statements might not be reliable. However, given the differences in market capitalization rates, the markets do seem capable of seeing through the differences in reliability–our findings therefore do not suggest that markets are misled by the lack of reliability.

However, these findings do not address whether markets are misled by non-recognition of brands, i.e., whether they undervalue brand-intensive firms in the absence of disclosure or recognition of brand asset values. If so, the news of brand recognition should convey information to stock markets. We find that announcements of brand capitalization indeed result in positive abnormal returns, on average equaling 12 percent of the value of the brands deflated by market value. Besides undervaluation, the benefits of relaxing contracting constraints can also explain the positive return. Although we attempt to distinguish between the two possible explanations by examining differences in the abnormal returns to firms with high and low contracting incentives, we obtain insignificant coefficient differences which prevents us from drawing any conclusions. Nevertheless, undervaluation, if any, is small in magnitude–the 0.12 coefficient is much lower than the brand capitalization rate we obtain in our value-relevance regression, 1.24, suggesting that most of the brand values had been capitalized into share prices before firms recognized them.

In related work on the value relevance of discretionary amounts recognized in financial statements, Aboody et al. (1999) examine the value relevance of upward revaluations of *tangible* fixed assets by U.K. firms, and the effect on value relevance of

the debt-to-book-equity ratio. The difference in coefficients between high- and low-leverage firms in their study is smaller than in our sample, possibly because we study an intangible asset; such assets are generally considered to be more difficult to value (Barth and Landsman 1995) and hence afford managers more discretion. Also, our sample firms' brand assets are a much higher percentage of book values of net assets, 44.2 percent for the median firm, than are revaluation reserves in Aboody et al.'s (1999) sample (6.5 percent). Our finding therefore indicates that large cross-sectional differences in market capitalization rates could be observed if valuations are subjective and contracting incentives are strong.

Our study contributes not only to the literature on value relevance and reliability of intangible assets, and more generally of recognized discretionary amounts, but also to the policy debate on recognition of intangible assets. An article in *Fortune* (Stewart 2001), for example, opines that the existing accounting system that ignores self-generated intangible assets is like an octogenarian butler: although faithful, he has "lost track of some valuable jewels, paid no attention to the furnace and the water heater, and put the place at risk." The *Economist* (2001), in contrast, argues that intangible assets cannot be reliably valued, and that "soft measures, if required by the authorities, could end up being used to hoodwink investors." Also, in response to suggestions in "hundreds of recent articles, studies, and consultants' reports" (FASB 2001, 2), in January 2002 the FASB added to its agenda a project on disclosure of self-generated intangible assets. The proposal (FASB 2001) states that a secondary goal of the project is to take a step towards recognition of intangible assets. While our results should assist standard setters by providing evidence on value relevance and suggesting problems with reliability, we do

not draw explicit policy conclusions because the trade-off between relevance and reliability for standard setting is not precisely quantified (Barth et al. 2001, 81). Moreover, accounting standards are shaped by factors other than value relevance and reliability (Holthausen and Watts 2001; Watts 2002).

We organize the rest of the paper as follows: in the next section we discuss the UK accounting practices for brand assets and the resulting contracting incentives. In Section III we describe the sample and provide descriptive statistics. In Section IV we explain our research methods and present our findings. We summarize and conclude the paper in Section V.

II. Brand Accounting in the U.K., and Contracting Incentives

U.K. company law and the *Statement of Standard Accounting Practice (SSAP) 14: Group Accounts* (1978)[4] permit acquired as well as self-generated brands, trademarks, and titles to be recognized on the balance sheet. The Companies Act 1985 allows intangible assets, including self-generated ones other than goodwill, to be recognized at "current cost" (generally taken to be the lower of replacement cost or realizable value). *SSAP 14* requires that in a business acquisition identifiable intangible assets other than goodwill be recognized at fair value to acquiror. The Companies Act 1985, *SSAP 14,* and *SSAP 22: Accounting for Goodwill* (1984) all cite trademarks and publishing titles as examples of identifiable intangible assets.

Three of our 33 sample firms (Rank Hovis McDougall, The Telegraph, and Goodhead) capitalized self-generated titles and brands (along with other acquired ones),

[4] *SSAP 14* was superseded by the *Financial Reporting Standard (FRS) 2: Accounting for subsidiary undertakings* in 1992. *FRS 2* does not change the relevant *SSAP 14* provisions about allocation of the purchase price.

but the other firms capitalized only brands obtained as part of a business acquisition. In contrast to the valuation of brands acquired in isolation, the valuation of self-generated brands and those obtained in business acquisitions is subject to managerial discretion. In the case of self-generated brands, managers have the discretion to determine replacement costs and realizable values, and in the case of brands obtained in business acquisitions, to determine fair value.

Capitalization of self-generated brands and of those obtained in business acquisitions increases owners' equity. Capitalization of self-generated brands increases owners' equity because the amount capitalized would otherwise have been expensed, thereby reducing owners' equity. Capitalization of brands in business acquisitions increases owners' equity because any part of the acquisition price that is not allocated to brands is instead allocated to goodwill (*SSAP 22*), which was immediately written off to owners' equity (the method recommended in *SSAP 22*) by most firms.[5] This difference between the treatment of goodwill and brands[6] enabled U.K. firms to increase owners' equity by recognizing brands separately from goodwill; the higher the brand valuation, the greater the increase in owners' equity.[7]

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[5] Although goodwill, too, could be capitalized (*SSAP 22*, paragraphs 32-35), firms preferred to capitalize brands rather than goodwill: brands were not required to be amortized except in the case of value impairment, while goodwill had to be amortized, consequently reducing future earnings. On Compustat Global Vantage we find only 155 firm-year observations with a non-zero goodwill asset, out of over 7,900 firm-year observations of U.K. firms between 1989 and 1997.

[6] In the USA, *APB Opinion 17: Intangible Assets* (1970, paragraph 26, subsequently superseded by *SFAS 142*) required identifiable intangible assets to be recognized separately. *SFAS 142: Goodwill and Other Intangible Assets* (2001, paragraphs B33-B35) requires more categories of intangible assets—those that either arise from contractual or other legal rights, or are separable—to be separately recognized. For example, AOL allocated $10 billion of the $147 billion purchase consideration in its acquisition of Time Warner to brands and trademarks. However, there is no difference in treatment between brands and goodwill—under *APB 17* both were capitalized and amortized, and under *SFAS 142* both are capitalized and need not be amortized, but must be tested for impairment.

[7] Maas (1990) opines that capitalization of acquired brands does not affect taxes directly, but could have an adverse indirect effect. Capital gains on sale of some assets can be deferred by purchasing another asset

The U.K. Accounting Standards Board issued *Financial Reporting Standard (FRS) 10: Goodwill and Intangible Assets* effective on December 23, 1998 to replace *SSAP 22*. Like *SFAS 142* in the USA, *FRS 10* removes the distinction between goodwill and identifiable intangible assets by not requiring amortization of either kind of intangible asset if it has an indefinite life. From our sample we exclude observations with fiscal years ending on or after December 23, 1998 thus ensuring that brand asset measures in our sample are unaffected by changes in accounting standards.

By increasing owners' equity, brand overvaluation helps U.K. firms avoid LSE rules requiring that companies obtain shareholders' approval for each "material" acquisition or disposal. Although transactions are considered material if any one of five specified ratios[8] exceeds 25 percent, the binding constraint in the majority of cases is the ratio of total acquisition price to the book value of owners' equity of the acquiring firm (Moorhouse 1990). An increase in owners' equity due to brand overvaluation enables firms to undertake larger acquisitions or disposals without seeking shareholder approval[9]

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within three years; this roll-over benefit is available for goodwill but not for brands. Maas (1990) also opines that capitalized expenditures on self-generated brands may not be tax-deductible.

[8] The five ratios are:

1. The net assets of the acquired/disposed unit (hereafter target) divided by the book value of the owners' equity of the acquiring/divesting firm (hereafter parent).
2. The purchase/sale price divided by the book value of the owners' equity of the parent.
3. Net profits (before taxation and extraordinary items) attributable to the assets of the target divided by those of the parent.
4. The purchase/sale price divided by the market value of all the common shares of the parent.
5. The gross capital of the target divided by the gross capital of the parent. For the parent, gross capital is defined as the aggregate value of common shares (at market value immediately prior to announcement), preferred shares, debt (at market value, if listed), net current liabilities, and all other liabilities such as minority interests and deferred taxes. For the target, a similar aggregation is used except that the amount of the purchase/sale price is used instead of the market value of the common shares being acquired.

[9] A simple numerical example illustrates the benefit. Suppose XYZ company originally has £100 of assets and is all equity financed. It acquires a company for £50 in cash. The tangible assets of the target have a fair value of £20. If the £30 (50 – 20) excess is entirely attributed to goodwill, XYZ's total assets and equity will equal £70 (assets = 100 – cash paid, 50 + tangible assets acquired, 20; owners' equity = 100 – goodwill write-off, 30). On the other hand, if £10 of the purchase price is allocated to brands, then goodwill would equal £20 (50 – tangible assets, 20 – brands, 10). So total assets and equity will equal £80 (assets =

and incurring the resulting costs—in terms of both money and time. The monetary costs include professional advisory fees and administrative expenses related to holding an extraordinary general meeting to seek shareholder approval. The delay caused in obtaining shareholder approval is a deal breaker in many potential acquisitions (KATO Communications 1993, 143).

Another contracting incentive for brand overvaluation is that it helps U.K. firms reduce their debt-to-book-equity ratios. This is an important consideration because many U.K. firms have a provision in their charter prohibiting them from borrowing if it increases the debt-to-book-equity ratio beyond a certain limit. In its 1989 annual report, Cadbury Schweppes plc, one of our sample firms, explicitly cited such a provision as a reason for capitalizing brands. U.K. banks also consider the debt-to-book-equity ratio in making their lending decisions (Citron 1992).

Mather and Peasnell (1991) and Muller (1999) report evidence that both contracting considerations motivated firms to capitalize brands. Muller measures the impact of LSE rules on firms by counting the number of transactions that could avoid the LSE shareholder approval rules in the year subsequent to the first capitalization of brands.

III. Sample and Descriptive Statistics

Initially we used *Extel Company Analysis* (one of a family of databases, formerly produced by the *Financial Times*, covering U.K. company financials, share prices, and news) to identify U.K. firms reporting intangible assets in excess of one percent of total

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100 – cash paid, 50 + tangible assets acquired, 20 + brands, 10; equity = 100 – goodwill write-off, 20). Subsequent to the acquisition, if XYZ company wants to acquire another company for £18, it will have to

assets. We determined the nature of the capitalized intangibles from firms' annual reports because brand values are not separately reported in available databases.[10] We include 33 firms that capitalized brands or titles (such as newspaper or magazine titles) in our sample.[11] The earliest instance of capitalization (of titles) was by Reed International in 1985. For the tests that follow, we hand-collected brand values from annual reports and obtained stock prices and accounting data from *Global Vantage's* 1998 Industrial/Commercial File and Issue File*, Extel Company Analysis, Extel Company Research, Extel Equity Research,* and *Microview.*

In Table 1 we present a list of the brand-capitalizing firms. The capitalized brands are a substantial percentage of book values of equity for the sample firms–the percentage ranges from a low 1.4 percent to a high 293.2 percent (because of negative owner's equity excluding brands), with a 44.2 percent median. The median sample firm's leverage (debt-to-book-equity ratio) without including brand assets in book value of equity is 1.95. It decreases substantially, to 1.16, when brands are included in book values. Market-to-book values of the median sample firms are similarly 5.19 and 2.50 without and with brands. Thus the brand assets of the sample firms are substantial in comparison to book

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seek shareholders' permission in the first case where no brands were recognized (because 18/70 exceeds 25 percent), but not if brands had been recognized (because 18/80 does not exceed 25 percent).

[10] For example, Compustat's Global Vantage data item 82 records the value of all intangibles; no breakdown is given except for goodwill (item 93).

[11] Some firms give a single figure, without a breakdown, for all intangibles including brands, patents, copyrights, licenses, know-how, etc. We exclude these cases to concentrate on the more controversial assets such as brands and titles. We also exclude firms that capitalized brands or titles acquired individually (not as part of an acquisition) because the valuations are not subject to managers' discretion. We exclude two firms because of special circumstances. One firm, Mirror Group Newspaper plc, was under investigation for serious financial and pension fraud and its shares were suspended from trading over an extended period of time surrounding the date of the first balance sheet capitalizing brands. Another firm, SmithKline Beecham, had a substantial portion of its equity in the form of overseas equity units, and substantial price differences were documented between the two equity types (Frost and Pownall 1996). The relationship between its market value, book value and brands is thus expected to be unrepresentative.

values of equity and debt; some sample firms are therefore expected to have strong incentives to overvalue brands.

[Table 1]

We examined financial statements to determine the sample firms' policies on brand assets (not reported in any table). The basis of valuation is "cost [at acquisition]," "historical cost," or "fair value on acquisition" in most cases. The remaining firms mention "valuation," "directors' valuation," "fair value," or "use value" as the basis. However, very few firms provide details about the methods or assumptions used in the valuation. Only three firms amortized the brand assets. Yet the carrying values of brand assets do change over time, primarily because of acquisitions and disposals. Descriptive statistics presented in Table 2 show that the coefficient of variation of brands exceeds 10 percent for 20 of the 33 firms. Of the remaining 13, one firm has only a single observation, and six others have no variation in brands. The coefficient of variation of brands is generally increasing with the number of observations; the six firms with no brand variation have only 20 firm-year observations in total.

[Table 2]

IV. Research Design and Findings

Value Relevance of Brand Assets

Following previous studies (see Barth et al. 2001) we test the value relevance of brand assets by regressing market value of equity on year- and firm-effects, book value of equity (excluding brands), net income, and brand assets using pooled annual time-series and cross-sectional data for all sample firm-years. This regression specification is

consistent with the model developed by Ohlson (1995), who shows that it is equivalent to the discounted dividends model under clean surplus accounting,[12] if abnormal earnings follow an auto-regressive process. We thus estimate the following regression:

$$MVE_{jt} = \sum_{Y=84}^{98} a_{0Y} YRDUM_Y + \sum_{j=1}^{32} a_{1j} FIRM_j + a_2\, BVE_{jt} + a_3\, NI_{jt} + a_4\, BRAND_{jt} + e_{jt}, \quad (1)$$

where

MVE	=	market value of equity,
$YRDUM_Y$	=	1 if year = Y, and 0 otherwise,
$FIRM_j$	=	1 for observations pertaining to jth firm, and 0 for others,
BVE	=	book value of equity (excluding brands),
NI	=	net income after extraordinary items, and
$BRAND$	=	brand assets.

We use net income after extraordinary items because *FRS 3: Reporting Financial Performance*, effective June 22, 1993, effectively outlawed extraordinary items. Net income before extraordinary items is therefore inconsistent before and after 1993.[13] A significantly positive coefficient a_4 indicates that brand assets are associated with market values after controlling for book value and net income. As in other value-relevance studies, we interpret an association as indicating value relevance and at least some degree of reliability (Barth et al. 2001, 81).

We include year dummies to control for fixed year-effects, e.g., effects of macroeconomic factors on stock prices. If correlated with the independent variables,

[12] Although clean surplus does not hold in the U.K. because goodwill is written off directly to owners' equity, Stark (1997) shows analytically that dirty surplus elements can be tolerated in the Ohlson framework if they have no ability to predict future earnings, dividend, or book value. O'Hanlon and Pope (1999) show that dirty surplus elements in the U.K. are not value relevant, thus making it unlikely that they predict future earnings, or dividends, or book value. The absence of clean surplus is therefore unlikely to affect our results. In any case, following previous studies such as Barth et al. (1998a), we do not rely on the Ohlson framework for our predictions because of its restrictive assumptions such as linear information dynamics.

these effects could otherwise bias the regression coefficients. Even if uncorrelated, the effects could still bias the t-statistics by inducing contemporaneous cross-correlation of residuals. Similarly, we include fixed firm effects to control for any omitted variables that are firm-specific (i.e., constant over time) and for time-series correlation among residuals for the same firm. The use of panel data allows us to include both year- and firm-effects, thereby enabling us to mitigate bias in coefficients as well as standard errors.

Barth and Kallapur (1996) show that scale effects are unlikely to bias the coefficient of interest in cases such as the present one because *BVE* and *NI* are probably more highly correlated with scale than is *BRAND*. Moreover, they show that in some cases deflation worsens bias, so we use undeflated variables in our regression. We use all firm-years beginning with the first year of each firm's brand capitalization, and ending on or before December 22, 1998, the day before the effective date of a new accounting standard on intangible assets, *Financial Reporting Standard 10*. This results in a sample of 232 observations. We delete five outliers identified using the *DFBETAS* statistic proposed by Belsley, Kuh, and Welsch (1980).[14]

[Table 3]

Panel A of Table 3 presents correlations among the dependent and independent variables used in the regressions. Although correlations among *BVE*, *NI*, and *BRAND* are high and significant, condition indexes in the regression estimation (not reported in the table) are below 10 and thus multi-collinearity does not affect regression coefficients

[13] We also estimated all our regressions using only data for fiscal years ending before June 22, 1993 (119 observations on 25 firms) and our results were qualitatively unchanged.

[14] In this and subsequent regressions we eliminate observations that have a *DFBETAS* exceeding one in absolute value for any regression coefficient. We also estimate the regressions after deleting observations that have *DFBETAS* exceeding $3/\sqrt{(\text{nobs})}$, as recommended by Belsley, Kuh, and Welsch. This results in the deletion of 29 to 34 observations in the different regressions, but leaves the results qualitatively unchanged.

(Belsley et al. 1980). *BRAND* is more highly correlated with *NI* than with *BVE*; this is consistent with some of the brand value being reflected in profitability. Results of estimating regression equation (1) presented in Panel B of Table 3 show that the coefficient on *BRAND* is positive (+1.24) and significant at better than the one percent level; brands are thus value relevant despite firms' incentives to overvalue them. Our finding that the coefficient value on *BRAND* exceeds one is consistent with Jennings et al.'s (1996) findings related to goodwill; our coefficient, however, does not differ significantly from one (t=0.63).

In our specification it is difficult to compare the brand coefficient with that on *BVE* because variation in *BVE* at the firm level is likely to be low; the fixed firm effects might therefore capture much of the effect of *BVE*. Indeed, if we omit firm effects then the coefficient on *BVE* increases to 0.83 and is significant. Consequently, we do not draw conclusions from the insignificance of *BVE*. The problem is less likely with *NI*, even though the coefficient on *NI* also increases when we omit fixed firm effects. The high regression R^2 (0.96) is not attributable to scale effects—the R^2 remains virtually unchanged, and the coefficient on *BRAND* remains significant, when we re-estimate the regression after deflating all variables by *BVE*.

We checked the robustness of our results using several alternative specifications described below. *First*, we perform a randomization test for the purpose of checking whether sample firms' brands and market values are mechanically related because both are large in relation to book values. If the relation is mechanical, then high brand coefficients should be observed even if random brand values are substituted for the true ones (in randomized regressions of market values on the control variables and random

brand values), as long as the distribution of random brand values in relation to market and book values is the same as that of true brand values. However, if the observed relation is not mechanical, then the actual brand coefficient should exceed random brand coefficients on average. Thus, in many trials of randomized regressions, the percentage of random brand coefficients exceeding the actual brand coefficient represents a randomization p-value for the null hypothesis that the observed relationship is mechanical.

The relevant property of the distribution of brand values in relation to book and market values that we hold unchanged in randomized trials is the ratio of brand values divided by the excess of market value over book value (call it the brand ratio). To ensure that the distribution of the brand ratios remains unchanged, we randomly shuffle the *brand ratios*, thereby assigning the brand ratio for a given firm-year to any other firm-year observation, and then convert shuffled brand ratios into random brand values. For example, Reed International's brands, book value of non-brand assets, and market value for the year ending 3/31/1985 are 106.2, 542.9, and 664.2 respectively. Its brand ratio therefore equals 106.2/(664.2 - 542.9) = 0.88. Similarly, Grand Metropolitan's brands, book value, and market value for 1988 are 588.3, 2818.7, and 4266.9 respectively. If shuffling results in Reed's 1985 brand ratio being assigned to Grand Metropolitan for 1988 in a particular randomization trial, then Grand Metropolitan's randomized brand value is 0.88*(4266.9 – 2818.7) = 1274.4. In 100 randomization trials, none of the randomized brand coefficients exceed the actual brand coefficient. The randomization p-value (not reported in any table) is therefore 0.00, and we reject the hypothesis that the significance of brands is mechanical.

Second, previous research finds evidence that the coefficients on *BVE* and *NI* vary as functions of earnings persistence and riskiness. Variables used as proxies for these factors include: persistence of abnormal earnings (estimated in Dechow et al. 1999 using an AR(1) model), return on equity (Burgstahler and Dichev 1997), standard deviation of monthly stock returns, and size, i.e., book value of total assets (Barth et al. 1998a). We create a dummy variable partitioning the sample firm-years into two groups based on persistence (estimated by an AR(1) model using the time series of each firm's abnormal earnings during the sample period), and re-estimate regression equation (1) allowing the intercept and coefficients on *BVE* and *NI* to vary with persistence. We similarly re-estimate regression equation (1) with dummy variables for each of the other factors. We also estimate a model with dummies for all the control variables described above, and their interactions with *BVE* and *NI,* jointly included in the regression equations. The coefficient on *BRAND* is significant in each of these cases at the one percent level or better, and does not differ much from the 1.24 value in Table 3—it ranges from 1.12 to 1.36.

Third, we controlled for sales growth rates because brand assets might proxy for them—managers and outside appraisers might be more comfortable justifying high brand values when sales growth is high. The results remain similar.

Fourth, because the sample firms' brand assets are high in relation to book values, one might be concerned about whether our results generalize to other firms which may not have high brand values. We estimated the brand coefficient separately for three groups of firms formed by the ratio of brands to book value of equity. The brand coefficient was significant for each of the groups, which makes it more likely that our

results generalize beyond the present sample. Overall, the results of the sensitivity analysis reinforce the conclusion that brand assets are value relevant.

Reliability of Brand Assets

The value relevance finding indicates that any bias or measurement error in brand valuation is not large enough to eliminate its relevance. Nevertheless, the question of whether there are predictable differences in bias and measurement error is likely to be of importance to standard setters because these are features of reliability, a desirable characteristic of accounting numbers (*SFAC 2*). To investigate differences in bias and measurement errors we estimate the market capitalization rates of brands (regression coefficient on *BRAND*) of firms partitioned according to whether their contracting incentives were high or low.

Following our discussion in section II, our proxies for contracting incentives are (1) whether brand capitalization enabled the firm to avoid shareholder approval for any transaction in the year subsequent to capitalization, and (2) whether the firm's industry-adjusted book-debt-to-equity ratio before brand capitalization is above the sample median. To determine whether firms with low contracting incentives have higher brand capitalization rates, we set dummy variables $D_{LSErule}$ and D_{lolevg} equal to one for firms with low contracting incentives, i.e., for firms that did not avoid the LSE rule for any transaction by capitalizing brands, and firms with an industry-adjusted debt-to-book-equity ratio below the sample median. We interact the dummy variables representing contracting incentives with each of the independent variables (book value of equity, net income, and brand assets) to allow the coefficients on the independent variables to differ

according to contracting incentives. We thus estimate the following regression, and its restricted versions with only one of the contracting incentives dummies:

$$MVE_{jt} = \sum_{Y=84}^{98} b_{0Y} YRDUM_Y + \sum_{j=1}^{32} b_{1j} FIRM_j + b_2\, BVE_{jt} + b_3\, NI_{jt} + b_4\, BRAND_{jt} +$$

$$b_5\, BVE_{jt}{*}D_{LSErule} + b_6\, BVE_{jt}{*}D_{lolevg} + b_7\, NI_{jt}{*}D_{LSErule} + b_8\, NI_{jt}{*}D_{lolevg} +$$

$$b_9\, BRAND_{jt}{*}D_{LSErule} + b_{10}\, BRAND_{jt}{*}D_{lolevg} + e_{jt}, \qquad (2)$$

where

$D_{LSErule}$ = a dummy variable equaling 0 if brand capitalization enabled a firm to avoid the LSE rule regarding shareholder approval for one or more transactions during the year subsequent to capitalization. Because brands increase owners' equity, the denominator in the first two of the five ratios enumerated in footnote 8 (net assets of the acquired/disposed entity divided by the owners' equity of the parent firm or the net purchase consideration divided by the owners' equity of the parent firm), we consider a transaction to have avoided the LSE rules if either of those ratios exceeds 25 percent without including brand assets, and both ratios are lower than 25 percent after including brands. Further, we ignore any transaction with a consideration-to-market-capitalization ratio exceeding 25 percent because those transactions would need shareholder approval regardless of brand capitalization. Twelve of the 33 sample firms had transactions that avoided the LSE rules as a result of brand capitalization.

D_{lolevg} = a dummy variable equaling 1 if the sample firm's industry-adjusted debt-to-book-equity (excluding brands) ratio in the first year of brand capitalization is below the sample median. We define an industry as firms with the same 3- or 4-digit U.K. SIC code. For consistency, we exclude intangible assets from book value of equity in calculating debt-to-book-equity ratio for firms in the industry group.

Once firms have decided to capitalize brands they apply their chosen accounting method consistently in future periods, instead of freshly deciding each period whether to capitalize brands. We therefore calculate each contracting-incentives dummy ($D_{LSErule}$ and D_{lolevg}) at the firm level using information at the time of the first brand capitalization.

Therefore all firm-year observations for a given firm *j* have the same value of the contracting-incentives dummy.

Coefficient b_4 measures the brand assets' market capitalization rate for firms with at least one acquisition/disposal transaction that avoided the LSE rules and which had high leverage; and b_9 and b_{10} measure how this rate differs for firms without transactions that avoided the LSE rules or which had low-leverage, respectively. If firms with greater contracting incentives overstate brands, then the market capitalization rate for their brands will be lower, and those for the brands of firms with low contracting incentives will be higher. Accordingly, b_9 and b_{10} will exceed zero.

Holthausen and Watts (2001, 29) suggest that managers might introduce noise as well as bias to mislead auditors and stock markets. Such noise would lead to errors in brand measures, which would bias the estimated regression coefficient towards zero in a multiple regression if other regressors are measured without error (Garber and Klepper 1980). Because the brand coefficient is expected to be positive, bias towards zero implies a smaller coefficient for firms with greater contracting incentives. Thus the effect of a larger error in brand measures of firms with high contracting incentives is likely to be the same as that of overstating brands.[15]

We include $BVE*D_{LSErule}$, $BVE*D_{lolevg}$, $NI*D_{LSErule}$, and $NI*D_{lolevg}$ to ensure that the estimated coefficient on $BRAND*D_{LSErule}$ and $BRAND*D_{lolevg}$ are unaffected by any association between stock prices and interactions of the contracting dummy with *BVE* and *NI*. The firm dummies included in the regression are finer than the contracting

[15] The regression coefficient remains biased towards zero even if other variables are measured with error, as long as those errors are small (i.e., have low variance). However, if the error in measuring other variables is large, then the effect of measurement error on the coefficient could be opposite to that of the bias, weakening our ability to find the hypothesized results.

dummy (whose value depends on whether an observation pertains to a firm that is classified into the high- or low-contracting-incentives group). Therefore we do not include contracting dummies in the regression—they would be collinear with some of the firm dummies if we did. In addition to the firm dummies, as in estimating regression equation (1), we include year dummies to capture fixed year effects. The sample, as before, consists of 232 firm-year observations from which we delete two outliers identified using the *DFBETAS* statistic proposed by Belsley, Kuh, and Welsch (1980).

[Table 4]

Panel A of Table 4 reports the correlations between the contracting dummies and the other regression variables. Although $D_{LSErule}$ and D_{lolevg} are significantly correlated (0.36), the correlation is far from perfect. We report results of estimating regression equation (2) and its restricted versions deleting terms involving D_{lolevg} and $D_{LSErule}$ in Panel B of Table 4. When estimated separately in the restricted regressions, the coefficients on $BRAND*D_{LSErule}$ and $BRAND*D_{lolevg}$ are positive, 1.59 and 1.51, and significantly different from zero at $p < 0.01$. The effective number of observations in each case—the number of observations with contracting-incentives dummy equal to 1—is 153 and 117 respectively for $D_{LSErule}$ and D_{lolevg}.

The significant coefficients indicate that the market's brand capitalization rate for firms with lower contracting incentives to overstate brands (firms with no transactions that escaped the LSE requirements, or with low leverage) is higher than that for firms with higher contracting incentives. The coefficient on *BRAND* for firms with transactions that avoided the LSE rule and high leverage are 0.35 and 0.40, and these values are not statistically significant. The market's capitalization rates for brand assets of firms with no

transactions that avoided the LSE rule is 1.94 (0.35 + 1.59); and that for low-leverage firms is 1.91 (0.40 + 1.51). In the unrestricted model, when we include terms involving both $D_{LSErule}$ and D_{lolevg}, the coefficient on $BRAND*D_{LSErule}$ is insignificant, but the coefficient on $BRAND*D_{lolevg}$ remains significant. However, these results could be affected by multicollinearity: the coefficient of correlation between $BRAND*D_{LSErule}$ and $BRAND*D_{lolevg}$ is 0.94 (not reported in any table).

The point estimates of the coefficients in the restricted regressions therefore indicate that the brand capitalization rates for firms with lower contracting incentives are five to six times (1.94/0.35 = 5.5 and 1.91/0.40 = 4.8) the capitalization rates of firms with high contracting incentives. Thus the differences in brand capitalization rates of firms with high and low contracting incentives are statistically as well as economically significant, suggesting that brand asset measures might lack reliability for firms with high contracting incentives. This conclusion is contrary to that of Barth and Clinch (1998) who find that discretionary revaluations of intangible assets in Australia are as value relevant as are revaluations of tangible assets. However, they do not condition their analysis on contracting incentives—ours is therefore a stronger test of reliability.

Another study, Aboody et al. (1999), finds modest differences in value relevance of discretionary revaluations of tangible fixed assets in the U.K. depending on firms' debt to equity ratio—in regressions with stock price as the dependent variable, they find that the coefficient on the revaluation balance is 0.44, and that on the revaluation balance interacted with the debt to book equity ratio is –0.02. Aboody et al. (1999) use a continuous debt to equity ratio measure unlike the dummy we use. Nevertheless, we can estimate that the difference between the coefficients of high- and low-leverage firms in

their sample is definitely below 0.10 (0.02*5): they report that the debt to book equity ratio does not exceed 5 for any firm. The 0.10 coefficient is smaller than in our study (1.51) in absolute as well as in relative terms (0.10/0.44 versus 1.51/1.91). One possible reason is that we examine the value relevance of an intangible asset; these assets are generally more difficult to value (Barth and Landsman 1995) and hence afford managers more discretion. Second, the median firm's revaluation reserves are only 6.5 percent of book values in their sample while the median firm's brand assets are 44.2 percent of book values in ours. Our finding therefore adds to the literature by showing that large cross-sectional differences in market capitalization rates could be observed if valuations are subjective and contracting incentives are strong.

The coefficients 0.35, 0.40, and 0.39 on *BRAND* in different versions of regression (2) are statistically insignificant at conventional levels. This is consistent with lack of reliability overwhelming their value relevance. However, a conclusion about lack of value relevance based on insignificant coefficients would be valid only if the test has sufficient power. Because the sample sizes are relatively small, we refrain from drawing conclusions based on statistically insignificant coefficients.

One potential problem with the use of the $D_{LSErule}$ variable is that errors in brand valuation could affect whether the firm subsequently avoids the LSE requirements. That is, if firms' brand valuations are unbiased but have some error, firms with positive valuation error (over-valuers) will have lower brand capitalization rates (if markets undo the effects of the error) and will be more likely to avoid the LSE requirements in the future. Thus the finding of lower brand capitalization rates for firms with $D_{LSErule} = 0$ could be attributable to valuation errors rather than contracting incentives. The small and

insignificant correlation between $D_{LSErule}$ and *BRAND* (0.03, reported in Panel A of Table 4) casts doubt on the validity of this explanation. Nevertheless, in another attempt to rule out this explanation[16] we use an alternative measure instead of $D_{LSErule}$, namely whether the firm needed shareholder approval for any acquisition during the year *prior* to the date of the balance sheet in which brands were first capitalized. This measure proxies for the probability of a firm being subject to the LSE requirements in future, assuming that past acquisitions are good indicators of future acquisitions. Specifically we define $D'_{LSErule} = 1$ if the firm had no transactions that required shareholder approval under the LSE rules during the year ending on the date of the first balance sheet containing capitalized brands. The coefficient $BRAND*D'_{LSErule}$ remains significant at better than the one percent level using this alternative specification.

Our findings regarding the significance of coefficients on $BRAND*D_{LSErule}$ and $BRAND*D_{lolevg}$ are largely unaffected when we perform the robustness tests described for the unpartitioned sample. There is, however, one exception: the randomization p-values are 0.15 and 0.14.[17] Our finding that brand capitalization rates of firms with high and low contracting incentives differ must therefore be interpreted with caution. Also, if brand valuations indeed lack reliability, our evidence does not suggest that markets are thereby misled–on the contrary, our findings are based on differences in market capitalization. Investigation of market mispricing would require an examination of future returns which is beyond the scope of this study.

[16]We measure leverage using the book value of equity excluding brands; the leverage-based contracting incentive measure is therefore unaffected by this problem.

[17] The purpose of the regression equations is to assess whether the brand coefficient differs according to contracting incentives. Accordingly for the randomization test we randomly assign firms to $D_{LSErule} = 0$ and $D_{LSErule} = 1$ categories, and leave other variables unchanged (similarly for D_{lolevg}).

Stock Price Effects of Brand Recognition

Previous evidence suggests that markets undervalue intangible-asset-intensive firms in the absence of recognition (Aboody and Lev 2000; Lev et al. 2000; Chan et al. 2001; Lev 2001). Lev et al. (2000) and Chan et al. (2001) report positive risk-adjusted returns to portfolios of stocks of firms with high R&D growth rates and high R&D-to-market-value ratios respectively. Aboody and Lev (2000) find that trades by insiders in R&D-intensive firms are three to four times as profitable as are trades by insiders in non-R&D-intensive firms, thus suggesting greater information asymmetries in R&D-intensive firms. We examine the stock price reaction to brand capitalization announcements to test whether brand-intensive firms were undervalued before they capitalized brands.

In regard to brands, undervaluation could result because markets impute conservative brand valuations to all firms in the absence of disclosure. Alternatively, markets could be unbiased on average, and firms whose brands are undervalued could selectively resort to brand recognition to signal their true values. In either case, if markets undervalue brands before firms recognize them, then brand recognition enables firms to overcome information asymmetries.

If brands were undervalued before firms recognized them, then news of brand recognition must convey positive information to markets. Besides undervaluation, positive information content could also be explained by the benefit to firms of having relaxed contracting constraints. In contrast, Smith (1996) considers brand capitalization a controversial accounting practice and its use a signal of an underlying weakness in a firm's financial position. If markets interpret brand capitalization in this way then we should observe a negative stock price reaction to the news of brand capitalization.

We are able to estimate the market reaction for only 24 of the 33 sample firms: for six firms the earliest announcement was before its stock was publicly traded, for two firms the stocks were newly listed and previous returns for estimating the market model were not available, and in one other case we cannot determine the date of earliest announcement of brand values. To determine the market reaction to brand announcements we regress market-and-risk-adjusted abnormal returns (estimated using market model betas calculated over the 60 days ending 30 days before the event date) on *BRAND/MVE.* Our specification is as follows:

$$AR_{jt} = d_0 + d_1 (BRAND_{jt} / MVE_{j,t-1}) + e_{jt}, \quad (3)$$

where

AR_{jt} = announcement period (days -10 to +10)[18] abnormal returns for the *j*th firm in year *t* (estimated as the difference between actual returns and expected returns based on market model parameters estimated over the 60 trading days ending 30 days before the announcement).

[Table 5]

Results presented in Table 5 show that the coefficient on *BRAND/MVE* is +0.12 and significant at better than the one percent level.[19] The coefficient should equal that on *BRAND* in regression equation (1) if 10 days before news of brand capitalization the markets expected *zero* brand values, and did not receive news about any other variables during the 21-day returns accumulation period;[20] under these assumptions regression equation (3) can be derived from regression equation (1) by first-differencing and

[18] Results for other announcement periods such as days –2 to +1 and –5 to +5 were slightly weaker.
[19] A randomization test similar to the one for the value-relevance regression indicates that the coefficient on *BRAND/MVE* is significant at the 4 percent level. We randomly shuffled *BRAND/MVE* values, keeping all other variables unchanged.
[20] In fact, twelve of the 24 announcements were concurrent with earnings announcements. We conduct additional sensitivity tests by adjusting the abnormal returns for earnings levels and changes (following Easton and Harris 1991) in these cases. We determine response coefficients on earnings levels and changes, required for the adjustment, by regressing abnormal returns on earnings levels and changes using pooled

deflating by market value. The comparison of coefficients, however, indicates that the 0.12 coefficient on *BRAND/MVE* in regression equation (3) is much lower than the 1.24 coefficient on *BRAND* in regression equation (1). Thus the market had already capitalized all but 10 percent (=0.12/1.24) of the brand values into prices before brands were actually capitalized by firms. Thus undervaluation of brands, if any, is small in economic magnitude.

The significantly positive return to news of brand capitalization is consistent with either undervaluation or the benefit to firms from relaxing contracting constraints through brand capitalization;[21] it is inconsistent with brand recognition being interpreted as a sign of weakness. To evaluate the constraint relaxation explanation, we interact *BRAND*/*MVE* with contracting dummies ($D_{LSErule}$ and D_{lolevg}) and include the interaction terms in the regression, as follows:

$$AR_{jt} = f_0 + f_1 (BRAND_{jt} / MVE_{j,t-1}) + f_2 D_{LSErule} + f_3 D_{lolevg} + f_4 (BRAND_{jt} / MVE_{j,t-1} * D_{LSErule}) + f_5 (BRAND_{jt} / MVE_{j,t-1} * D_{lolevg}) + e_{jt}, \quad (4)$$

where all variables are as defined before.

Results presented in Table 5 show that in the restricted versions of equation (4) with only one or the other contracting dummy, the coefficients on *BRAND/MVE* * $D_{LSErule}$ and *BRAND/MVE* * D_{lolevg}, 0.21 and -0.00 do not differ significantly from zero; the contracting constraint relaxation explanation predicts positive coefficients. Because of

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cross-section and time-series data for all available years for the 12 firms. Our results are similar to those reported.

[21] Actually, the requirement for shareholder approval was meant to protect shareholders—it is therefore not clear whether shareholders benefit when firms are able to relax this constraint. However, if the constraint had resulted in approval being required even for very small transactions due to equity depletion resulting from repeated goodwill writeoffs, shareholders might benefit. In any case, a positive brand coefficient suggests that any unfavorable effect on shareholders because managers were able to relax the constraint is not the dominant explanation for the market returns.

their insignificance we are unable to distinguish between the two possible explanations for positive returns at the announcement of brand capitalization. Thus we cannot rule out undervaluation of brands but, as argued above, the magnitude of undervaluation is small. In the unrestricted version, the coefficients on *BRAND/MVE* * $D_{LSErule}$ and *BRAND/MVE* * D_{lolevg}, 1.85 and -1.77, are both significant at the 5 percent level but in opposite directions. Because the coefficient of correlation between *BRAND/MVE* * $D_{LSErule}$ and *BRAND/MVE*D_{lolevg} is very high (0.94) we do not draw any conclusions from this result.

V. Conclusions

This study examines the value relevance and reliability of brand assets recognized by 33 U.K. firms beginning in 1985. Most previous studies on the value relevance of intangible assets have examined valuations of outside parties rather than managers who could be subject to contracting incentives to bias recognized amounts. The only other study that examines recognized intangible assets, Barth and Clinch (1998), does not examine the effects of contracting incentives on value relevance. Also, previous studies on brand recognition in the U.K. (e.g., Muller 1999) have examined the incentives for brand recognition, but not the effects of these incentives on the value relevance and reliability of the recognized brand values.

Our results suggest that recognized brand values are value relevant despite managers' incentives to over-value them. These findings are robust in several sensitivity tests. However, market capitalization rates of brands of firms with low contracting incentives−firms with no transactions that avoided the LSE rules requiring shareholder approval for acquisitions/disposals, and firms with industry-adjusted leverage below the

sample median—are substantially higher than those of firms with high contracting incentives. The difference in market capitalization rates indicates differences in the amount of bias or error in brand valuations of different groups of firms, suggesting that brand asset measures lack reliability for firms with high contracting incentives. These results must, however, be interpreted with caution because in a randomization test we perform for sensitivity analysis, the differences are significant at only the 15 and 14 percent levels. Another caveat is that our findings are based on market capitalization rates; they therefore do not indicate that markets are misled by the lack of reliability.

Previous studies that investigate the effects of contracting incentives on the value relevance of managers' discretionary valuations (e.g., Aboody et al. 1999, which examines managers' revaluations of tangible fixed assets) find much smaller differences in capitalization rates. Brand assets in our sample are higher as a proportion of total assets than is the revaluation balance in Aboody et al.'s sample. Furthermore, the valuation of intangible assets such as brands is likely to be more discretionary. Subject to caveats mentioned before, our study therefore contributes to the literature by showing that substantial differences in market capitalization rates of recognized assets could be observed for different groups of firms when contracting incentives are strong and the valuations are subjective.

We also find a significantly positive association between market returns during the 21-day period surrounding the first announcement of brand asset values. The positive association could result either from undervaluation of brands by markets prior to recognition, as suggested by Lev (2001), or from the relaxation of contracting constraints. Although we attempt to distinguish between the two explanations for a positive

association, insignificant coefficients prevent us from doing so. We are thus unable to rule out the undervaluation explanation, but the magnitude of undervaluation is small.

By examining the value relevance and reliability of intangible assets, we contribute to the policy debate on recognition of intangible assets. However, we do not draw any policy conclusions because our evidence suggests relevance as well as a possible lack of reliability, and the trade-off between these considerations is not precisely quantified (Barth et al. 2001). Besides, accounting standards are shaped by factors other than value relevance and reliability (Holthausen and Watts 2001; Watts 2002).

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TABLE 1
Descriptive Statistics for U.K. Firms Capitalizing Brands
Earliest Brand Capitalization and Debt to Book Equity and Market to Book Ratios.

Firm Name	First balance sheet date[a]	Brands/ BVE	D/E without brands	D/E with Brands	MVE/BVE without brands	MVE/BVE with brands
Reed International	3/31/85	16.4%	1.27	1.06	1.22	1.02
United Newspapers	12/31/85	98.2%	130.96	2.42	160.88	2.97
Reckitt and Colman	1/4/86	14.5%	1.10	0.94	2.93	2.50
Emap	4/5/86	17.6%	1.00	0.82	4.60	3.79
London International	3/31/88	44.2%	6.04	3.37	8.38	4.68
Adscene Group	5/28/88	60.1%	4.42	1.76	9.02	3.60
Ranks Hovis McDougall	9/3/88	73.0%	2.79	0.75	5.19	1.40
Grand Metropolitan	9/30/88	17.3%	0.87	0.72	1.51	1.25
Lonrho	9/30/88	10.0%	1.73	1.56	1.48	1.33
Guinness	12/31/88	48.2%	1.29	0.67	2.01	1.04
Ladbroke	12/31/88	13.9%	0.79	0.68	1.07	0.92
United Biscuits	12/31/88	20.7%	1.89	1.50	2.96	2.34
WPP	12/31/88	293.2%	(5.32)	10.28	(1.92)	3.71
Nu Swift	12/31/88	35.7%	10.47	6.73	9.94	6.39
Sterling Publishing	3/31/89	58.5%	6.65	2.76	16.74	6.95
Continuous Stationery	3/31/89	82.3%	7.93	1.40	16.54	2.93
Southnews	4/1/89	70.6%	4.00	1.17	19.99	5.87
Goodhead	5/31/89	37.5%	1.95	1.22	2.23	1.39
Daily Mail & General Trust	9/30/89	47.7%	3.42	1.79	3.43	1.79
Cadbury Schweppes	12/30/89	51.6%	5.33	2.58	8.47	4.09
Jeyes Group	12/30/89	1.4%	1.16	1.14	2.77	2.73
Trinity International	12/29/90	18.3%	0.98	0.80	2.23	1.82
Blacks Leisure	2/29/92	5.0%	1.34	1.27	2.28	2.16
Telegraph	12/31/92	54.8%	0.59	0.27	3.19	1.44
Matthew Clark	4/30/93	37.6%	0.65	0.40	2.52	1.57
Midland Indep. Newspapers	12/31/94	90.5%	5.28	0.50	14.95	1.42
Dalgety	6/30/95	43.0%	6.97	3.97	7.36	4.19
Johnston Press	12/31/95	43.7%	2.34	1.32	10.05	5.65
Highland Distilleries	8/31/96	31.1%	1.50	1.03	3.29	2.26
Scottish Radio Holdings	9/30/96	55.6%	1.67	0.74	10.86	4.82
Scottish Media Group	12/31/96	61.4%	1.76	0.68	11.61	4.48
Charterhouse Comm.	5/31/97	131.8%	(2.44)	0.77	(5.48)	1.74
Newsquest	12/31/97	156.7%	(2.04)	1.16	(4.56)	2.59
MEDIAN		44.2%	1.95[b]	1.16	5.19[b]	2.50
MEAN		55.8%	7.27[c]	1.76	11.66[c]	2.94

TABLE 1 (CONTINUED)

D/E = Debt/Equity ratio = Total liabilities / Book Value of Shareholders' Equity,
MVE = Market value of shareholders' equity, and
BVE = Book value of shareholders' equity (including brands, except where noted otherwise).

[a] For six firms share prices are not available at the date of the first balance sheet containing brand assets, because, e.g., they were not publicly listed at the time. For these firms we report the first balance sheet date with available share price information.

[b] Firms with negative leverage or MVE/BVE are treated as having the highest leverage or MVE/BVE.

[c] Excluding firms with negative book value of equity.

TABLE 2
Descriptive Statistics
Number of Observations, and Mean, Standard Deviation, and Variation in Brand Values by Firm.

		Brand Value				
Firm Name	N	Mean	SD	CV %	Min	Max
Emap	13	181.2	172.1	95.0	5.5	479.7
Reckitt and Colman	13	615.0	470.9	76.6	55.8	1295.6
United Newspapers	13	121.8	27.4	22.5	60.0	133.0
Adscene Group	11	16.7	15.3	91.8	2.7	40.0
Southnews	10	14.6	21.5	147.2	2.6	72.5
Sterling Publishing	10	15.4	11.3	73.1	1.8	30.7
United Biscuits	10	174.1	53.4	30.7	106.5	251.0
Daily Mail	10	200.3	35.6	17.8	174.4	260.7
Ladbroke Group	10	326.7	52.7	16.1	276.7	376.7
London International	10	35.6	3.4	9.5	32.0	40.4
Cadbury Schweppes	9	798.1	611.7	76.6	304.0	1689.0
Grand Metropolitan	9	2660.4	965.1	36.3	588.3	3884.0
Jeyes Group	9	0.5	0.2	32.0	0.2	0.7
Goodhead Group	9	11.2	3.0	26.5	6.2	16.0
WPP	9	330.6	58.3	17.6	175.0	350.0
Guinness	9	1388.3	10.0	0.7	1375.0	1395.0
Trinity	8	127.4	141.4	111.0	10.2	354.0
Reed International	8	844.3	648.4	76.8	106.2	1669.7
Matthew Clark	6	9.7	0.0	0.1	9.7	9.7
Ranks Hovis McDougall	5	614.6	105.7	17.2	459.0	740.0
Nu Swift	5	9.5	1.0	10.2	8.5	10.4
Blacks Leisure	4	0.8	0.1	7.2	0.7	0.8
Continuous Stationery	4	4.5	0.0	0.0	4.5	4.5
Lonrho	4	117.0	0.0	0.0	117.0	117.0
Telegraph	4	176.0	0.0	0.0	176.0	176.0
Johnston Press	3	142.5	110.6	77.6	14.9	206.3
Midland Independent	3	112.8	12.7	11.3	99.4	124.7
Scottish Radio Holdings	3	10.9	1.0	9.5	10.2	12.1
Dalgety	3	130.0	0.0	0.0	130.0	130.0
Highland Distillers	3	72.2	0.0	0.0	72.2	72.2
Charterhouse	2	6.4	0.2	2.9	6.2	6.5
Scottish Media Group	2	56.0	0.0	0.0	56.0	56.0
Newsquest	1	320.0			320.0	320.0

N = Number of observations,
SD = Standard deviation, and
CV = Coefficient of variation, i.e., SD/Mean.

TABLE 3
Test of Value Relevance of Brands
Correlations, and Coefficient Values and t-statistics for the Regression:

$$MVE_{jt} = \sum_{Y=84}^{98} a_{0Y} YRDUM_Y + \sum_{j=1}^{32} a_{1j} FIRM_j + a_2\, BVE_{jt} + a_3\, NI_{jt} + a_4\, BRAND_{jt} + e_{jt}.$$

Panel A: Correlations Among Variables Used in Regressions

	BVE	*NI*	*BRAND*
MVE	0.55***	0.81***	0.86***
BVE		0.50***	0.23***
NI			0.74***

Panel B: Regression coefficient values and White t-statistics

Variable	Predicted signs	Regression coefficient (white t-stat) N = 227
BVE	+	-0.06 -0.17
NI	+	2.27 3.26***
BRAND	+	1.24 3.27***
Adj R^2		0.96

MVE = market value of equity.
BVE = book value of equity (excluding brands).
NI = net income after extraordinary items.
BRAND = brand assets.
$YRDUM_Y$ = 1 if year = *Y*, and 0 otherwise,
$FIRM_j$ = 1 for the *j*th firm, and 0 for others.

*, **, *** indicate significance at 10, 5, and 1 percent levels (one-tailed for coefficients whose signs we predict).

Five outliers, i.e., observations with *DFBETAS* exceeding one in absolute value for any coefficient, were deleted for the regression in Panel B.

TABLE 4
Test of Reliability–Value Relevance of Brands in Subsamples Partitioned by Dummies for Contracting Incentives

Correlations, and Coefficient Values and White t-statistics for the Regressions:

$$MVE_{jt} = \sum_{Y=84}^{98} b_{0Y} YRDUM_Y + \sum_{j=1}^{32} b_{1j} FIRM_j + b_2\, BVE_{jt} + b_3\, NI_{jt} + b_4\, BRAND_{jt} + b_5\, BVE_{jt}{*}D_{LSErule} + b_6\, BVE_{jt}{*}D_{lolevg} + b_7\, NI_{jt}{*}D_{LSErule} + b_8\, NI_{jt}{*}D_{lolevg} + b_9\, BRAND_{jt}{*}D_{LSErule} + b_{10}\, BRAND_{jt}{*}D_{lolevg} + e_{jt}.$$

Panel A: Correlations Among Variables Used in Regressions[a]

	$D_{LSErule}$	D_{lolevg}
MVE	0.05	0.31***
BVE	0.27***	0.35***
NI	0.03	0.26***
BRAND	0.03	0.28***
$D_{LSErule}$		0.36***

Panel B: Regression coefficients and White t-statistics

Variable	Predicted signs	Model 1 N = 230	Model 2 N = 230	Model 3 N=230
BVE	+	–0.42 (–1.10)	–0.60 (–1.52)*	–0.41 (–1.13)
NI	+	7.19 (5.16)***	6.72 (5.25)***	8.55 (7.24)***
BRAND	+	0.35 (0.94)	0.40 (1.05)	0.39 (1.03)
$BVE{*}D_{LSErule}$	?	1.03 (1.89)**		–1.07 (–1.49)*
$BVE{*}D_{lolevg}$	?		1.27 (2.29)**	2.13 (2.73)***
$NI{*}D_{LSErule}$	?	–7.96 (–5.19)***		–3.68 (–2.79)***
$NI{*}D_{lolevg}$	?		–7.65 (–5.45)***	–5.87 (–5.30)***
$BRAND{*}D_{LSErule}$	+	1.59 (2.98)***		(–0.20) (–0.31)
$BRAND{*}D_{lolevg}$	+		1.51 (2.80)***	1.76 (2.49)***
Adj R^2		0.96	0.96	0.96

(White heteroskedasticity-adjusted t-statistics in parentheses)

TABLE 4 (CONTINUED)

MVE	= market value of equity.
BVE	= book value of equity (excluding brands).
NI	= net income after extraordinary items.
BRAND	= brand assets.
$YRDUM_Y$	= 1 if year = *Y*, and 0 otherwise,
$FIRM_j$	= 1 for *j*th firm, and 0 for others.
$D_{LSErule}$	= a dummy variable equaling 0 if brand capitalization enabled a firm to avoid the LSE rule regarding shareholder approval for one or more transactions during the year subsequent to capitalization. A transaction is considered to have avoided the LSE rules if either the assets ratio (ratio of net assets of the acquired/disposed entity divided by the owners' equity of the parent firm) or the consideration ratio (net purchase consideration paid or received divided by the owners' equity of the parent firm) exceeds 25 percent without including brand assets, but both ratios are lower than 25 percent after including brands. We ignore any transactions with a consideration-to-market-capitalization ratio exceeding 25 percent because those transactions would need shareholder approval regardless of brand capitalization. Twelve of the 33 sample firms had transactions that avoided the LSE rules as a result of brand capitalization.
D_{lolevg}	= a dummy variable equaling 1 if the sample firm's industry-adjusted debt-to-book-equity (excluding brands) ratio in the first year of brand capitalization is below the sample median. We define an industry as the same 3- or 4-digit U.K. SIC code. For the sake of consistency, we exclude intangible assets from book value of equity in calculating debt-to-book-equity ratio for firms in the industry group.

[a] See panel A of Table 3 for correlations among the other regression variables.

*, **, *** indicate significance at 10, 5, and 1 percent levels (one-tailed for coefficients whose signs we predict).

In each model two outliers, i.e., observations with *DFBETAS* exceeding one in absolute value for any coefficient, were deleted.

TABLE 5
Share Price Reactions to Announcements of Brand Capitalization: All Firms, and Subsamples Partitioned by Contracting Incentives

Coefficient values and White t-statistics for the regressions:

$$AR_{jt} = d_0 + d_1 (BRAND_{jt} / MVE_{j,t-1}) + e_{jt}$$

and

$$AR_{jt} = f_0 + f_1 (BRAND_{jt} / MVE_{j,t-1}) + f_2 D_{LSErule} + f_3 D_{lolevg} + f_4 (BRAND_{jt} / MVE_{j,t-1} * D_{LSErule}) + f_5 (BRAND_{jt} / MVE_{j,t-1} * D_{lolevg}) + e_{jt}.$$

Variable	Predicted signs	Model 1 N = 24	Model 2 (N=24)	Model 3 (N=24)	Model 4 (N=24)
Intercept	?	-0.01 (-0.20)	0.02 (0.62)	-0.06 (-1.36)	-0.05 (-1.00)
BRAND/MVE	+/-	0.12 (3.21)***	0.08 (2.76)***	0.16 (3.35)***	0.15 (3.16)***
$D_{LSErule}$	?		-0.05 (-0.97)		-0.22 (-1.89)*
D_{lolevg}	?			0.07 (1.13)	0.25 (2.13)**
BRAND/MVE * $D_{LSErule}$	+		0.21 (1.07)		1.85 (1.88)**
BRAND/MVE * D_{lolevg}	+			-0.00 (-0.01)	-1.77 (-1.82)**
Adj R^2		0.02	0.03	0.08	0.06

AR_{jt} = brand capitalization announcement period (days -10 to +10) abnormal returns for the *j*th firm in year *t* (estimated as the difference between actual returns and expected returns based on market model parameters estimated over the 60 trading days ending 30 days before the announcement).

$BRAND_{jt}$ = brand assets at the end of year *t*.

$MVE_{j,t-1}$ = market value of equity at the end of year *t-1*.

$D_{LSErule}$ and D_{lolevg} are as defined in Table 4.

*, **, *** indicate significance at 10, 5, and 1 percent levels (one-tailed for coefficients whose signs we predict).