The Association between Brand Capital Intensity and Share Repurchases: Evidence

from the U.S.

Abstract

We examine the association between brand capital intensity and share repurchases using a large sample of publicly listed non-financial U.S. firms over the period 1994-2021. We find that firms with a high level of brand capital intensity have a significant and positive relationship with the extent of share repurchases. Additional analyses use alternative brand capital or share repurchase measures, or an alternative depreciation rate is used to calculate brand capital, which is consistent with our base model results. Furthermore, our results remain robust with the use of endogeneity and self-selection tests, including generalized method of moments (GMM) and propensity score matching (PSM). Overall, this study finds that a higher level of brand capital intensity plays a central role in the share repurchasing decisions of firms, which holds important implications for investors, management, analysts, and regulators.

Keywords: Brand Capital, Intangible Assets, Share Repurchases, Advertising Expenses.

1. Introduction

This study examines the relationship between the brand capital intensity and share repurchases of a large sample of publicly listed U.S. firms. The value of intangible assets has proliferated increasingly over the past 15 years, in line with an increase in investment and following on from consumers, analysts, boards and other stakeholders. In 2018, the market value of intangible assets for S&P 500 U.S. firms was around 84% (\$21 trillion), while tangible assets represented just 16% (Berman, 2019). Brand capital is a class of intangible assets which contributes to stability, in terms of cash flow and future profits, and enables firms to compete more effectively in a dynamic marketplace (Boix, 2020). Belo et al. (2021) found that brand capital represents an average of 6-25% of firm market value in the U.S. According to the 2021 annual *Brand Finance* report, some 46% of global brand capital value is related to U.S. firms

with an aggregate brand capital value of \$3.3 trillion (BrandFinance, 2021). Brand capital can contribute significantly to sales growth and the ability of firms to gain market share (Hasan et al., 2021). Hence, brand capital can help a firm to compete effectively through an expansion of its market share, enhancing stakeholder inter-connection, attracting investments, assisting with the maintenance of customer loyalty and retention, incentivising skilled employees, contributing to the uniqueness of product innovation, services and product differentiation (Belo et al., 2014; Brexendorf et al., 2015; Hasan et al., 2021). Expenditure on advertisements, research, innovation and development provide prospective clients a favourable impression of a firm's brand and how it can secure a competitive advantage.

Firms have payouts via share repurchases and/or dividends. This paper focuses on share repurchases, which occur when firms acquire their previously sold stock to outside investors (Chesnais, 2016). Since 1963, the phenomenon and practice of share repurchasing has gradually increased in the U.S. and has drawn attention from analysts (Elton & Gruber, 1968; Guthart, 1967). In particular, share repurchases became more widespread after the elimination of market restrictions in capital markets in the 1980s (Wang et al., 2021)¹. Firms buyback their shares for multiple reasons, which can include the consumption of excess cash, tax benefits, or a takeover strategy, leading to an increase in the stock price of these firms. Consequently, firms prefer share repurchases over dividends (Dittmar, 2000; Gyimah et al., 2021; Jensen, 1986; Stephens & Weisbach, 1998; Stonham, 2002; Vermaelen, 1981). The U.S. firms included in the S&P 500, from 2009 to 2018, spent around \$4.3 trillion on share repurchases, which exceeded the amount spent on distributing dividends (\$3.3 trillion) over the same period (Lazonick et al., 2020). The motivation behind the present study stems from the observation that brand capital plays a key role in generating profitability, stability and cash flow, especially

¹ According to Wang, Z., Yin, Q.E., & Yu, L. (2021). Real effects of share buybacks legalization on corporate behaviors. *Journal of Financial Economics*, *140*(1), 197-219, firms in developed countries exercised share repurchases in the following years: the United States in 1982, Canada in 1985, Spain in 1989, the Netherlands in 1992, Switzerland in 1992, New Zealand in 1994, Germany in 1998 and Greece in 2003.

for firms with a high level of intensive brand capital. Hence, brand capital represents a considerable proportion of firms' market value. Vitorino (2014) corroborates that brand capital represents, on average, around 23% of firm market value in the United States.

Recently, firms with substantial brand capital in the U.S. announced share repurchasing plans, to highlight their financial performance and to promote confidence in managing their future performance. For instance, in 2018, Apple announced a share repurchase program of \$100 billion, as a way of repaying value to its shareholders (Ota et al., 2022). Apple has been repeatedly listed as one of the most valuable brands in the world, with an estimated value of \$234 billion, representing 17% of the stock market value in the United States (Swaminathan et al., 2022). The strength of the brand capital of Apple is widely viewed as a significant contributor to its financial success. Therefore, by repurchasing shares, Apple demonstrates confidence in the long-term expansion prospects of its brand.

Advertising expenses, as a measure of brand capital in the present study, can indicate the value of investing in brands and the impacts of that investment on the financial position of firms. Firms that invest extensively in building their brands may be more willing to repurchase their shares to signal their financial strength and confidence in their future performance. Studying the relationship between brand capital intensity and share repurchases may help managers evaluate the effectiveness of their advertising strategy and make informed decisions about resource allocation.

The availability of cash enables decision-makers to choose the appropriate payout policy. Barth and Kasznik (1999) stated that firms with excess cash are more likely to buyback their shares. Additionally, Stephens and Weisbach (1998) showed that share repurchase and cash flow levels exhibit a positive association. Therefore, cash is one determinant that supports and motivates managers to buyback their shares. The literature has not been explicitly explored, regarding the association between brand capital and share repurchases. Thus, investigating the association between brand capital intensity and share repurchases can provide valuable perception into the role of brand capital intensity in corporate finance and highlights the factors that affect the decision of a firm to buyback its shares.

The present study proposes a positive association between brand capital intensity and share repurchases for several causes. First, intensive brand capital is considered to be the main driver for firms to expand their market share, generate more profits, reduce the volatility of future cash flow and enhance competitive advantage (Belo et al., 2021, 2014; Hasan & Taylor, 2022; Hasan et al., 2021; Hsu & Lawrence, 2016). In such a setting, the likelihood of cash flow is increased, which may encourage firms to use the excess cash in returning value to their shareholders through share repurchases. Second, firms with a high level of brand capital are prone to more scrutiny and monitoring from consumers, analysts, boards and other stakeholders (Hasan et al., 2021). Therefore, this can create more attention and pressure on the managers of firms to increase potential growth in sales, maintain high levels of performance and use the firms' resources more efficiently, which may, ultimately, impact agency relations (Hasan & Taylor, 2022; Ismail et al., 2021). In this case, the managers of the firms with intensive brand capital work hard to prove the effectiveness of their performance and the strength of their financial position by signalling to stakeholders through share repurchases, which are indicators of financial stability (Gyimah et al., 2021). Third, firms with valuable brand capital tend to have more stable cash flow, through expanded customer loyalty and increased profitability (Hasan & Taylor, 2022; Hsu & Lawrence, 2016; Larkin, 2013). These firms devote more effort to attracting investors by providing them with various advantages for investing in their firms. A lower tax burden is one determinant that motivates investors to think about whether to invest in a specific firm or not. Hence, because firms with brand capital intensity have more stable cash flow and strong financial positions, which drive firms to use their resources more effectively, these firms might attract investors through share repurchases and this provides

favourable tax benefits to the investors. Regarding tax for payout policies, share repurchases are classified as a capital gains tax, which is realised when the shares are sold; whereas, dividends are classified under ordinary income tax, which is recognised when earned (Brown et al., 2007). Firms with a high level of brand capital can be desirable to investors because of the benefits of firms having their share repurchases taxed as a capital gain, rather than as ordinary income. Feng et al. (2013) confirmed that capital gain is better than ordinary income due to the benefits for investors, including lower tax rates.

Brand capital intensity can be estimated based on advertising expenditure, by using the perpetual inventory method which is aligns with the methodology used in the extant literature on brand capital (Belo et al., 2021, 2014; Hasan & Taylor, 2022; Ismail et al., 2021). Our sample comprised year-end observations from 35,995 publicly listed U.S. firms, from 1994-2021 and their baseline regression results demonstrate that firms with higher brand capital intensity have a significant and positive association with the level of share repurchase. Regarding economic importance, our regression findings propose that an increase of one standard deviation in brand capital leads to a 22.21% rise in share repurchases, relative to the mean². In addition, our results continue to be significant and positive when we measure brand capital using alternative specifications, alternative share repurchases measures and alternative depreciation rates to measure brand capital. Furthermore, we fulfil various robustness tests, incorporating GMM and PSM, in order to mitigate endogeneity concerns.

This study enriches the existing literature in numerous significant ways. First, to the best of our knowledge, there has yet to be a prior study that has explicitly examined the association between the level of brand capital and share repurchases. Although a previous study examined the association between intangible assets, in general, and share repurchases, intangible assets

 $^{^{2}}$ 22.21%. = 0.043 (std Dive of BR/AT) * 0.093 (coefficient of BR/AT) = 0.004

^{0.004 / .0.018 (}Mean of Sh/AT) = 0.2221

^{0.2221 * 100 = 22.21%}.

are highly diverse. Barth and Kasznik (1999) and Hasan and Uddin (2022) verified that share repurchases are significantly and positively higher for firms with more intangible assets. Intangible assets, as a class, are so diverse that it is difficult to disentangle the effects they may have on the propensity of firms to buyback their shares. Brands are important because they may be a substantial driver of a firm's profitability. Brand capital intensity may affect the tendency of a firm to practice share repurchasing, based on its desire to increase market share in a certain industry. We provide evidence that a higher level of brand capital is significantly and positively related to a greater likelihood of share repurchases. Therefore, the current study is in response to the recent significant increase in share repurchase activities and the absence of studies that have yet to investigate the association between brand capital intensity and share repurchases. Second, we advance the literature by presenting evidence of the effect of brand capital intensity on payout policies, specifically share repurchases, which is significant because share repurchases interact with the investment and financial decisions that firms make and are essential to numerous corporate finance inquiries (Farre-Mensa et al., 2014; Nessa, 2017). Understanding how the level of a specific component of intangible assets, brand capital, can affect the probability of share repurchases occurring is critical to the investment of firms and financial decision-makers.

The rest of this study is structured in the following way: Section 2 presents the existing studies and hypothesis development. Section 3 describes and details the methodology ensued. Section 4 discusses our results and, finally, Section 5 concludes the paper.

2. Background and hypothesis development

2.1 Background

Brand capital is an essential firm-specific intangible asset that embodies the elements of customer awareness and their perceived reliability of goods and services delivered by firms.

(Bick et al., 2003; Hasan & Taylor, 2022; Hasan et al., 2021; Swaminathan et al., 2022; Vitorino, 2014). These advantages align with the strategic investment perspective of intangible assets, specifically brand capital, which impacts the cash flow and operating profit function, enabling firms to generate more resources to buyback their shares. According to Hasan and Taylor (2022), Hasan et al. (2021), Lou (2014), and Mizik (2014), firms that invest in brand capital through advertising normally receive higher abnormal returns and profitability over the long-term compared to their competitors. Investment in brand capital is significant in enhancing the visibility of firms, customer loyalty, the quality of products and services, and governance mechanisms (Belo et al., 2014; Bick et al., 2003; Hasan et al., 2021). Recently, several studies have analysed the influence of brand capital on a firm's value, credit rating, stock crash risk, financial reporting irregularities, and monetary policy (Belo et al., 2014; Hasan et al., 2021; Hasan & Taylor, 2022; Ismail et al., 2021; Larkin, 2013). Belo et al. (2014) investigated the role of intensive brand capital in firm valuation. They found that firms with enhanced brand capital enjoyed superior average stock returns than their counterparts, by up to 5.1% per year. Hasan et al. (2021) explored the association between brand capital and stock price crash risk and documented that firms with a high level of brand capital tend to have less crash risk. Furthermore, Hasan and Taylor (2022) illustrated that higher brand capital levels reduce the default risk of firms; hence, rating agencies grant these firms higher credit ratings. Ismail et al. (2021) also confirmed that firms with substantial brand capital are less prone to financial reporting irregularities. Additionally, firms with valuable intensive brand capital influence monetary policy by lowering future cash flow volatility (Larkin, 2013). The present study intends to build upon the growing body of research by investigating how brand capital intensity affects share repurchasing policy.

Share repurchases have recently become more popular as a payout policy that aims to return cash to shareholders (Gyimah et al., 2021). The existing literature highlights that share repurchases are more resilient than distributing dividends (Iyer & Rao, 2017). Previous studies provided substantial evidence that firms are more inclined to undertake share repurchases due to the availability of excess cash, tax benefits, lack of investment opportunities, boosted stock prices, and resistance to a firm takeover (Billett & Xue, 2007; Boudry et al., 2013; Gyimah et al., 2021; Chen & Liu, 2021; Wang et al., 2021). Firms with excess cash are more prone to buyback their shares or pay dividends (Hasan & Uddin, 2022; Jensen, 1986). Wang et al. (2021) clarified that excess cash, which is used for share repurchases, is fully funded by internal resources rather than external debt sources. Conversely, Lei and Zhang (2016) argued that issuing debt has been popular for firms over the past decade and some firms rely on borrowing to support their share buyback; hence, this debt decreases the agency cost of free cash flow because that money is repaid over time. Another reason firms are encouraged to practice share repurchases is the tax benefits. In 2003, the United States made significant changes to dividend taxation law by reducing the tax burden from 38% to 15% and, also, reducing the capital gains tax rate from 20% to 15%, which is applicable to share repurchases (Moser, 2007). Even after the tax cut on dividends and share repurchases, and having an equal tax rate of 15%, share repurchases are still commonplace. Brown et al. (2007) claimed that share repurchases are taxed on a net basis, which is not due until the shares are sold and the capital gains are recognised; this gives share repurchases more advantages than dividend distribution (considering the dividend tax rate, Wang et al., (2021)). Additionally, Boudry et al. (2013) illustrated that limited attractive investment, while holding excess cash, motivates firms to buyback their shares. Brav et al. (2005) found that 32.3% of a sample of 348 financial executives believed that firms performed share repurchases when there were limited investment opportunities. Furthermore, firms undertake share repurchases to boost their stock values. Liu and Swanson (2016) also demonstrated that share repurchases support the cost of shares by concurrently raising demand and lowering supply. Intensely competitive firms can employ

share buybacks to signal their financial stability and increase their stock values (Gyimah et al., 2021). Massa et al. (2007) claimed that share repurchases positively impact the stock price of firms and negatively affect the stock price of firms with exact industries. However, firms may face risks, in the form of a drop in stock prices, after share repurchases. For example, General Electric spent approximately \$24 billion on share repurchases in 2016 and 2017 but the stock price dropped to \$7, instead of trading at \$30 as it did a few years ago (Goldberg, 2018). Takeover defence is considerable and one of the common causes for share repurchases, which firms carry out to remove expected acquisitions from their competitors. Billett and Xue (2007) confirmed that share repurchase activity increases when firms face a greater likelihood of a takeover.

2.2 Hypothesis development

2.2.1 Brand capital intensity and share repurchases

In today's competitive business landscape, it is noticeable that firms invest a significant amount of their resources in building and expanding their brands to attract the trust and attention of investors and consumers. Indeed, having strong brand capital can lead to more stable cash flow, market share, profitability, firm value and enhanced financial performance, stemming from the investment in brand capital (Hasan et al., 2021). This can ultimately increase a firm's cash holdings, which might cause agency problems if stakeholders do not take action to mitigate managerial opportunities. Lee and Suh (2011) proved a strong association between cash holdings and stock buybacks. Based on the agency theory, share repurchases play a central role in reducing free cash flow, which significantly decreases shareholders' concerns regarding managers' misuse of firms' resources (Gim & Jang, 2020). Furthermore, signalling theory proposes that managers are inclined to involve in share repurchases to signal their confidence in their future performance and growth (Gim & Jang, 2020; Wansley et al., 1989). The existing literature indicates that executives' incentive compensation agreements serve as a key driver for engaging in share buybacks (Brav et al., 2005; Hasan & Uddin, 2022). To be specific, when compensation of executive is linked to earnings per share (EPS), managers encourage the reporting of EPS through share buybacks, to reduce the count of outstanding shares (Hasan & Uddin, 2022; Young & Yang, 2011). Therefore, we posit that managers in the higher levels of brand capital firms view the practice of share repurchases favourably due to the long-term enhancement of firms in terms of cash flow, sales growth, profitability, risk mitigation, and reputation. Moreover, firms that invest strategically in building brand capital, can minimise the risks of agency problems through careful monitoring and effective resource utilisation to meet stakeholder demands. Considering the aforementioned discussion, we propose the hypothesis to be as follows:

H1: Brand intensive firms are more likely to undertake share repurchases.

2.2.2 The governance role of brand capital intensity and share repurchases

Brand capital intensive firms are exposed to a high level of scrutiny and monitoring from customers, shareholders and investors (Hasan et al., 2021). Existing literature illustrated that efficient corporate governance mechanisms act as a key driver of increasing share repurchase activity (Jansson & Larsson-Olaison, 2010). Moreover, Hasan and Taylor (2022) demonstrated that firms with superior brand capital incline to have more effective corporate governance structures. Thus, firms' managers with valuable brand capital have fewer incentives to be involved in agency-related problems. In addition, this reduces agency costs and increases free cash flow, which can be used for share repurchases. The previous literature indicated that shareholders value efficient corporate governance because deficient corporate governance tends to diminish the financial resources of firms, by investing in unprofitable ventures (Brush et al., 2000). Caton et al. (2016) posited that firms with robust corporate governance and

flexibility of share repurchase policies allowed the enhancement of the relationship between earnings, investment policies, and payouts, resulting in the increased value of firms. Hence, on the basis of the monitoring function of brand capital intensity, we propose that firms with superior brand capital are subject to greater attention and scrutiny from a broader range of stakeholders. Consequently, these firms experience fewer issues with agency conflicts and incur lower costs. This will assist valuable brand capital firms in increasing the incidence of share repurchases. Therefore, this study posits the following hypothesis:

H2: Corporate governance positively affects the relationship between brand capital intensity and share repurchases.

2.2.3 The excess cash role of brand capital intensity and share repurchases

Excess cash is defined as the surplus amount of cash held beyond the optimal levels that firms need for their current operations (Lee & Suh, 2011). According to Dittmar and Mahrt-Smith (2007), Jensen and Meckling (1976), and Oswald and Young (2008), managers usually have a tendency to waste firms' excess resources if left to their own devices, without effective monitoring from shareholders. Brand capital acts as a crucial driver for firms to increase sales growth, maintain stable cash flow and enhance operating profit, which ultimately results in excess cash (Downar et al., 2018; Hasan & Taylor, 2022; Hasan et al., 2021; Larkin, 2013). Firms with intensive brand capital tend to be subject to more stakeholder monitoring, which can facilitate the effective use of free cash flows and mitigate agency costs and related conflicts. The availability of excess financial resources increases a firm's ability to buyback their shares, especially when firms have a lack of good, or high-risk, investment opportunities. Oswald and Young (2008) claimed that firms typically seek to use excess cash in share buybacks to reduce agency costs. This is consistent with prior studies that demonstrate a positive association between surplus cash and the likelihood of buyback shares (Barth & Kasznik, 1999; Stephens & Weisbach, 1998). Furthermore, using excess cash in share repurchases has more flexibility than distributing dividends because firms do not have any commitment to buyback their shares and there is no expectation to repurchase on a regular basis (Dittmar, 2000). Overall, it can be seen that a high level of brand capital intensity enables firms to buyback their shares with excess cash due to effective monitoring, using firms' financial resources more efficiency.

H3: Excess cash positively impacts the relationship between brand intensity and share repurchases.

3. Research design

3.1 Data and sample

In this study, the sample comprised listed non-financial U.S. firms over the 1994-2021 period. Data was obtained from a variety of sources, including Compustat (North America data file), the Center for Research in Security Prices (CRSP) and BoardEx (North America data file). The present study excluded certain firms from the sample, specifically those operating within the financial sector (Standard Industrial Classification: 6000–6999) and the utilities sector (Standard Industrial Classification: 4900–4999), because these industries operate under rigorous regulatory constraints and subject to differences in measurement and recognition of financial statement elements. We removed observations that had missing dependent variable values (share repurchases), independent variable values (brand capital) and control variables. Furthermore, firms with missing advertising expenditure data were omitted from the sample. The process of obtaining an appropriate sample for this study lead to a conclusive set, comprising 35,995 observations. To address the distortion caused by outlying observations, all the continuous variables in this study were winsorized at levels of 1% and 99%. Finally, consistent with the approaches implemented by Belo et al. (2014) and Eisfeldt and

Papanikolaou (2013), this study limited the sample to firms with fiscal year-ends in December to preserve uniformity in financial reporting across firms.

3.2 Research design

To investigate the association between brand capital intensity and share repurchases, we employ this regression model:

Repurchase_AT_{i,t}

$$= \alpha_{0} + \beta_{1} \operatorname{Brand}_{AT_{i,t}} + \beta_{2} \operatorname{Firm}_{age_{i,t}} + \beta_{3} \operatorname{SIZE}_{i,t} + \beta_{4} \operatorname{LEV}_{i,t}$$

$$+ \beta_{5} \operatorname{CASH}_{i,t} + \beta_{5} \operatorname{ROA}_{i,t} + \beta_{6} \operatorname{MTB}_{i,t} + \beta_{7} \operatorname{Sales}_{Growth_{i,t}}$$

$$+ \beta_{8} \operatorname{CAPEX}_{i,t} + \beta_{9} \operatorname{RE}_{i,t} + \beta_{10} \operatorname{Negative}_{Earnings_{i,t}} + \beta_{11} \operatorname{RD}_{i,t}$$

$$+ \operatorname{Industry} FE + \operatorname{Year} FE + e_{i,t}$$

where i represents the firm, t represents time, Repurchases_AT represents the dependent variable (refer to Section 3.3), and Brand_AT denotes the independent variable (refer to Section 3.4). The regression model incorporates a range of firm characteristics and controls for the year and 12 Fama-French industry group effects (see Section 3.5). All model variables are defined in Appendix A.

3.3 Measurement of share repurchases

Using the specifications provided by Bliss et al. (2015), Dang et al. (2021), Hoberg et al. (2014), Nessa (2017), and Nguyen et al. (2021), we measured The monetary amount of share buybacks is computed by subtracting the net variation in purchase both of preferred and common stocks and the value of net change in the outstanding preferred stock, all divided by the total assets or by total sales. For the additional analysis, we divided the dollar value of share buybacks by market capitalisation, book equity, cash flow, and earnings to ensure that our results remained consistent with our main results.

3.4 Measurement of brand capital

Brand capital is the independent variable in this study. To estimate brand capital, we followed the recent literature by using yearly advertising expenses (Belo et al., 2014; Hasan & Taylor, 2022; Hasan et al., 2021). According to Hasan et al. (2021), estimating brand capital through advertising expenditure is feasible and ideal. In alignment with the extant literature, the stock of brand capital for each firm is estimated annually employing the perpetual inventory method.

Brand Capital_{i,t} =
$$(1 - \delta_{Brand})$$
Brand Capital_{i,t} " + ADVX_{i,t}

The following presents an estimation of the initial level of brand capital:

Brand Capital_{*i*,t0} =
$$\frac{AADVX_{i,t}}{\delta + \delta_{Brand}}$$

where Brand Capital_{i,t} denotes a firm's level of brand capital, δ_{Brand} represents the depreciation rate of brand capital, ADVX_{i,t} is advertisement expenditures, and δ signifies the growth of brand capital estimated as the average growth of firm-level ADVX. Following the prior literature (Belo et al., 2014; Hasan & Taylor, 2022; Hasan et al., 2021), this research used a depreciation rate of $\delta = 50\%$ to estimate brand capital. Finally, the value of brand capital was divided by the overall assets (Brand/AT) or overall sales (Brand/Sale).

3.5 Control variables

The regression model includes a range of control variables that have been identified in prior studies as being the potential determinants of share repurchases (Dang et al., 2021; Nessa, 2017; Nguyen et al., 2021). These control variables encompass the natural logarithm of firm age (AGE), to control any potentially confounding effects of maturity and life cycle on our results (Bendig et al., 2018), and the natural logarithm of overall assets (SIZE). Prior studies showed that the level of leverage can influence the share repurchasing decision (Boudry et al.,

2013); therefore, we controlled leverage (LEV). Since firms with idle cash incline to repurchase more shares and increase dividend payments to mitigate agency costs, we included cash holdings as a control variable (CASH) (Hasan & Uddin, 2022). Furthermore, we added profitability (ROA) to control the potential effect of firm performance on share repurchases. We also included (MTB), (Sales_Growth) and (CAPEX) to control growth opportunities. Because a high level of retained earnings is indicative of a firm's long-term financial stability and profitability, we controlled retained earnings (RE). Finally, we considered negative earnings (Negative_Earnings) as an indicator of a firm's losses and added research and development expenses to control for investment opportunities (RD).

4. Empirical results

4.1 Descriptive statistics

Table 1 displays a comprehensive summary of the descriptive statistics for all the variables employed in the first regression model of this study. We find that the mean and median values of Repurchase_TA are 0.018 and 0.001, respectively. These findings are consistent with those documented in earlier studies. For example, Hasan and Uddin (2022) reported a mean repurchases over total assets figure of 0.014 and a median of 0.000. The average proportion of brand capital represents 1.8% (1.7%) of total assets (sales). The distribution pattern of brand capital intensity is relatively stable and consistent with what has been observed in previous research (Hasan & Taylor, 2022; Hasan et al., 2021; Ismail et al., 2021). The sample firms exhibit a certain average level of age (2.996), size (6.780), leverage (22.2%), cash (0.184), return on assets (0.123), and sales growth (11.4%). In general, descriptive statistics in the present study are aligned with the existing literature (Dang et al., 2021; Nessa, 2017; Nguyen et al., 2021).

4.2 Correlation results

Table 2 shows the correlations among all the variables utilized in our primary analysis. We find that Repurchases/AT is positively and significantly correlated with Brand Brand/AT (coefficient = 0.095; p < 0.01) and Brand/Sales (coefficient = 0.063; p < 0.01), suggesting that firms with a high level of brand capital are better correlated with more share repurchases. Similarly, we observe a significant positive correlation between Repurchases/Sales and Brand/AT (coefficient = 0.033; p < 0.01) and the correlation among Repurchases/Sales and Brand/AT (coefficient = 0.033; p < 0.01) and the correlation among Repurchases/Sales and Brand/Sales is also positive and statistically significant (coefficient = 0.045; p < 0.01). Additionally, we notice that Repurchases/AT and Repurchases/Sales are positively and significantly correlated with AGE, SIZE, ROA, MTB and retained earnings (p < 0.01). However, Repurchases/AT and Repurchases/Sales negatively correlate with LEV, CASH, Sales Growth, CAPEX, Negative Earnings and RD (p < 0.01, except Repurchases/AT with CASH). The correlations among the share repurchases and control variables are consistent with the study by Hasan and Uddin (2022). Ultimately, the strongest correlation is between Repurchases/AT and ROA (coefficient = 0.284; p < 0.01), which indicates that multicollinearity is not a factor to be concerned with in our analysis.

4.3 Baseline regression results

Table 3 provides the regression analysis findings that investigate the relationship among brand capital intensity and share repurchases. As a dependent variable, we used two distinct measures of share repurchases /AT in columns 1 and 3 and Repurchases/Sale in columns 2 and 4. In addition, we applied two measures for the independent variable: Brand/AT in columns 1 and 2, and Brand/Sale in columns 3 and 4. Based on the regression outcomes, it can be seen (in columns 1 and 2) that Brand/AT has a significant positive relationship with Repurchase_AT and Repurchases/Sale (coefficient = 0.093; 0.058 p < 0.01)³. This lends support to our hypothesis that, as the level of brand capital intensity increases, firms are more incline to engage in share repurchases. Columns 3 and 4 demonstrate that Brand/Sale also has a positive and statistically significant relationship with Reprchases/AT and Repurchases/Sale (coefficient = 0.067; $0.090 \ p < 0.01$). This finding provides supporting evidence of the hypothesis that the level of brand capital intensity is positively and significantly associated with share buybacks. In relation to economic importance, the regression findings in Table 3 demonstrate a substantial economic effect. For instance, the coefficient in column 1 shows that an increase in one standard deviation in brand capital, on average, leads to a $0.0039 (= 0.043 \times$ 0.093) increase in share repurchases. As our sample mean for share repurchases (Repurchase_ $TA_{i,t}$) is 0.018, this economic importance is translated into an increase in share repurchases of 22.21% (i.e. $0.004/0.018 \times 100$) relative to the mean, which has significant economic implications. Moreover, the coefficient in column 3 shows a 16.1% increase in share repurchases for a standard deviation rise in brand capital (i.e. $(0.044 \times 0.067) / 0.018 \times 100$). Overall, this economic relevance retains its qualitative similarity despite adopting different measurements to measure brand capital (Brand/AT and Brand/Sale). Furthermore, our results indicate that the sign and statistical significance of control variables are largely align with prior related studies (Dang et al., 2021; Hasan & Uddin, 2022; Nessa, 2017). For example, the findings of our regression analysis reveal a positive relationship between share repurchase and firm size, cash, return on assets, market to book ratio, retained earnings, and research and development expenses. This positive association is more significant at the 1% level, specifically firm size, return on assets, market to book ratio and return on assets, with the two different share repurchase measures. Conversely, share repurchases exhibit a statistically

³ In an untabulated test, we find that the relationship between BR/AT and DIV/AT, BR/Sale and DIV/AT and BR/Sale and DIV/Sale are positive; whereas, BR/AT with DIV/Sale is negative.

significant and negative relationship with firm age, leverage, sales growth, capital expenditures and negative earnings.

4.4 Cross-sectional analysis

4.4.1 Brand capital and share repurchases: the role of corporate governance

Brand capital intensive firms exhibit effective corporate governance structures that are managed in the best interests of stakeholders, including shareholders, customers, investors, analysts and employees (Hasan & Taylor, 2022). Consequently, managers of these firms have less motivation and limited opportunities to participate in agency-related concerns that may conflict with the interests of stakeholders (Hasan et al., 2021). Past research revealed that shareholders place significant importance on the quality of corporate governance because a lack of effective corporate governance encourages managers to waste funds (Brush et al., 2000). Expanding on the idea that brand capital is linked to strength in corporate governance, we predict that brand capital firms will engage more in share repurchases. Hence, if the positive association between brand capital intensity and share buybacks (which we have demonstrated) is influenced by the strength and effectiveness of the governance structure, such an impact is more likely to be noticeable in firms characterised by weak corporate governance.

To test this conjecture, we employed CEO duality as a proxy to capture the efficiency of corporate governance. Bosse and Phillips (2016) claimed that CEO duality leads to a decline in a firm's performance because of infective agent self-monitoring. Separating the role between the CEO and board chair enhances the effectiveness of corporate governance. It promotes beneficial decision-making for shareholders, which ultimately plays a crucial role in reducing agency problems. We split our sample into a subsample with a value of 1, if firms have CEO duality, and 0 otherwise (Table 4). Brand/AT and Brand/Sale coefficients are significant and positive for firms without CEO duality (coefficient = 0.106; 0.074 p < 0.01, respectively). In

contrast, firms with CEO duality have positive coefficients but they are insignificant. In general, this indicates that corporate governance impacts the significant positive association between brand capital intensity and share repurchases, which aligns with the idea that firms with substantial brand capital are linked with better corporate governance.

4.4.2 Brand capital and share repurchases: the role of excess cash

The existing literature has documented that a superior level of brand capital enables firms to boost sales growth, improve cash flow and enhance profitability (Downar et al., 2018; Hasan & Taylor, 2022; Hasan et al., 2021; Larkin, 2013). This leads to surplus cash, especially when firms have a high risk or lack of investment opportunities. Firms with intensive brand capital are prone to more visibility and monitoring from a broader range of stakeholders (Hasan & Taylor, 2022; Hasan et al., 2021). Therefore, this will help to mitigate agency problems and opportunistic managerial behaviour, ensuring the management of excess cash in the interest of firms and stakeholders. Furthermore, Barth and Kasznik (1999), and Stephens and Weisbach (1998) demonstrated a positive relationship between excess cash and the likelihood of share repurchases. We contend that firms with strong brand capital incline to practice share repurchases when they have excess cash. Hence, if the positive association between brand capital intensity and share repurchases (that we have confirmed) is affected by excess cash, then this effect is likely to be obvious in firms that suffer from liquidity problems.

To test our conjecture, following Dang et al. (2021), we employed a measure of excess cash and partitioned our sample into two distinct subsamples, according to the respective median of excess cash. Therefore, the subsample of firms demonstrating EXCESS_CASH above the median is prone to more excess cash, and vice versa. Table 5 shows that the association between brand capital and share repurchases is positive for both Brand/AT and Brand/Sale, being statistically significant and more prominent for the subset of firms with more

excess cash (coefficient = 0.107; 0.073 p < 0.01, respectively). However, the subset of firms with less excess cash has a positive and insignificant association between brand capital and share repurchases for both Brand/AT and Brand/Sale (coefficient = 0.0.047; 0.050 p < 0.10, respectively). We present evidence that, overall, the level of excess cash has a positive consequence on the association between brand capital and share repurchases.

4.5 Sensitivity analyses

4.5.1 Alternative measures of brand capital

In our primary analysis, the stock of brand capital intensity is divided by total assets (Brand/AT) and total sales (Brand/Sale). Following the existing literature on brand capital (Hasan & Taylor, 2022; Hasan et al., 2021), we employed two additional alternative methods of measuring brand capital by scaling brand capital to the physical capital (Brand/PPE) and the natural logarithm of brand capital (Brand/LN). Table 6 indicates that brand capital has a significant and positive association with share repurchase for all measures: Brand/PPE and Brand/LN (coefficient of Brand/PPE = 0.003 and coefficient of Brand/LN = 0.002; p < 0.01 for all measures). Therefore, these findings support our primary results and indicate that the empirical outcomes are not attributable to any particular scale of brand capital.

4.5.2 Alternative measures of share repurchases

In order to confirm the strength and credibility of our main results, we performed a series of additional tests that included different measures of share repurchases (a dependent variable) based on alternative scaling variables. Following prior studies (Dang et al., 2021), we scaled share repurchases by market capitalisation (Repurchases/MC), book equity (Repurchases/BE), and cash flow (Repurchases/CF). The outcomes in Table 7 reveal that the association between Brand/AT and all the alternative measures of share repurchases are

consistent with our main findings, both significantly and positively (coefficients = 0.052, 0.171, and 0.517; p < 0.01, respectively). We also find that the association between Brand/Sale and the different share repurchase measures is robust for most of them.

4.5.3 Estimation of brand capital by using alternative depreciation rates

Based on the previous studies (Belo et al., 2014; Hasan et al., 2021; Hasan & Taylor, 2022), we adopted a depreciation rate of 50% to estimate the stock of brand capital intensity in our primary analysis. To examine the sensitivity of our main results, we utilised different ranges of depreciation rates (20%, 30%, 40%, 60% and 70%) to re-estimate the stock of brand capital intensity. Table 8 shows that the coefficient on brand capital intensity is positive and statistically significant (p < 0.01) for all depreciation rates utilised in Brand/AT and Brand/Sale. Consequently, the particular depreciation rate applied in estimating the stock of brand capital does not significantly influence our main findings.

4.5.4 Adding additional control variables in the baseline regression model

Despite the fact that our main baseline regression model includes a range of firm-level characteristics, which previous studies identified as variables affecting share repurchases (Nessa, 2017; Nguyen et al., 2021), one might argue that our main baseline regression model needs more control variables relating to both brand capital and share buybacks in order to make our findings more robust. By following the work of Barth and Kasznik (1999), Dang et al. (2021), Guo et al. (2021), Hasan and Taylor (2022), Hasan et al. (2021), and Hasan and Uddin (2022), we incorporated five additional control variables that pertain to both brand capital and share repurchases. First, we included Systematic Risk and Idiosyncratic Risk to control any risk related to the economy, market or firms that may affect share repurchases. Second, we added Intangible Assets, since brand capital is a specific class of intangible assets that is not

recognised in a firm's financial statements (Barth & Kasznik, 1999; Hasan & Taylor, 2022; Hasan et al., 2021). Third, we incorporated EPS to ensure that share repurchases are not used to manipulate EPS. Fourth and finally, to determine whether that cash used for cash dividends is not an alternative option for share repurchases, we controlled DIV. Adding these additional firm-level characteristics leads to a decrease in our sample to 23,157 firm-year observations. Table 9 reports the regression model without the range of control variables that we use in our baseline regression model. We find that our findings are consistent with our main baseline regression model, which is positive and significant for both Brand/AT and Brand/Sale (coefficient = 0.143; 0.104; p < 0.01, respectively). Furthermore, we added the additional control variables to the control variables in our baseline regression model and found a positive and significant association between brand capital and share buybacks, which remains robust (coefficient = 0.110; 0.084 p < 0.01, respectively). Overall, omitted variables are not the reason for the documented results in the baseline regression model.

4.5.5 Excluding GFC period 2007-2009 and COVID-19 period 2019-2020

In the main baseline regression analysis, we examined the global financial crisis (GFC) in the period 2007-2009 and Covid-19 in 2019-2020 for the whole sample and documented a positive association between brand capital and share repurchases. Then, we re-estimated our baseline regression model after eliminating the GFC in 2007-2009 and Covid-19 in 2019-2020. The results continue to remain robust with our main findings being positive and statistically significant for both Brand/AT and Brand/Sale, after excluding the GFC period (coefficient = 0.093; 0.066 p < 0.01, respectively). In addition, the outcomes are align with our main findings after excluding the COVID-19 period (i.e. positive and significant with coefficient = 0.093; 0.068 p < 0.01, respectively). In general, both the GFC and COVID-19 do not influence our positive and significant results.

4.6 Endogeneity tests

4.6.1 Difference-in-difference test

To mitigate potential endogeneity issues, we evaluated how the association between brand capital intensity and share buybacks changed following the tax cut in 2018. The Tax Cut and Jobs Act (TCJA) was signed into law in 2017 and took effect in 2018. According to Dong et al. (2019), the new TCJA lowered the income tax rate for U.S corporate entities, from 35% to 21% and exempted 100 percent of any income earned by foreign subsidiaries from 2018 onwards. This ultimately leads to an increase in corporate cash holdings, which incentivises firms to use it in numerous ways; for example, increasing wages, increasing investments, paying bonuses, distributing dividends and buying back their shares. Gravelle and Marples (2019) indicated that firms in 2018 allocated much of these funds for share repurchases (approximately \$1 trillion), which exceeded the previous year's record.

Therefore, in this study, we used TCJA as an exogenous shock to assess the effect of this event on the relationship between brand capital intensity and share repurchases. To conduct an analysis by using a 'difference-in-difference' approach that aims to mitigate concerns, we took three years from our sample before the TCJA was applied in 2018 (2015, 2016 and 2017), three years after (2019, 2020 and 2021) and excluded all other years that are not related to the mentioned period (from 2015 to 2021). Table 11 reveals the outcomes of our test for the impact of the TCJA by denoting 1 for years after 2018, and 0 for years before 2018. We notice that the coefficient of Brand/AT and share repurchases before the TCJA is positive and statistically significant (coefficient = 0.160; p < 0.01) and becomes negative (coefficient = -0.074; p < 0.10) after the TCJA is applied. In addition, it is noticeable that Brand/Sale has a positive and significant association with share buybacks before the TCJA is applied (coefficient = 0.124; p < 0.01); however, this association changes to significant and negative after the tax cut in 2018

(coefficient = -0.083; p < 0.01). This indicates that firms with more brand capital have more share repurchases before the Tax Cut and Jobs Act was applied but firms with a high level of brand capital have fewer share repurchases after the implementation of TCJA. Overall, in our baseline regression model, we found a positive and statistically significant association between brand capital intensity and share repurchases; whereas, after TCJA we found a negative relationship, which may be because there are more none-brand capital firms using the repatriation funds for share repurchases.

4.6.2 Two-step system GMM method

This study adopted the GMM approach to reduce endogeneity biases and omitted variable bias (Arellano & Bover, 1995; Blundell & Bond, 1998). Basically, the GMM approach employs the initial lagged difference of a firm's attributes to use as an instrument variable for equations in the levels, while applying the second lag of a firm's attributes as an instrument within the differenced equation. Applying this approach makes the estimates obtained robust to unobserved heterogeneity, dynamic endogeneity and simultaneity. The GMM approach is extensively developed in the economic literature and has been employed in a variety of accounting and finance literature. Table 12 presents our findings from conducting GMM. We notice a positive and statistically significant coefficient on brand capital (coefficient = 0.073; p < 0.01 for Brand/AT and 0.034; s p < 0.05 for Brand/Sale). Consequently, our main outcomes remain consistent when employing the dynamic GMM to mitigate the endogeneity issue. Furthermore, our findings reveal the anticipated statistically significant AR (1) and statistically insignificant AR (2). The result of the Hansen over-identification test provides conclusively robust evidence that the instruments employed in the GMM estimation are valid and reliable.

4.6.3 Propensity score matching (PSM)

In this study, we employed the PSM technique as an additional approach to tackle endogeneity concerns and confirm that our findings are not affected by confounding impacts because of the observable covariate. According to Rosenbaum & Rubin (1983, 1985), the PSM technique offers an alternative approach to alleviate potential self-selection bias by matching sample firms with control firms that have related characteristics, based on a function of covariates. We created a dummy variable for Brand/AT and Brand/Sale: Brand_PSM1 (coded as 1 if Brand/AT is above the mean, and 0 otherwise) and Brand_PSM2 (coded as 1 if Brand/Sale is above the mean, and 0 otherwise). Following Shipman et al. (2017), we included all the control variables, that we used in our baseline regression model, to perform the PSM procedures. We applied the nearest-neighbour method without replacement in the matching process and obtained 14,669 firm-year observations. Panel A in Table 13 shows that there is no statistically significant difference recorded in the explanatory variables among the treatment and control groups, regarding firm characteristics.

Panel B of Table 13 shows the outcomes of the regression analysis for our matched sample. We find that the coefficient of Brand/AT and Brand/Sale is positive and statistically significant (p < 0.01). Overall, the outcomes of the PSM-matched sample are consistent with our baseline regression analysis.

Conclusion

This study provides new insights into the association between brand capital intensity and share buybacks among non-financial publicly listed U.S. firms, from 1994-2021. Our findings reveal a significant and positive association between firms with high levels of brand capital intensity and share repurchases. Furthermore, our findings remain consistent, even when utilising alternative measures for brand capital, share repurchases, and depreciation rates, which highlights the robustness of our findings. Importantly, we also address endogeneity

concerns through GMM and PSM and find that our initial results remain robust. Our findings indicate that brand capital intensity plays a key role in shaping firms' share repurchasing policies. The implications of our research contribute to a deeper understanding of the drivers behind share repurchase decisions and provide valuable guidance for investors and practitioners in capital decision-making.

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Variable	Mean	SD	Median	Min	Max
Repurchases/AT	0.018	0.058	0.001	-0.389	0.228
Repurchases/Sale	0.017	0.103	0.001	-1.108	-0.414
Brand/AT	0.018	0.043	0.000	0.000	0.254
Brand/Sale	0.017	0.044	0.000	0.000	0.337
AGE	2.996	0.672	3.098	0.131	3.949
SIZE	6.780	2.238	6.794	1.481	12.100
LEV	0.222	0.197	0.197	0.000	1.029
CASH	0.184	0.231	0.105	0.000	1.755
ROA	0.123	0.166	0.133	-1.123	0.540
МТВ	3.241	2.930	2.277	0.357	12.230
Sales growth	0.114	0.379	0.065	-0.777	3.608
CAPEX	0.056	0.065	0.035	0.000	0.461
Retained earnings	0.057	0.788	0.264	-2.832	0.824
Negative Earnings	0.226	0.418	0.000	0.000	1.000
RD	0.040	0.088	0.002	0.000	0.780

Table 1. Summary Statistics

Note: This table exhibits the summary statistics for the variables we applied in this study. The sample period was 1994 to 2021. Definitions of all the variables are provided in Appendix A.

Table 2. Pairwise Correlations

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
Repurchases/AT	1														
Repurchases/Sale	0.808***	1													
Brand/AT	0.095***	0.033***	1												
Brand/Sale	0.063***	0.045***	0.868***	1											
AGE	0.064***	0.056***	0.001	-0.017*	1										
SIZE	0.175***	0.174***	-0.022***	0.0122*	0.263***	1									
LEV	-0.068***	-0.034***	-0.011 *	0.028***	0.050***	0.307***	1								
CASH	0.004	-0.015**	-0.018***	0.023***	-0.150***	-0.299***	-0.316***	1							
ROA	0.284***	0.243***	0.077***	0.017**	0.057***	0.260***	-0.001	-0.248***	1						
MTB	0.163***	0.091***	0.061***	0.052***	-0.030***	0.058***	-0.031***	0.274***	0.196***	1					
Sales Growth	-0.034***	-0.046***	-0.033***	-0.020***	-0.165***	-0.065***	-0.008	0.112***	-0.024***	0.110***	1				
CAPEX	-0.050***	-0.067***	-0.018***	-0.047***	-0.113***	0.023***	0.058***	-0.095***	0.241***	0.081***	0.112***	1			
Retained Earnings	0.254***	0.224***	0.059***	0.024***	0.186***	0.346***	-0.080 ***	-0.331***	0.59 ***	-0.040***	-0.089***	0.103***	1		
Negative Earnings	-0.227***	-0.184***	-0.027***	0.004	-0.098***	-0.230***	0.083***	0.129***	-0.564***	-0.160***	0.010	-0.104***	-0.482***	1	
RD	-0.065***	-0.092***	-0.075***	-0.043***	-0.121 ***	-0.257***	-0.154***	0.540***	-0.517***	0.225***	0.127***	-0.110***	-0.520***	0.280***	1

Note: This table exhibits the results of the correlations among variables we applied in our baseline regression model. The main dependent variable is either share repurchases divided by total assets (Repurchases/AT) or share repurchases divided by sales (Repurchases/Sale). The independent variable is either brand capital divided by total assets (Brand/AT), or brand capital divided by sales (Brand/Sale). *, ** and *** are the two-tailed statistical significance at a level of 10%, 5%, and 1%, respectively. Definitions of all the variables are presented in Appendix A.

	(1)	(2)	(3)	(4)
VARIABLES	Repurchases/AT	Repurchases/Sale	Repurchases/At	Repurchases/Sale
Brand/AT	0.093***	0.058***		
	(5.49)	(3.10)		
Brand/Sale			0.067***	0.090***
			(4.30)	(4.21)
AGE	-0.002**	-0.006***	-0.002**	-0.005***
	(-2.20)	(-2.74)	(-2.21)	(-2.67)
SIZE	0.003***	0.005***	0.003***	0.005***
	(8.38)	(8.51)	(8.11)	(8.44)
LEV	-0.009**	-0.003	-0.010**	-0.004
	(-2.10)	(-0.34)	(-2.32)	(-0.42)
CASH	0.007**	0.013*	0.006*	0.013
	(2.13)	(1.75)	(1.81)	(1.63)
ROA	0.072***	0.108***	0.075***	0.109***
	(10.02)	(6.76)	(10.29)	(6.85)
MTB	0.002***	0.001***	0.002***	0.001***
	(6.97)	(2.81)	(7.02)	(2.76)
Sales Growth	-0.004***	-0.007**	-0.004***	-0.007**
	(-3.34)	(-2.11)	(-3.33)	(-2.13)
CAPEX	-0.079***	-0.144***	-0.079***	-0.143***
	(-8.00)	(-5.79)	(-8.05)	(-5.77)
Retained Earnings	0.011***	0.017***	0.011***	0.017***
	(6.65)	(5.28)	(6.61)	(5.27)
Negative Earnings	-0.006***	-0.007***	-0.005***	-0.008***
	(-4.32)	(-2.68)	(-4.00)	(-2.72)
RD	0.063***	0.027	0.064***	0.029
	(4.36)	(0.81)	(4.31)	(0.88)
Constant	-0.026***	-0.039***	-0.024***	-0.040***
	(-6.21)	(-5.36)	(-5.83)	(-5.53)
Observations	35,995	35,995	35,995	35,995
Adjusted R-squared	0.173	0.125	0.171	0.126
YEAR	YES	YES	YES	YES
INDUSTRY	YES	YES	YES	YES

Table 3. Baseline Regression Results for Brand Capital and Share Repurchases

Note: This table exhibits the OLS baseline regression findings for the relationship between brand capital intensity and share repurchases. The text in bold represents the main variables of interest. Standard errors are clustered by firm, in parentheses. The main dependent variable is either share repurchases divided by total assets (Repurchases/AT) or share repurchases divided by sales (Repurchases/Sale). The independent variable is either brand capital divided by total assets (Brand/AT), or brand capital divided by sales (Brand/Sale). *, ** and *** are the two-tailed statistical significance at a level of 10%, 5%, and 1%, respectively. Definitions of all the variables are presented in Appendix A.

	(1) Repurchases/AT	(2) Repurchases/AT	(3) Repurchases/AT	(4) Repurchases/AT
VARIABLES	With CEO Duality	Without CEO Duality	With CEO Duality	Without CEO Duality
Brand/AT	0.024 (0.50)	0.106*** (5.65)		
Brand/Sale			0.028	0.074***
			(0.67)	(4.35)
AGE	-0.015**	-0.006***	-0.015**	-0.006***
	(-2.51)	(-4.58)	(-2.49)	(-4.57)
SIZE	0.004***	0.004***	0.004***	0.004***
	(2.99)	(10.70)	(2.99)	(10.37)
LEV	0.016	-0.011**	0.016	-0.012**
	(1.03)	(-2.01)	(1.00)	(-2.18)
CASH	0.023	0.010**	0.022	0.010**
	(1.61)	(2.51)	(1.56)	(2.38)
ROA	0.140***	0.085***	0.141***	0.089***
	(3.42)	(9.50)	(3.43)	(9.72)
MTB	-0.001	0.002***	-0.001	0.002***
	(-0.67)	(6.69)	(-0.69)	(6.75)
Sales Growth	-0.018	-0.005***	-0.018	-0.005***
	(-1.38)	(-3.29)	(-1.37)	(-3.27)
CAPEX	-0.172***	-0.080***	-0.172***	-0.079***
	(-3.35)	(-6.42)	(-3.35)	(-6.33)
Retained Earnings	0.027***	0.010***	0.027***	0.010***
	(2.88)	(5.27)	(2.86)	(5.23)
Negative Earnings	-0.015	-0.005***	-0.015	-0.005***
6	(-1.52)	(-3.37)	(-1.50)	(-3.00)
RD	0.309***	0.077***	0.310***	0.075***
	(3.77)	(4.32)	(3.77)	(4.15)
Constant	-0.108	-0.034***	-0.108	-0.032***
	(-1.57)	(-3.90)	(-1.57)	(-3.66)
Observations	355	24,969	355	24,969
Adjusted R-squared	0.248	0.194	0.248	0.191
YEAR	YES	YES	YES	YES
INDUSTRY	YES	YES	YES	YES

Table 4. Regression Results for the Effect of CEO Duality on Brand Capital and Share Repurchases

Note: This table exhibits the cross-sectional regression findings for the association between brand capital intensity and share repurchases. The text in bold represents the main variables of interest. The standard errors are clustered by firm, in parentheses. The main dependent variable is either share repurchases divided by total assets (Repurchases/AT) or share repurchases divided by sales (Repurchases/Sale). The independent variable is either brand capital divided by total assets (Brand/AT), or brand capital divided by sales (Brand/Sale). In addition, this table exhibits the role of corporate governance, by using (CEO_Duality) as a proxy for the association between brand capital and share buybacks. *, ** and *** are the two-tailed statistical significance at a level of 10%, 5%, and 1%, respectively. Definitions of all the variables are presented in Appendix A.

		Reputchases		
	(1)	(2)	(3)	(4)
	Repurchases/AT	Repurchases/AT	Repurchases/AT	Repurchases/AT
VARIABLES	High Excess Cash	Low Excess Cash	High Excess Cash	Low Excess Cash
Brand/AT	0 107***	0 047*		
Dranu/A1	(5.63)	(1.77)		
Brand/Sale	(3.03)	(1.77)	0 073***	0.050*
Drand/Bale			(4 31)	(1.84)
AGE	-0 002**	-0.002	-0.002**	-0.002
NOL	(-2.17)	(-1.23)	-0.002	-0.002
SIZE	(-2.17)	0.003***	(-2.21)	0.003***
SIZE	(7.86)	(6 20)	(7.52)	(6.19)
I FV	-0.007	-0.019***	-0.008*	-0.020***
	(-1.48)	-0.01)	-0.000	(-2.88)
CASH	0.008**	-0.020**	0.007**	-0.020**
Chon	(2,38)	(-2.18)	(2.03)	-0.020
ROA	0.063***	0 122***	0.065***	0.125***
KOA	(8 51)	(8.43)	(8.72)	(8 75)
MTB	0.002***	0.002***	0.002***	0.002***
MID	(6.27)	(4.38)	(6.34)	(4.31)
Sales Growth	-0.003**	-0.009**	-0.003**	-0.000**
Sales Olowin	(-2.26)	-0.00)	-0.003	-0.00)
CADEY	0.075***	(-2.54)	(-2.51)	(-2.32)
CALLA	(7.30)	(5.21)	(7.33)	-0.091
Patainad Farnings	(-7.50)	(-5.21)	(-7.55)	(-3.22)
Retained Lannings	(6.57)	(4.31)	(6.48)	(4.26)
Nagativa Famings	0.007***	(4.31)	(0.48)	(4.20)
Regative Earnings	(5.06)	(0.87)	(4.80)	(1.08)
חע	(-5.00)	(0.87)	(-4.80)	(1.08)
КD	(4, 31)	(1.82)	(4.25)	(1.82)
Constant	(4.31)	(1.62)	(4.23)	(1.82)
Constant	-0.024 · · ·	-0.020	-0.022	-0.029
	(-3.48)	(-3.78)	(-3.00)	(-3.60)
Observations	28,907	7,168	28,907	7,168
Adjusted R-squared	0.167	0.216	0.163	0.217
YEAR	YES	YES	YES	YES
INDUSTRY	YES	YES	YES	YES

Table 5. Regression Results for the Effect of Excess Cash on Brand Capital and Share Repurchases

Note: This table exhibits the cross-sectional regression findings for the relationship between brand capital intensity and share repurchases. The text in bold represents the main variables of interest. Standard errors are clustered by firm, in parentheses. The main dependent variable is either share repurchases divided by total assets (Repurchases/AT) or share repurchases divided by sales (Repurchases/Sale). Our independent variable is either brand capital divided by total assets (Brand/AT), or brand capital divided by sales (Brand/Sale). In addition, this table exhibits the role of excess cash (EXCESS_CASH) on the association between brand capital and share buybacks. *, ** and *** are the two-tailed statistical significance at a level of 10%, 5%, and 1%, respectively. Definitions of all the variables are presented in Appendix A.

Table 6. Alternative Measures of Brand Capital							
	(1)	(2)					
VARIABLES	Repurchases/At	Repurchases/AT					
Brand/PPF	0 003***						
	(2.58)						
Brand/L N	(2.50)	0 002**					
Drand/Liv		(2.53)					
AGE	-0.002**	(2.55)					
AGE	(-2.16)	(-1.45)					
SIZE	(-2.10)	(-1.43)					
SIZE	(8.24)	(1.16)					
IEV	(0.24)	(1.10)					
LEV	-0.009^{+1}	-0.004					
CASU	(-2.12)	(-0.00)					
САЗП	(2.20)	0.001					
DOA	(2.29)	(0.09)					
RUA	$0.0/3^{***}$	0.108***					
	(10.05)	(7.73)					
MTB	0.002***	0.002***					
	(7.11)	(4.38)					
Sales Growth	-0.004***	-0.006**					
	(-3.71)	(-2.33)					
CAPEX	-0.076***	-0.069***					
	(-7.57)	(-3.75)					
Retained Earnings	0.011***	0.009***					
	(6.64)	(3.29)					
Negative Earnings	-0.005***	-0.008***					
	(-3.85)	(-3.39)					
RD	0.062***	0.083***					
	(4.17)	(3.39)					
Constant	-0.023***	-0.025***					
	(-5.50)	(-3.54)					
Observations	35,979	14,056					
Adjusted R-squared	0.169	0.205					
YEAR	YES	YES					
INDUSTRY	YES	YES					

Note: This table exhibits the sensitivity analysis for the relationship between brand capital intensity and share repurchases. The text in bold represents the main variables of interest. Standard errors are clustered by firm, in parentheses. The main dependent variable is either share repurchases divided by total assets (Repurchases/AT) or share repurchases divided by sales (Repurchases/Sale). The independent variable is either brand capital divided by total assets (Brand/AT), or brand capital divided by sales (Brand/Sale). In addition, this table exhibits two different measures of brand capital: brand capital divided by physical capital (Brand/PPE) and brand capital divided by the natural logarithm of brand capital (Brand/LN). *, ** and *** are the two-tailed statistical significance at a level of 10%, 5%, and 1%, respectively. Definitions of all the variables are provided in Appendix A.

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	Repurchases/MC	Repurchases/MC	Repurchases/BE	Repurchases/BE	Repurchases/CF	Repurchases/CF
Brand/AT	0.052*** (2.67)		0.171*** (4.68)		0.517*** (4.12)	
Brand/Sale		0.041** (2.11)		0.098*** (2.99)		0.375** (2.57)
AGE	-0.003	-0.002	0.001	0.000 (0.17)	-0.015* (-1.93)	-0.015*
SIZE	0.003***	0.003***	0.007***	0.007***	0.016***	0.016***
LEV	-0.025***	-0.026***	-0.022	-0.024*	-0.060**	-0.060**
CASH	(-3.29) 0.007*	(-3.39) 0.007*	(-1.39) -0.017**	(-1.76) -0.020**	0.010	0.009
ROA	(1.88) 0.018** (2.28)	(1.69) 0.019** (2.43)	(-2.08) 0.048*** (2.66)	(-2.36) 0.049*** (2.72)	(0.40) -0.013 (0.20)	(0.36) -0.004 (0.10)
MTB	0.000	0.000	(2.00) 0.009*** (10.28)	(2.75) 0.010*** (10.47)	0.007***	(-0.10) 0.007*** (4.21)
Sales Growth	-0.002	-0.002	-0.007**	-0.008**	-0.021** (2.22)	(4.51) -0.024**
CAPEX	(-1.01) -0.033* (1.86)	-0.035* (1.93)	(-2.30) -0.141*** (5.87)	(-2.39) -0.141*** (5.89)	-2.32) -0.346*** (4 16)	(-2.32) -0.338*** (4.06)
Retained Earnings	0.012***	0.012***	0.025***	0.025***	0.029**	0.031**
Negative Earnings	-0.017***	-0.017***	-0.014***	-0.014***	-0.096*** (7.21)	-0.095***
RD	(-0.06) 0.046*** (2.62)	(-5.99) 0.044** (2.46)	(-4.21) 0.077** (2.55)	(-4.07) 0.081*** (2.66)	(-7.21) 0.316*** (2.24)	(-7.14) 0.345*** (2.62)
Constant	-0.022*** (-2.93)	(2.46) -0.021*** (-2.81)	(2.55) -0.072*** (-6.62)	(2.00) -0.067*** (-6.20)	(3.34) -0.047 (-1.33)	(3.63) -0.042 (-1.18)
Observations	35,995	35,995	35,995	35,995	35,995	35,995
Adjusted K-squared YEAR	VES	V.069 YES	VES	YES	0.040 YES	VES
INDUSTRY	YES	YES	YES	YES	YES	YES

Table 7. Alternative Measures of Share Repurchases

Note: This table exhibits the sensitivity analysis for the association between brand capital intensity and share repurchases. The text in bold represents the main variables of interest. Standard errors are clustered by firm, in parentheses. The main dependent variable is either share repurchases divided by total assets (Repurchases/AT) or share repurchases divided by sales (Repurchases/Sale). The independent variable is either brand capital divided by total assets (Brand/AT), or brand capital divided by sales (Brand/Sale). In addition, this table exhibits three different measures of share repurchases: share repurchases divided by market capitalisation (Repurchases/MC), share repurchases divided by book equity (Repurchases/BE) and share repurchases divided by earnings. *, ** and *** are the two-tailed statistical significance at a level of 10%, 5%, and 1%, respectively. Definitions of all the variables are presented in Appendix A.

VARIABLES	(1) Repurchases/AT	(2) Repurchases/AT	(3) Repurchases/AT	(4) Repurchases/AT	(5) Repurchases/AT	(6) Repurchases/AT	(7) Repurchases/AT	(8) Repurchases/AT	(9) Repurchases/AT	(10) Repurchases/AT
Brand/AT (20%)	0.102***									
Brand/Sale (20%)	(5.70)	0.087*** (4 80)								
Brand/AT (30%)		(4.00)	0.098*** (5.71)							
Brand/Sale (30%)				0.083*** (4.81)						
Brand/AT (40%)					0.095*** (5.71)					
Brand/Sale (40%)						0.081*** (4.81)				
Brand/AT (60%)							0.092*** (5.72)	0.070***		
Brand/AT (70%)								(4.82)	0.092***	
Brand/Sale (70%)									(5.72)	0.078***
AGE	-0.002**	-0.002**	-0.002**	-0.002**	-0.002**	-0.002**	-0.002**	-0.002**	-0.002**	(4.82) -0.002**
SIZE	(-2.23) 0.003***	(-2.25) 0.003***	(-2.23) 0.003***	(-2.26) 0.003***	(-2.23) 0.003***	(-2.26) 0.003***	(-2.23) 0.003***	(-2.26) 0.003***	(-2.24) 0.003***	(-2.26) 0.003***
LEV	(8.24) -0.009** (2.08)	(7.95) -0.010** (2.21)								
CASH	(-2.08) 0.007** (2.12)	0.006*	0.007**	0.006*	0.007**	0.006*	0.007**	0.006*	0.007**	0.006*
ROA	0.072*** (10.01)	0.075*** (10.28)	0.072*** (10.01)	0.075*** (10.28)	0.072*** (10.01)	0.075*** (10.28)	0.072*** (10.01)	0.075*** (10.28)	0.072*** (10.01)	0.075*** (10.28)
MTB	0.002*** (6.90)	0.002*** (6.92)	0.002*** (6.90)	0.002*** (6.92)	0.002*** (6.90)	0.002*** (6.92)	0.002*** (6.90)	0.002*** (6.93)	0.002*** (6.90)	0.002*** (6.93)
Sales Growth	-0.004*** (-3.33)	-0.004*** (-3.32)	-0.004*** (-3.32)	-0.004*** (-3.32)	-0.004*** (-3.32)	-0.004*** (-3.31)	-0.004*** (-3.32)	-0.004*** (-3.31)	-0.004*** (-3.32)	-0.004*** (-3.31)
CAPEX	-0.078*** (-8.00)	-0.079*** (-8.05)	-0.078*** (-7.99)	-0.079*** (-8.05)	-0.078*** (-7.99)	-0.079*** (-8.05)	-0.078*** (-7.99)	-0.079*** (-8.05)	-0.078*** (-7.99)	-0.079*** (-8.05)
Retained Earnings	0.011*** (6.66)	(6.62)	(6.66)	(6.62)	0.011*** (6.66)	(6.62)	(6.66)	(6.62)	(6.66)	(6.62)
RD	(-4.34) 0.064***	(-4.05) 0.064***								
	(4.36)	(4.31)	(4.36)	(4.31)	(4.36)	(4.31)	(4.36)	(4.31)	(4.36)	(4.31)
Constant	-0.026*** (-6.18)	-0.024*** (-5.85)								
Observations Adjusted R-squared	35,995 0.174	35,995 0.171								
YEAR INDUSTRY	YES YES									

Table 8. Estimation of Brand Capital by using alternative depreciation rates of 20%, 30%, 40%, 60%, and 70%.

Note: This table represents the regression results for applying different depreciation rates of 20%, 30%, 40%, 60% and 70% for both (Brand/AT) and (Brand/Sale), whereas, the baseline regression is 50%. *, ** and *** are the two-tailed statistical significance at a level of 10%, 5%, and 1%, respectively. Definitions of all the variables are presented in Appendix A.

	(1)	(2)	(3)	(4)
VARIABLES	Repurchases/AT	Repurchases/AT	Repurchases/AT	Repurchases/AT
Brand/AT	0.143*** (6.91)		0.110*** (6.17)	
Brand/Sale	(0.71)	0.104***	(0.17)	0.084***
AGE		(5.43)	-0.009***	(5.05) -0.009***
SIZE			(-5.14) 0.002***	(-5.05) 0.002***
LEV			(5.89) -0.005	(5.70) -0.006
CASH			(-0.94) 0.007	(-1.04) 0.006
ROA			(1.61) 0.084***	(1.38) 0.088***
MTB			(9.70) 0.002***	(9.89) 0.002***
Salas Growth			(6.69)	(6.74)
			(-3.79)	(-3.75)
CAPEX			-0.085***	-0.086*** (-6.81)
Retained Earnings			0.012*** (5.69)	0.012*** (5.65)
Negative Earnings			0.002 (1.32)	0.003 (1.48)
RD			0.083***	0.083***
Systematic Risk	-0.005^{***}	-0.005^{***}	-0.002	-0.001
Idiosyncratic Risk	-0.006	-0.006	-0.001	-0.001
Intangible	(-0.56) 0.010**	(-0.52) 0.008*	-0.005	-0.007
DIV	(2.33) 0.215***	(1.93) 0.222***	(-1.21) 0.020	(-1.54) 0.020
EPS	(6.35) 0.005***	(6.41) 0.005***	(0.61) 0.002***	(0.60) 0.002***
Constant	(13.16) -0.010*** (-2.66)	(13.05) -0.008** (-2.17)	(5.82) -0.009 (-1.36)	(5.68) 0.001 (0.14)
Observations	24,311	24,311	23,157	23,157
Adjusted R-squared YEAR INDUSTRY	0.118 YES YES	0.113 YES YES	0.204 YES YES	0.202 YES YES

Table. 9 Regression Results for Additional Control Variables

Note: This table exhibits the regression results for the relationship between brand capital and share repurchases after including additional selected sets of control variables (Systematic Risk, Idiosyncratic Risk, Intangible, DIV and EPS) in columns 1 and 2. In columns 3 and 4, we include the set of control variables used in our baseline regression, with the additional control variables (Systematic Risk, Idiosyncratic Risk, Intangible, DIV and EPS). *, ** and *** are the two-tailed statistical significance at a level of 10%, 5%, and 1%, respectively. Definitions of all the variables are presented in Appendix A.

		<u>(2)</u>		
	(1) CEC Deried	(2) CEC Daria d	(3) COVID 10 Paris d	(4) COVID 10 Daried
VADIADI ES	GFC Period	GFC Period	COVID-19 Period	COVID-19 Period
VARIABLES	Repurchases/A1	Kepurchases/A I	Kepurchases/A I	Repurchases/A1
Brand/AT	0.093***		0.093***	
	(5.08)		(5.36)	
Brand/Sale		0.066***		0.068***
		(3.97)		(4.32)
AFE	-0.002*	-0.002*	-0.002**	-0.002**
	(-1.90)	(-1.92)	(-2.06)	(-2.07)
SIZE	0.003***	0.003***	0.003***	0.003***
	(7.96)	(7.69)	(8.38)	(8.13)
LEV	-0.006	-0.007*	-0.012***	-0.013***
	(-1.40)	(-1.67)	(-2.67)	(-2.91)
CASH	0.008**	0.007*	0.006*	0.005
	(2.30)	(1.94)	(1.91)	(1.59)
ROA	0.073***	0.076***	0.072***	0.074***
	(9.72)	(9.99)	(9.88)	(10.18)
MTB	0.002***	0.002***	0.002***	0.002***
	(6.77)	(6.81)	(6.70)	(6.74)
Sales Growth	-0.003***	-0.004***	-0.004***	-0.004***
	(-2.70)	(-2.79)	(-3.05)	(-3.04)
CAPEX	-0.079***	-0.080***	-0.077***	-0.077***
	(-7.85)	(-7.92)	(-7.87)	(-7.93)
Retained Earnings	0.011***	0.011***	0.011***	0.011***
-	(6.58)	(6.53)	(6.57)	(6.51)
Negative Earnings	-0.006***	-0.005***	-0.005***	-0.005***
	(-4.05)	(-3.78)	(-3.99)	(-3.68)
RD	0.061***	0.062***	0.061***	0.061***
	(4.33)	(4.31)	(4.04)	(3.98)
Constant	-0.027***	-0.025***	-0.023***	-0.024***
	(-6.55)	(-6.17)	(-5.43)	(-5.71)
Observations	31,600	31,600	33,474	33,474
Adjusted R-squared	0.174	0.171	0.174	0.171
YEAR	YES	YES	YES	YES
INDUSTRY	YES	YES	YES	YES

Table 10. Regression Results after excluding the GFC period (2007-2009) and the COVID-19 period (2019-2020)

Note: This table exhibits the regression findings for the association between brand capital intensity and share repurchases after excluding the GFC period (2007 - 2009) and Covid-19 period (2019-2020) from our sample. The text in bold represents the main variables of interest. Standard errors are clustered by firm, in parentheses. *, ** and *** are the two-tailed statistical significance at a level of 10%, 5%, and 1%, respectively. Definitions of all the variables are presented in Appendix A.

	(1)	(2)
VARIABLES	Repurchases/AT	Repurchases/AT
Brand/AT	0.160***	
-	(4.65)	
Brand/AT*TCJA	-0.074*	
	(-1.77)	0 104444
Brand/Sale		0.124***
		(4.00)
Brand/Sale* I CJA		-0.083****
TCIA	0.010***	(-2.95)
ICJA	-0.010****	-0.010
ACE	(-4.00)	(-4.00) 0.006***
AUE	-0.000	-0.000
SIZE	(-3.70)	(-3.01)
SIZE	(4.71)	(4.20)
LEV	(4./1) 0.012*	(4.29) 0.012*
	(1.80)	(1.76)
CASH	(1.0 <i>7)</i> 0.012*	0.011
CADII	(1.01)	(1.61)
ROA	0.087***	0.003***
NOA	(7, 47)	(7.74)
MTB	0.002***	0.002***
WITD	(6.06)	(6.10)
Sales Growth	-0.001	-0.001
Sales Growin	(-0.32)	(-0.37)
CAPEX	-0.086***	-0.087***
	(-3.84)	(-3.84)
Retained Earnings	0.010***	0.010***
	(4.75)	(4.70)
Negative Earnings	-0.006***	-0.006***
	(-3.42)	(-3.15)
RD	0.098***	0.100***
	(4.13)	(4.10)
Constant	-0.001	0.001
	(-0.18)	(0.07)
Observations	8,271	8,251
Adjusted R-squared	0.215	0.213
YEAR	YES	YES
INDUSTRY	YES	YES

 Table 11. Regression results for the effect of TCJA on Brand capital and Share

 Repurchases (2015-2021)

Note: This table exhibits the regression findings for the relationship between brand capital intensity and share repurchases before and after the event of the reduction in dividends and capital gains tax rate in 2018. Brand/AT and Brand/Sale represent the results before the event, while Brand/AT*TCJA and Brand/Sale*TCJA represent the results after the event. The text in bold represents the main variables of interest. Standard errors are clustered by firm, in parentheses. *, ** and *** are the two-tailed statistical significance at a level of 10%, 5%, and 1%, respectively. Definitions of all the variables are presented in Appendix A.

	(1)	(2)
VARIABLES	Repurchases/AT	Repurchases/AT
Brand/AT	0.073***	
	(5.13)	
Brand/Sale		0.034**
		(2.23)
AGE	-0.006***	-0.006***
	(-3.94)	(-2.68)
SIZE	0.004***	0.003***
	(7.42)	(4.14)
LEV	0.003	-0.000
	(0.81)	(-0.09)
CASH	-0.004*	-0.004
	(-1.75)	(-1.44)
ROA	0.012***	0.018***
	(2.61)	(3.45)
MTB	-0.000*	0.000
	(-1.80)	(0.46)
Sales Growth	0.002**	0.002**
	(2.56)	(2.40)
CAPEX	0.051***	0.017
	(2.79)	(0.57)
Retained Earnings	0.005***	0.007***
	(4.83)	(4.30)
Negative Earnings	-0.003***	-0.004***
	(-3.91)	(-3.64)
RD	-0.034**	-0.029
	(-2.43)	(-1.57)
Constant	-0.026***	0.000
	(-2.76)	(0.00)
Observations	35,201	35,201
YEAR	YES	YES
INDUSTRY	YES	YES
AR (1)	-17.41	-12.71
P-value	(0.000)	(0.000)
AR (2)	1.45	0.47
P-value	(0.148)	(0.640)
Hansen test	298.70	159.87
P-value	(0, 200)	(0.221)

Table.12 Two-Step System GMM Method

P-value (0.200) (0.221) Note: This table exhibits the regression findings for the tow-step system GMM regression results. The text in bold represents the main variables of interest. Standard errors are clustered by firm, in parentheses. *, ** and *** are the two-tailed statistical significance at a level of 10%, 5%, and 1%, respectively. Definitions of all the variables are presented in Appendix A.

	Ν	lean	
Variable	Treated	Control	t-stat
AGE	3.0374	3.025	1.20
SIZE	7.0525	6.983	2.00
LEV	0.2375	0.240	-0.79
CASH	0.1789	0.182	-0.88
ROA	0.1428	0.142	0.42
MTB	3.5649	3.682	-2.31
Sales Growth	0.0914	0.099	-1.66
CAPEX	0.0518	0.052	-0.59
Retained Earnings	0.0136	0.124	1.09
Negative Earnings	0.2119	0.216	-0.59
RD	0.0314	0.033	-1.20

Table. 13 Propensity score matching (PSM)Panel A: Covariate balance test

	(1)	(2)	(3)	(4)
VARIABLES	Repurchases/AT	Repurchases/Sale	Repurchases/AT	Repurchases/Sale
Brand_PSM1	0.009***	0.008***		
	(4.62)	(2.65)		
Brand_PSM2			0.007***	0.009***
			(4.12)	(3.45)
AGE	-0.002	-0.005**	-0.002	-0.005**
	(-1.17)	(-2.47)	(-1.12)	(-2.47)
SIZE	0.003***	0.006***	0.003***	0.006***
	(6.43)	(7.61)	(6.11)	(7.45)
LEV	-0.003	0.012	-0.004	0.012
	(-0.54)	(1.44)	(-0.64)	(1.42)
CASH	0.002	0.014	0.002	0.013
	(0.49)	(1.63)	(0.34)	(1.55)
ROA	0.101***	0.109***	0.102***	0.110***
	(8.58)	(5.61)	(8.68)	(5.68)
MTB	0.002***	0.001	0.002***	0.001
	(5.22)	(1.32)	(5.32)	(1.41)
Sales Growth	-0.005***	-0.005	-0.005***	-0.005
	(-2.63)	(-0.99)	(-2.65)	(-0.99)
CAPEX	-0.083***	-0.146***	-0.083***	-0.146***
	(-5.38)	(-5.38)	(-5.36)	(-5.40)
Retained Earnings	0.010***	0.015***	0.010***	0.015***
-	(3.77)	(3.29)	(3.77)	(3.30)
Negative Earnings	-0.006***	-0.011***	-0.006***	-0.012***
	(-3.19)	(-3.48)	(-3.25)	(-3.54)
RD	0.094***	0.043	0.095***	0.043
	(4.38)	(1.07)	(4.45)	(1.07)
Constant	-0.038***	-0.050***	-0.036***	-0.050***
	(-6.57)	(-5.52)	(-6.36)	(-5.60)
Observations	14.669	14,669	14.669	14,669
Adjusted R-squared	0.194	0.137	0.193	0.138
YEAR	YES	YES	YES	YES
INDUSTRY	YES	YES	YES	YES

Panel B: Second stage regression results

Note: This table exhibits the outcomes of the PSM-matched sample analysis. The text in bold represents the main variables of interest. *, ** and *** are the two-tailed statistical significance at a level of 10%, 5%, and 1%, respectively. Definitions of all the variables

Variable	Definition
Repurchase/AT	Purchase of common and preferred stock (PRSTKC) less the decrease in the
	book value of the preferred stock (PSTKRV), all divided by total assets (AT).
Brand/AT	Brand capital divided by total assets (AT)
Brand/Sale	Brand capital divided by sales (Sale)
AGE	Natural logarithm of one plus the number of years since the firm's earliest date
	appearance in CRSP.
SIZE	Natural logarithm of total assets (AT).
LEV	Total of long-term debt (DLTT) plus total of current liabilities in debt (DLC),
	all divided by total assets (AT).
CASH	Cash and short-term investment (CHE) divided by total assets of firm i at the
	end of year $t - 1$.
ROA	Operating income before depreciation (OIBDP) scaled by total assets of firm
	i at the end of year $t - 1$.
MTB	Market value of equity (PRCC_F * CSHO) scaled by the book value of
	common equity (CEQ) of firm <i>i</i> at the end of year $t - 1$.
Sales/Growth	Total sales (SALE) of firm i at the end of year $t - 1$ less the total sales (SALE)
	of firm <i>i</i> at the end of year $t - 2$, all scaled by total sales (SALE) in year $t - 2$
	2.
CAPEX	Capital expenditures (CAPEX) scaled by total assets (AT) at the year end $t -$
	1.
Retained Earnings	Retained earnings (RE) divided by total assets (AT) at the year end $t - 1$.

Appendix A: Variable definitions

Negative Earnings	Binary variable; takes one when earnings before interest are negative,
	otherwise zero.
RD	Research and development expense, calculated as XRD over total assets. We
	replace missing RD with zero.
Repurchases/Sale	Purchase of common and preferred stock (PRSTKC) less the decrease in the
	book value of the preferred stock (PSTKRV), all divided by sales (SALE).

Additional variables used in other analysis

Brand/PPE	Brand capital over the total of property, plant, and equipment expenses.
Brand/LN	Natural logarithm of brand capital.
Repurchase/MC	Purchase of common and preferred stock (PRSTKC) less the decrease in the
	book value of the preferred stock (PSTKRV), all divided by market
	capitalisation (PRCC*CSHO).
Repurchase/BE	Purchase of common and preferred stock (PRSTKC) less the decrease in the
	book value of the preferred stock (PSTKRV), all divided by book equity.
Repurchase/CF	Purchase of common and preferred stock (PRSTKC) less the decrease in the
	book value of the preferred stock (PSTKRV), all divided by operating income
	before depreciation (OIBDP).
CEO_Duality	Binary variable; takes one when the CEO and chairperson of the board are the
	same person, otherwise zero.
Excess Cash	Binary variable; takes one when the value of excess cash is greater than or
	equal to the value of its median, otherwise zero. Natural logarithm of cash and
	short-term investment (CHE) divided by total assets (AT), less the mean value
	of the variable for the exact year and exact 3 digits of SIC.
Brand_PSM1	Coded as 1 if Brand/AT is above the mean, and 0 otherwise.
Brand_PSM2	Coded as 1 if Brand/Sale is above the mean, and 0 otherwise.