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Why Do Companies Share Buybacks? Evidence from the UK

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Abstract: We examine the key drivers behind management decisions on share repurchase from various theoretical perspectives, including the free cash flow theory and the signaling theory/hypothesis. Specifically, we investigate the relationship between share repurchase and three key drivers: surplus cash, undervaluation, and leverage, along with several control variables. Using a sample of UK-listed non-financial companies from 2012 to 2022, we apply logistic regression, standard OLS regression, and Tobit regression to identify the factors influencing share repurchase. Our findings reveal that firms repurchase shares to distribute cash to shareholders with surplus cash and Surplus investing cash flow. This study also finds that undervalued smaller firms with lower market-to-book ratios and lower leverage are more likely to repurchase shares. Our study highlights the key factors motivating companies' share repurchases, such as undervaluation, surplus cash, and leverage, examined from various theoretical perspectives, including the free cash flow theory and signaling theory. Focusing on the UK context, as well as adding a new angle in regard to applying logistic regression, standard OLS regression, and Tobit regression in combination, this research contributes to the existing body of knowledge in corporate finance. The outcome of the study has plausible implications for financial managers and investors in selecting stocks. Its practical implications will help investors gain a better understanding of the factors and forces influencing share repurchase decisions.

Keywords: share repurchase; surplus cash flow; leverage; book-to-market ratio

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1. Introduction

Share repurchases have become a growingly popular activity in recent years for public companies to allocate surplus cash generated from company operations. A share repurchase occurs when a public company's management buys back previously sold shares. Companies can purchase shares directly from the stock market or give shareholders the right to tender shares to the company (Adhikari and Agrawal 2018; Stephens and Weisbach 1998). Such actions can boost financial measures denominated in outstanding shares, prevent a stock price decline, or enhance one's equity interest in the company. Hence, share buybacks are a significant factor in determining a company's valuation. Additionally, Brav et al. (2005), Peyer and Vermaelen (2009), Almeida et al. (2016), and Manconi et al. (2019) also contend that rather than increasing dividends, many firms now use share repurchases as an alternative. Repurchasing shares is more flexible than dividend payments because it enables more investment optimization. Companies often choose to repurchase shares when they believe their stock is undervalued, aiming to positively impact earnings per share (EPS). Further, Ben-Rephael et al. (2014) found evidence of positive abnormal returns, particularly around the time of repurchase disclosure and in the following month. Dittmar and Field (2015), using a larger dataset, supported Ben-Rephael et al. (2014), further revealing that the average firm experiences positive abnormal returns for up to three years

after a repurchase. Moreover, Ben-Rephael et al. (2014) revealed a positive association between insider trading and repurchases, while Dittmar and Field (2015) showed that net insider trading is associated with more advantageous repurchase prices.

These findings suggest that share repurchases are frequently driven by managerial attempts to time the market, benefiting both current shareholders and managers. Another explanation for repurchasing shares is that companies repurchase their stock to defend against unwelcome attempts to take over. Moreover, companies repurchase shares to offset the dilution effect of the stocks purchased as employee stock options by management (Weisbenner 1998; Chen et al. 2015; Abraham et al. 2018). Corporate managers who personally purchase a significant number of company shares will strengthen this positive impact on the share price. Apart from that, peer influences have a substantial impact on share repurchase strategies among companies, especially those operating within the same sector (Adhikari and Agrawal 2018). Empirical evidence suggests that organizations frequently emulate the financial policies of their contemporaries, encompassing both dividend distributions and share repurchases, as a means to uphold competitive balance. Firms experience a marked influence from their peers regarding stock repurchase strategies over the long term (Adhikari and Agrawal 2018; Wang and Chen 2023; Massa et al. 2007). A further significant aspect from a pure tax viewpoint is that overall payouts, along with dividends and repurchases, should be reduced to eliminate tax liability for pay-out companies and their owners (Hsieh and Wang 2008). In a perfectly competitive business environment, dividends and share repurchases are perfect alternatives in terms of market value. Stocks repurchased under capital gains are taxed at a lower rate and withheld until sold. Conversely, the dividend payment is taxed and distributed at a higher rate (Dittmar 2000). Hence, dividends have a significant drawback compared to repurchases from a tax perspective. As a result, share repurchasing has recently become a popular activity among public companies. Share repurchase is now a dominant corporate pay-out over dividends (Mazur et al. 2023; Brettell et al. 2015; Bonaimé and Ryngaert 2013). As a substitute for paying dividends, companies can use cash to repurchase shares of their stock (Bagwell 1991; Syahputra and Prisilia 2020; Almeida et al. 2016). Besides, share repurchase is more flexible compared to dividends. Consequently, in recent years, share repurchases have increased dramatically. Sodhi et al. (2023) highlight that stock repurchases are primarily used by firms to signal undervaluation to the market, suggesting that management believes the company's stock is worth more than its current trading price. This strategy, aimed at boosting investor confidence, is the most consistent driver of repurchase size. Other factors include the distribution of excess cash; when firms have surplus funds, they may return them to shareholders through buybacks. Earlier studies also reveal that when a firm's leverage is lower than its target ratio, the company is more likely to engage in share repurchases as a strategic move to rebalance its capital structure. By buying back shares, the firm reduces the overall level of equity, which effectively increases the proportion of debt in its financing mix, bringing the debt ratio closer to the target level (Sodhi et al. 2023; Gamage 2023; Tjio 2021; Dittmar 2000). Therefore, undervaluation, surplus cash, and leverage are considered the primary triggers of stock repurchases. These factors often drive companies to repurchase shares as a way to signal confidence to the market, efficiently allocate excess resources, or adjust their capital structure to achieve an optimal balance between debt and equity.

The first driver of share repurchase is undervaluation. Companies repurchase shares of their stock when their stock values are undervalued (Segara and Yang 2022). The research argues that companies repurchase shares to indicate the undervaluation (Vermaelen 1981; Syahputra and Prisilia 2020). Moreover, information asymmetry exists between insiders and shareholders (Billett and Xue 2016). Therefore, the business can repurchase stocks if insiders perceive that the stock is undervalued. Besides, when a company repurchases shares of an undervalued stock, it signals its confidence in undertaking the repurchase and having sufficient cash to meet future commitments such as interest payments and capital expenditures (DeLisle et al. 2020; Dhanani 2016). Hence, earlier research contends

that undervaluation is the primary motive for share repurchase. Here, the company can organize the Market to exploit its undervaluation (Vermaelen 1981; Grullon and Michaely 2004; Ikenberry et al. 1995; Brav et al. 2005; Busch and Obernberger 2017). Secondly, companies are more likely to engage in share repurchases when they possess surplus capital. A company with surplus capital over investment opportunities usually keeps the excess capital as retained earnings or allocates it to shareholders by dividend payout and share repurchase (Ferri and Li 2018; Jensen 1986). The explanation is that repurchasing is an efficient way of distributing excess capital (Dittmar 2000; Ferri and Li 2018). On the other hand, leverage is the third purpose of share repurchases, and the capital allocation by businesses lowers their equity and, therefore, lifts their leverage ratio. Earlier studies found that when the leverage ratio is lower, companies repurchase shares to maintain the optimum leverage or debt ratio (Hsieh and Wang 2009; Ferri and Li 2018; Clarke 2022; Bagwell and Shoven 1988; Opler and Titman 1996).

In financial markets, dividends have traditionally been the primary way companies distribute profits to shareholders. However, recent research indicates a shift: firms are increasingly favoring share repurchases over dividends. Over the past three decades in the UK, buybacks have emerged as the primary method for corporate payouts. Share repurchases in the UK are subject to more stringent corporate governance regulations, including the requirement for shareholder consent (Dhanani 2016). UK corporations typically engage in fewer substantial repurchase activities compared to their US counterparts. In the US market, share repurchase activity is significantly greater, as companies frequently utilize buybacks as a primary strategy to return capital to shareholders, driven by advantageous tax policies and fewer regulatory constraints. As a result, buybacks in the US have been fueled by reductions in corporate tax rates, accessible capital markets, and a focus on shareholder returns, positioning the US as the leading market for repurchase activities (Wang et al. 2021; Vaupel et al. 2023). European firms, particularly those in countries like Germany, have traditionally taken a more cautious approach to buybacks, favoring dividend distributions as the preferred method (Drousia et al. 2023; Anolick et al. 2021). However, in recent years, there has been a significant increase in buyback activities in Europe, mirroring trends observed in the US.

By engaging in share buybacks, some of the UK's top companies are achieving compound growth in their earnings per share, rewarding patient shareholders (Dedman et al. 2022; Tjio 2021; Sodhi et al. 2023). This trend has not only drawn the attention of academics but has also ignited lively debates among policymakers and the media. This study examines key drivers behind the management decision on share repurchase from different theoretical perspectives (i.e., the free cash flow theory and signaling theory/hypothesis). The signaling hypothesis's popularity stems from its position that stock repurchases are undertaken by undervalued firms, signaling superior future cash flows (Comment and Jarrell 1991; Asquith and Mullins 1986). On the other hand, the free cash flow theory originated from the argument that managers are responsible for deploying free cash flows. Free cash flows are generated after the payment of all expenses. In the past, these free cash flows were used to explore profitable projects, after which any excess was distributed to the shareholders as dividends or used to repurchase stock (Jensen 1986; Baker et al. 1981). Hence, this study is motivated by the fact that firms choose share repurchases over dividends to distribute corporate payouts. Thus, this study fills these gaps in the literature based on the theoretical motivation from the free cash flow theory and signaling theory/hypothesis. The stock undervaluation could serve as a strong motivation for buybacks when focusing on the sample of repurchasing firms. However, undervaluation is one of several factors driving repurchases decisions for all firms in the market. In this study, we investigate this share repurchase puzzle. Specifically, we explore the potential factors that lead to repurchase in the UK. In contrast to past studies such as Vermaelen (1981); Almeida et al. (2016); Syahputra and Prisilia (2020), the contribution of this study is to demonstrate key factors that motivate companies' share repurchases, such as undervaluation surplus cash and

leverage in the context of the UK applying logistic regression, standard OLS regression, and Tobit regression where earlier studies focus on particularly one factor using OLS regression.

We find that the key driving forces of share repurchase are surplus cash, undervaluation, and leverage. We also note that when firms have surplus cash holdings and surplus investing cash flow (SIC), they prefer to repurchase shares and distribute capital to shareholders. We also show that firms only distribute cash if they have surplus operating cash flow. Company characteristics such as market-to-book ratio and leverage influence the paying of dividends or repurchasing shares in the UK. The rest of the paper is structured as follows: The literature review is stated in the next section. The data sample and descriptive statistics of the variables are defined in Section 3. Section 4 contains explanations of the regression models. The models focus on the standard regression of the OLS and the estimation of the regression of Tobit to illustrate the relation between the surplus cash and the number of funds allocated to shareholders. A discussion of the robustness is given in Section 5, and conclusions and implications are highlighted in the Section 6.

2. Literature Review and Theoretical Development

2.1. Free Cash Flow Theory and Signaling Theory

In the context of share repurchases in the UK, several key motives emerge. Initially, three prominent reasons drive repurchases: distributing excess cash, substituting dividends, and signaling stock undervaluation. The free cash flow theory suggests that companies should share their extra cash with shareholders to prevent the negative consequences of overinvesting. By doing so, they can avoid potential agency costs arising from managers making excessive investments. The latter suggests that when firms perceive their stock as undervaluation, repurchasing shares signals the market about mispricing, potentially correcting the stock price. Additionally, repurchases serve purposes such as signaling asymmetric information, providing a tax-friendlier payout, replacing dividends, and adjusting capital structure to increase debt exposure (Cook and Zhang 2022; Syahputra and Prisilia 2020; Almeida et al. 2016). Corporate taxes significantly influence repurchase decisions. The tax preferential hypothesis underscores the tax efficiency of repurchases over dividend distribution (Chang et al. 2023). While this motive varies by country, the UK has seen relevant changes in tax policy since 1981, impacting the landscape (Dedman et al. 2022). Furthermore, new repurchase motives intertwine with firm characteristics like business growth and leverage (Anolick et al. 2021; Zhao et al. 2023; Almeida et al. 2016; Brettell et al. 2015).

The Free Cash Flow Theory suggests that companies with excess cash may engage in share repurchases to optimize their capital structure (Buus 2015). According to this theory, when a firm generates more cash than is needed for investments and operations, it signals to investors that it lacks profitable investment opportunities (Agrawal and Jayaraman 1994). Through repurchasing shares, the company aims to return value to shareholders and signal confidence in its future prospects (Chen and Liu 2023; Tjio 2021; Howe et al. 1992). This theory assumes that repurchasing shares is a more tax-efficient way to distribute excess cash compared to dividends (Chang et al. 2023; Chen and Liu 2023).

On the other hand, Signaling Theory posits that share repurchases can serve as a positive signal to the market. The signaling theory proposes that management, with insider knowledge of expected cash flow growth, utilizes stock repurchases to communicate this information to the market (Dhanani 2016; Vermaelen 1981). By announcing the repurchase, management communicates to shareholders that they believe the stock is undervalued, which is often interpreted positively by the market. When a company repurchases its own shares, it may indicate that management perceives the stock as undervalued (Dixon Rob et al. 2008; Brau and Holmes 2006). This can lead investors to interpret the buyback as a positive signal of the company's financial health and future performance. In situations of asymmetric information, undervalued firms can distinguish themselves from overvalued ones by initiating stock buybacks (Chemmanur et al. 2018; Brau and Holmes 2006; Bagwell and Shoven 1988). Lee and Suh (2011) found that this signal is stronger when firms are

willing to pay a premium above the current stock price. Additionally, signaling theory and market timing suggest that companies may use share repurchases to counteract negative market perceptions or to communicate their commitment to long-term shareholder value (Vermaelen 1984; Brav et al. 2005; Peyer and Vermaelen 2009; Almeida et al. 2016; Manconi et al. 2019). In addition, the market generally views stock repurchase announcements favorably, as they are taken as a sign that the company is confident in its financial health and future earnings potential (Jagannathan et al. 2000; Drousia et al. 2023). While Free Cash Flow Theory focuses on the optimization of capital structure, Signaling Theory emphasizes the communicative aspect of share repurchases in conveying information about a company's financial health and prospects to the market (Chen and Liu 2023).

2.2. Share Repurchase

A share repurchase has become a standard evolving strategy of corporate payout. Share repurchasing is an efficient way for businesses to pay dividends and return capital to shareholders. Typically, share repurchases are performed in any of the following three forms. The first one is to purchase in the open market. Here, companies can buy without announcing that they are purchasing their shares. On the other hand, sellers need to be made aware of whether the initial companies or other buyers purchase their shares. Secondly, a company can repurchase its shares by issuing a tender offer. Companies announce their willingness to buy a particular volume of shares at a fixed rate to all shareholders. Afterwards, the agreements are signed secretly. Companies can repurchase shares from particular shareholders (Busch and Obernberger 2017; Chemmanur et al. 2018; Dann 1981; Dunsby 1994). Business managers undertaking large-scale repurchase plans have several justifications for investing substantial money in repurchases. Share repurchases are beneficial because they burn off capital and allocate it to shareholders (Busch and Obernberger 2017; Chang et al. 2023). Hence, share repurchases have become a common way of distributing dividends to shareholders, and companies choose stock repurchases to defer paying down debt. In developed countries, such as the United States, the share repurchase steadily outpaces the dividend as a popular way to distribute business profits (Grullon and Michaely 2002; Ben-Rephael et al. 2014; Dittmar and Field 2015). This is not surprising, as a survey of US corporate executives by Brav et al. (2005) highlights the flexibility of share repurchase as a significant advantage compared to dividends. Unlike dividend pay-outs, reducing share repurchases from one period to the next does not have a negative informational signal or penalty. Instead, the announcement of a repurchase program is perceived to positively impact the share price (Billett and Xue 2016). Ma et al. (2024) contend that managers use open-market share repurchases to signal undervaluation and better prospects of firms. Moreover, Anolick et al. (2021) also stated that share buyback as a mechanism of distributing surplus cash to shareholders has increased significantly in both the United States and Europe. The market often interprets buybacks as a positive signal, leading to an increase in share price.

Companies use share repurchases as a way to indicate that their stock is undervalued. Conversely, when firms are overvalued, they tend to issue new equity. Therefore, Chen and Liu (2023) show that repurchases by undervalued firms are strongly linked to a decrease in both the likelihood and the dollar amount of equity issuance. Benhamouda and Watson (2010) also find that stock repurchases are chosen as an alternative to dividends to avoid the deflation of executive options. Chang et al. (2023) suggests that the effect between dividends and share repurchases takes place over time. Instead of paying dividends, many US companies have offered share repurchases for the dividends. Share repurchases are now the top payouts that outweigh dividends (Hsieh and Wang 2009). Next, purchasing a share through a share repurchase plan signals a company's credibility in the underlying stock, indicating that a company can purchase at a long-term price as the stock trades (Arora 2022). Further, it denotes that the company still has enough cash to pay for potential obligations such as interest costs and capital expenditures. On the contrary, when a company's management believes it can repurchase its stock rather than invest in the

future, this is a strong indicator that the company is less interested in investing (Cook and Zhang 2022; Dedman et al. 2022; Bonaimé and Ryngaert 2013; Jena et al. 2017). Current evidence indicates that repurchasing stock is a prudent way for businesses to return capital to investors, as cash-rich companies seem to produce higher excessive returns when introducing new repurchase programs (Grullon and Michaely 2004; Jena et al. 2017).

Research has been conducted to determine the causes and motivations behind offering share repurchases. Studies have taken forth many drivers about the type of companies that switch to repurchase shares and the contexts of their buyback. According to signaling theory, companies tend to repurchase stocks primarily to distribute cash surplus, signal undervaluation, and attain their target leverage ratio (Zhao et al. 2023; Iyer and Rao 2017; Lee and Mauck 2018). Other motives driving repurchasing are minimizing the takeover risks and mitigating the dilution impact of employee stock options. Therefore, a move to repurchase a stock can be influenced by the companies' distribution, business operation, capital structure, corporate policies, and corporate influence (Oswald and Young 2008; Billett and Xue 2016; Bagwell and Shoven 1988). Previous studies have also found that undervaluation is correlated with companies' share repurchases. Since repurchases and dividends are alternatives, different theoretical arguments on dividend plans often relate to the share repurchase strategies (DeAngelo 2023; Dedman et al. 2022; Tjio 2021). The earlier signal models of Vermaelen (1984), Miller and Rock (1985) are now among the most popular. Their asymmetric information models demonstrate that dividends and stock repurchase are reliable signs of the company's prospects. The signaling theory posits that when the market undervalues a company's shares and its stock price does not signify improved operating efficiency, the company repurchases shares. Also, repurchasing shares signals that the stock has a high degree of liquidity. One of the critical factors for frequent repurchases is undervaluation (Almeida et al. 2016; Segara and Yang 2022; Arora 2022; Vaupel et al. 2023). Further, share repurchase can enhance the stock's long-term value when the company's undervaluation and information asymmetry between managers and investors exist. Typically, managers clarify behind the open-market purchasing of shares, as evidenced by their long-term cash flow estimations, the shares look inexpensive, as is what they stand for (Almeida et al. 2016; Ben-Rephael et al. 2014; Brettell et al. 2015; Boudry et al. 2013). Earlier studies by Dittmar (2000) studied the motives of US companies from 1977 to 1996 and proved that most of the time, companies repurchase stock to take the benefit of undervaluation, but sometimes to allocate the excess cash. Moreover, Jagannathan and Stephens (2003) studied infrequent, occasional, and regular share repurchases and found that the primary reason for buybacks by infrequent repurchases is undervaluation. There is a larger scale, lower volatility, greater institutional ownership, and higher dividend payout ratio for regular repurchases than occasional repurchases. Similarly, it has also been found that an Indian company prefers repurchasing shares due to undervaluation (Dixon Rob et al. 2008). Similarly, Segara and Yang (2022) and Li and McNally (2007) also find that motivated by agency cost, the undervaluation hypothesis influences the repurchase. However, Liu and Swanson (2016) analyze the trading action of companies and short-sellers before and after repurchases and document a strong stock returns correlation between the decreases in repurchases and a rise in short-selling activity. Using short selling volume as a signal of stock overvaluation, they illustrate that share repurchase programs offer compensation for an overvalued stock. El Ghoul et al. (2023); Chung et al. (2005) analyze the free cash flow, as company cash may be allocated to shareholders and investors, which is not used for working capital or investment in fixed assets. Besides, according to the study conducted by Syahputra and Prisilia (2020) evidence that the greater the availability of free cash flow, the healthier and wealthier the business is. Therefore, the one with a smaller capacity to produce cash flow is unhealthier than the other. Companies prefer to buy back shares using excess cash rather than to pay dividends. Thus, stock buyback is considered a good investment in utilizing the excess capital or cash flow (Baker et al. 1981; Cook and Zhang 2022; Dedman et al. 2022; Bonaimé and Ryngaert 2013).

Most companies repurchase their shares to distribute their surplus cash. Therefore, companies should allocate surplus cash to shareholders to ensure that managers do not overinvest in projects with negative NPV to reduce agency costs of overinvestment. Companies may repurchase shares using surplus capital alternatively available to increase dividends (Vaupel et al. 2023; Syahputra and Prisilia 2020). Other main reasons for adopting share repurchases for dividends are the tax benefits and the lack of secure cash flows associated with dividend-paying companies. The tax structure supports repurchases when it comes to paying dividends and capital gains. However, even when capital gains and dividends are taxed at the same rate as in the late 1980s compared with after 2003, investors prefer share repurchase because of the apparent opportunity and versatility in buyback schemes (Dittmar 2000). Lee and Suh (2011) analyze share repurchase patterns and factors for companies in 7 countries such as Australia, Canada, France, Germany, and Japan. They find that excess capital or surplus cash flow is the critical force for share repurchases. Besides, Boudry et al. (2013) analyze the performance of Real Estate Investment Trusts (REITs) and conclude that bad investments appear to be repurchased by REITs. For businesses with low investment opportunities, the cash is strongly correlated with repurchases only if the investment opportunities are considered high. Arora (2022) investigates the open cash flow of Indian corporations' stock acquisitions and reveals that surplus cash flow is the critical reason for share repurchases.

Furthermore, companies adopt stock buybacks to adjust their leverage ratio, avoid takeovers, and mitigate the dilution impact of stock options. Leverage relates to using assets and financing sources to generate profit for shareholders (Syahputra and Prisilia 2020). Organizations strive for a composition of debt and equity that is optimal for their operation. Thus, maintaining a target capital structure is also a motivating factor for share repurchases (Bonaimé and Kahle 2024; Gamage 2023). Buus (2015) and Lee and Alam (2004) hypothesized that companies try to buy back their stock to achieve maximum capital structure. Recent research by Jena et al. (2017) has shown that stock repurchases are undertaken for several purposes. The study attributed the share repurchase to aiming for the target debt ratio, suggesting it is the necessary explanation for companies going for a share buyback. Companies are more likely to repurchase if their leverage ratio is less than the target ratio (Dittmar 2000). So, repurchasing shares raises the relative leverage level of total capital. Dixon Rob et al. (2008) point out that the primary motivation for share repurchases is to obtain optimal capital structure.

3. Sampling and Description of Data

The sample consists of listed UK companies and data collected from DataStream. The study examines the three main factors affecting management decisions regarding share repurchases from 2012 to 2022. The final sample consists of 5058 company observations. Financial companies and institutions have been excluded from our study due to their financial structural and regulatory differences from non-financial companies. Furthermore, we exclude companies that do not issue stock options and lack applicable financial information in their annual reports. The initial sample consists of all open-market share repurchases. We use logistic regression and standard OLS regression to explain the association between shares repurchase and three key drivers of stock repurchase. We differentiate repurchasing firms from non-repurchasing firms based on their share repurchase activity. For each year in our sample (2012 to 2022), firms are classified as non-repurchasing if they do not repurchase at least 1% of their outstanding shares within a five-year window (two years before and two years after the current year). Firms are considered repurchasing if they repurchase more than 1% of their outstanding shares during the current year and have a positive actual repurchase (with a total share repurchase greater than zero) over a three-year window (one year before and one year after).

3.1. Measurement of Variables

Table 1 provides summary statistics of the following variables are: Surplus cash holding (SCH) is an indicator variable for year $t-1$ taking the value of one if surplus cash holding are positive, and zero otherwise; Surplus operating cash flow (SOC) is an indicator variable for year $t-1$ taking the value of one where operating cash flows are positive, and zero otherwise; Surplus investing cash flow (SIC) is an indicator variable for year $t-1$ taking the value of one if investing cash flows are positive, and zero otherwise; Market capitalization (MC) is the natural logarithm of the fiscal year-end $t-1$ share price multiplied by the number of shares outstanding; Abnormal share returns(AR) is an indicator variable taking the value of one if the 12-month firm return ending on fiscal year-end $t-1$ exceeds the market return measured over the corresponding period, and zero otherwise; Market-to-book(MB) is the book value of debt plus the market value of equity divided by total assets in year $t-1$; Dividend payout (DP) is equity dividends in year $t-1$ scaled by operating earnings (or equity dividends scaled by six percent of total assets where operating earnings are negative; and Net leverage (Net Lev) is total liabilities net of cash holdings divided by total assets net of cash holdings in year $t-1$. All variables are measured at the beginning of the repurchase year. At the beginning of the repurchase year, all variables are calculated.

Table 1. Measurement of variables.

Variables	Label	Description
Share Repurchase		Share Repurchase is calculated as number of repurchase observations divided by total sample size (Vermaelen 1981; Dittmar 2000; Iyer and Rao 2017).
Surplus Cash Holdings	SCH	Surplus cash holding (SCH) is the cash and cash equivalents surpassing the level provided for normal operations (Lee and Suh 2011; Dittmar 2008).
Surplus Operating Cash Flow	SOC	Surplus Operating Cash Flow is the excess cash generated from a company's core operating activities (Lee and Suh 2011; Dittmar 2008).
Surplus Investing Cash Flow	SIC	Surplus Investing Cash Flow refers to the excess cash a company generates from its investing activities (Lee and Suh 2011; Dittmar 2008).
Market Capitalization	MC	Market capitalization is calculated by using the share price log multiplied by the number of outstanding shares (Sodhi et al. 2023; Almeida et al. 2016; Dixon Rob et al. 2008).
Abnormal Share Returns	AR	Abnormal share returns are the difference between a stock's actual return and its expected return (Clarke 2022; Almeida et al. 2016).
Market-to-Book	MB	Market-to-book (MB) is the book value of debt plus the market value of equity divided by total assets. The Market-to-Book (M/B) ratio is used to assess whether a stock is overvalued or undervalued relative to its book value (Sodhi et al. 2023; Almeida et al. 2016; Dixon Rob et al. 2008).
Dividend Payout	DP	Dividend payout (DP) is the equivalent of stock dividends scaled by operating earnings (Mazur et al. 2023; Anolick et al. 2021).
Net Leverage	Net Lev	Net leverage measures a company's debt level relative to its cash holdings, reflecting its ability to repay debt using available cash (Gamage 2023; Tjio 2021; Dittmar 2000; Chen and Liu 2021; Wang et al. 2024).

3.2. Descriptive Statistics

Table 2 provides the summary of descriptive statistics. Descriptive statistics are listed for cash flow, undervaluation, leverage, and company factors. To investigate the impact of cash flows on share repurchases, we use Surplus Cash Holdings, Surplus Operating Cash flow, and Surplus Investing Cashflow. Regarding the correlation between information asymmetry and undervaluation, we use company size (small, medium, and large) to measure information asymmetry, following Freeman (1987). In this study, the company size

is determined by the natural log of the share price multiplied by the number of outstanding shares. We use net leverage to maintain the relationship between the surplus cash and target leverage ratio. The market-to-book ratio (MB), Dividend Payouts (DP), and Abnormal share returns (AR) are also used as predictor variables. Table 1 shows that 36.65% of all findings have Surplus Cash Holdings in the entire sample, while 46.74% (16.33%) have surplus cash for operating expenses (investing). There are no significant differences in the percentage of Surplus operating cash flow scenarios between the repurchase and non-repurchase company-year samples. However, there is substantial variance in the percentage of Surplus Cash Holdings and Surplus Investing Cashflow cases: 44.57% and 22.51%, respectively, for the sample of repurchase. In the year before repurchase, the dividend pay-out suggests that repurchasing companies offer significantly lower dividends (51.46%) than their non-repurchasing equivalents (52.86%). Table 2 also reveals that repurchasing small companies have a lower Market-to-book ratio than their non-repurchasing counterparts. Further, they have less leverage and higher abnormal returns.

Table 2. Summary Statistics.

Variable	Full Sample (n = 5058)							Repurchasers (n = 462)		Non-Repurchasers (n = 4596)	
	Mean	St. Dev	Min	25thPctle	Median	75thPctle	Maximum	Mean	Median	Mean	Median
SCH	0.3665	0.4819	0.0000	0.0000	0.0000	1.0000	1.0000	0.4457	0.0000	0.3585	0.0000
SOC	0.4674	0.4990	0.0000	0.0000	0.0000	1.0000	1.0000	0.4844	0.0000	0.4658	0.0000
SIC	0.1633	0.3697	0.0000	0.0000	0.0000	0.0000	1.0000	0.2251	0.0000	0.1571	0.0000
MC	12.0956	1.7716	6.6333	10.9147	11.8635	13.1218	18.6409	11.9138	11.3803	12.1138	11.8922
AR	0.5216	0.5000	0.0000	0.0000	1.0000	1.0000	1.0000	0.5303	1.0000	0.5207	1.0000
MB	1.8989	2.1376	0.3128	1.1026	1.4379	2.0501	94.7554	1.4434	1.2308	1.9447	1.4645
DP	0.5274	1.5671	0.0000	0.2598	0.4006	0.5453	56.0000	0.5146	0.4449	0.5286	0.3947
Net Lev	−0.0783	2.8798	−157.833	−0.0606	0.0979	0.2219	1.5726	−0.1874	0.0255	−0.0674	0.1037

Note: Descriptive statistics for explanatory variables.

4. Models and Results

Since the sample covers a long time interval with significant economic changes, we use logistic regression and Tobit regression to analyze the data in the Tobit model, which is suitable for censored outcomes (e.g., share repurchase amounts that may be zero for many firms). The models are, therefore, more likely to have pure heteroskedasticity. This is commonly adjusted by creating robust standard errors. Thus, using STATA, in order to correct for heteroskedasticity, robust standard errors are applied in all regression models.

4.1. Logistic Regression Examines the Relationship between Share Repurchase and Key Variables

The following logistic regression formulates the probability of share repurchases for the main variables and other control variables:

$$log\left(\frac{p_{it}}{1-p_{it}}\right) = \beta_0 + \beta_1 Surplus\ cash\ holding_{\ it-1} + \beta_2 Market\ capitalization_{it-1} + \beta_3 Dividend\ payou_{t-1} + \sum_{k=1}^{K} \lambda_k Controls_{kit-1} \quad (1)$$

where p_{it} is the probability of company i repurchasing shares in year t. Surplus cash holding (SCH) is the cash and cash equivalents surpassing the level provided for normal operations. To measure the market capitalization (MC), we use the share price log multiplied by the number of outstanding shares. Dividend payout (DP) is the equivalent of stock dividends scaled by operating earnings, and some control factors are likely to impact the decision to repurchase. Surplus operating cash flow (SOC), Surplus investing cash flow (SIC), abnormal stock returns (AR), Market- to-Book ratio (MB ratio), and leverage (Net Lev) have been included in the variables.

The results of logistic regressions related to the repurchase system of Surplus cash holdings, the log of market capitalization (MC), the payout of dividends, and the control variables are shown in Table 3. The main objective of constructing Table 3 is to evaluate the relationship between the repurchase of shares, the company's size, and the leverage of the surplus cash holdings. The key and control variables are used in the model, whereas

model 2 contains only key variables. On the other hand, in Table 3, models 3, 4, and 5 of use one key variable with control variables.

Table 3. Model Summary Statistics and Marginal Effect from Logistic Regressions Explaining Probability of Stock Repurchase.

Variable	Predicted	Logistic Models				
	Sign	Model 1	Model 2	Model 3	Model 4	Model 5
Constant	(−)	−1.514	−1.6423	−1.8117	−1.2486	−1.6746
		(0.0002)	(<0.0001)	(<0.0001)	(0.0016)	(<0.0001)
SCH	(+)	0.4516	0.3583	0.4568		
		(<0.0001)	(0.0003)	(<0.0001)		
		0.0350	*0.0298*	*0.0354*		
SOC	(+)	0.1426		0.1451	0.0853	0.0884
		(0.1933)		(0.1852)	(0.4291)	(0.4123)
		0.0111		*0.0113*	*0.0067*	*0.0069*
SIC	(+)	0.3937		0.3768	0.4106	0.3875
		(0.0030)		(0.0040)	(0.0018)	(0.0028)
		0.0307		*0.0294*	*0.0320*	*0.0302*
MC	(−)	−0.0261	−0.0658		−0.0391	
		(0.4243)	(0.0206)		(0.2248)	
		−0.0020	*−0.0055*		*−0.0030*	
AR	(−)	−0.0563		−0.0493	−0.0452	−0.0301
		(0.6163)		(0.6594)	(0.6853)	(0.7861)
		−0.0044		*−0.0038*	*−0.0035*	*−0.0024*
MB	(−)	−0.5045		−0.5205	−0.4534	−0.4786
		(<0.0001)		(<0.0001)	(<0.0001)	(<0.0001)
		−0.0393		*−0.0406*	*−0.0354*	*−0.0374*
DP	(−)	−0.0089	0.0003			−0.0175
		(0.8319)	(0.9929)			(0.6954)
		−0.0007	*0.0000*			*−0.0014*
Net Lev	(−)	−0.1039		−0.1084	−0.0251	−0.0274
		(0.0094)		(0.0065)	(0.1402)	(0.1059)
		−0.0081		*−0.0084*	*−0.002*	*−0.0021*

Notes: The dependent variable in the logistic regression is the log of odds of share repurchase. Explanatory variables are as defined in Table 1. Three values are reported for each covariate: the first value is the coefficient estimate, the second (parenthesized) value is the two-tailed probability value, and the third (italicised) value is the marginal effect (except for constant). Marginal effects for logistic regressions are equal to $\beta(1-p)p$, where β is the coefficient estimate and p is the probability of a repurchase (computed as number of repurchase observations divided by overall sample size). Model definitions are as follows: Model 1 includes all key and control variables, Model 2 includes only the all key variables, Model 3 includes surplus cash holding as key variable and all control variables. Model 4 includes log of market capitalization as key variable and all control variables, and Model 5 includes dividend payout as key variable and all control variables.

In Table 3, every model incorporates the coefficient estimation, calculated estimation sign, *p*-value, and marginal effect of each covariate. On the contrary, each covariate includes each model's estimated coefficient, expected estimate sign, *p* values, and marginal effect. Since the logit model has no direct economic influence on estimated coefficients, we add marginal effects to make the findings stronger. Sample regression analysis of model 1 shows that the probability of repurchasing stock in model 2 is correlated to SCH, SOC, and SIC. The marginal effects of these two factors indicate that a higher cash flow in Surplus cash holdings and a higher cash flow in surplus investment raise the probability of share repurchases by 0.0350 and 0.0307, respectively. On the other hand, a company's SOC flow is insignificant. The findings show that companies would repurchase stock to allocate excess cash, including cash and cash equivalents and investment cash flow. Analysis (model 1) of stock repurchases reveals that companies with lower leverage and lower MB ratios are more prone to repurchase shares. The marginal effects of these two variables on the share repurchase are −0.0393 and −0.0081, respectively. However, the company size, log of market capitalization (MC), abnormal return (AR), and dividend

payout have an insignificant correlation to repurchases. Moreover, share repurchases are driven by surplus cash flow, particularly from operating activities, in industries with limited investment opportunities, indicating a strategy to distribute temporary excess cash efficiently. The company often chooses to use that excess liquidity to repurchase shares since this allows firms to return value to shareholders, reduce the number of outstanding shares, and potentially boost earnings per share. Further, surplus cash also provides the financial flexibility needed for companies to engage in buybacks, making it a significant factor in share repurchase strategies.

Our model 2 explains the key variables most significant to the repurchase decision. Model 2 finds that companies repurchase shares to distribute surplus cash, which is consistent with model 1. Consequently, smaller companies are more prone to repurchase their stock than larger companies. Small companies also practice information asymmetry, and small companies are more willing to repurchase stock due to their value being disvalued. There are a few key independent and dependent variables used in models 3–5, with all control variables. The results of these models are similar to those of models 1 and 2, except models 3 and 4 show that leverage is not a significant factor in share repurchases. Firms with substantial cash reserves can fund buybacks without incurring extra debt, making leverage irrelevant in certain instances. Furthermore, repurchase decisions are frequently motivated by stock undervaluation or market timing factors rather than a firm's present debt levels. The overall result is consistent with previous studies by Vermaelen (1981); Chen and Liu (2023); Vaupel et al. (2023); Syahputra and Prisilia (2020); Ben-Rephael et al. (2014); Dittmar and Field (2015).

4.2. The Relationship between Share Repurchase and Key Variables Using OLS Regression

Using OLS regression, we examine the probability of share repurchases for the main variables and other control variables:

$$p_{it}(y = 1 \mid X) = \beta_0 + \beta_1 Surplus\ cash\ holding_{\ it-1} + \beta_2 Market\ capitalization_{it-1} + \beta_3 Dividend\ payout_{-1} + \sum_{k=1}^{K} \lambda_k Controls_{kit-1} \quad (2)$$

Table 4 presents the results from a regression relating repurchase activity to SCH, log of MC, dividend distribution, and control variables. In Table 4, where p_{it} is the probability of company i repurchasing shares in year t. Surplus cash holding (SCH) is the cash and cash equivalents surpassing the level provided for normal operations. To measure the market capitalization (MC), we use the share price log multiplied by the number of outstanding shares. Dividend payout (DP) is the equivalent of stock dividends scaled by operating earnings, and some control factors are likely to impact the decision to repurchase. Surplus operating cash flow (SOC), Surplus investing cash flow (SIC), abnormal stock returns (AR), Market- to-Book ratio (MB ratio), and leverage (Net Lev) have been included in the variables.

The Table 4 shows a few notable characteristics. First, the OLS coefficients and logit coefficients are similar in symbol. Also, it may seem appealing to make direct comparisons between the OLS and logit estimates; this is not extraordinarily helpful. An OLS regression model shows that SCH, SOC, and SIC investing directly correlates to the share repurchase probability. To allocate surplus cash, companies use repurchases. Table 4 shows that companies with low leverage and low MB ratios prefer share buyback. Such findings align with those found by logistic regression analysis. Evidence shows that smaller companies repurchase shares at a 5% significance level. The findings imply that firms that have low leverage have better financial flexibility, allowing them to repurchase shares with excess cash without raising debt. As a result, firms can maintain a conservative capital structure while returning value to shareholders. Furthermore, corporations with low MB ratios may assume that their stock is undervalued in the market. By repurchasing shares, companies demonstrate faith in the company's future prospects and seek to increase the stock price. In general, low leverage and MB ratios make repurchases an attractive tool for firms looking to increase shareholder value. The findings are consistent with Dixon Rob et al. (2008); Segara and Yang (2022).

Table 4. Model Summary Statics of OLS Regression.

Variables	Predicted Sign	OLS
Constant	(+)	0.1375
		(<0.0001)
SCH	(+)	0.0283
		(0.0015)
SOC	(+)	0.0099
		(0.2442)
SIC	(+)	0.0443
		(0.0001)
MC	(−)	−0.0049
		(0.0479)
AR	(+)	0.0045
		(0.6003)
MB	(−)	−0.0083
		(<0.0001)
DP	(−)	−0.0001
		(0.9568)
Net Lev	(−)	−0.0127
		(0.0032)
Adjusted R^2 (%)		1.22
Number of Observations		4401

Notes: The dependent variable in the logistic regression is the probability of share repurchase. Explanatory variables are as defined in Table 1. Two values are reported for each covariate: the first value is the coefficient estimate, the second (parenthesized) value is the two-tailed probability value.

According to the OLS regression, this evidence is not significant enough. This is not a strongly effective association, even if there are correlations between repurchases of shares and the key variables and control variables. The model outcome variable is the likelihood of shares being repurchased. The dependent variable's lower bound probability is −0.694, which is implausible. Anticipated probabilities must be limited to the one-on-one side and zero on the lower side. Predicted probabilities must be upper-bounded at one and lower-bounded at zero. Again, errors cannot be normally distributed since the repurchase probability can take the values of either 1 or 0. Thus, testing whether coefficient estimates differ from zero becomes problematic since test statistics are not normally distributed. The result of OLS regression is also consistent with logistic models. The findings implied that large cash holdings held by repurchasing firms represent excess cash. Firms tend to repurchases to distribute temporary cash flows. On the other hand, share repurchases have a negative relationship with leverage, and firms mostly prefer buyback to exploit undervaluation at the cost of (uninformed) selling shareholders and to the benefit of ongoing shareholders. Hence, these findings are also in line with the earlier studies (Baker et al. 1981; Cook and Zhang 2022; Dedman et al. 2022; Bonaimé and Ryngaert 2013).

4.3. Surplus Cash and Share Repurchase Relationship with the Level of the Funds Distributed Using Tobit

The below Tobit regression tests analyze the correlation between surplus cash and the amount of money distributed through repurchases to shareholders:

$$y_{it}^{*} = \beta_0 + \beta_1 Surplus\ cash\ holding_{\ it-1} + \beta_2 Market\ capitalization_{it-1} + \beta_3 Dividend\ payout_{it-1} + \sum_{k=1}^{K} \omega_k Controls_{kit-1} + \xi_{it} \quad (3)$$

where y_{it}^{*} the aggregate value of shares is repurchased by company i in year t (scaled by lagged market capitalization).

The findings for the Tobit models, as shown in Table 5, are closer to logistical regression results. The repurchase of shares is closely connected with SCH and SIC, as illustrated in model 1 of Table 5. It suggests that management buys back shares to transfer cash to shareholders. As the SOC is not relevant, it is not connected to the essence of an operating cash flow surplus to the cash amount transferred by share repurchases. Table 5 further

reports that companies with lower leverage and MB ratios are more ready to distribute capital by repurchases to shareholders. Model 2 of this table also states a significant association between the SCH and the repurchase of shares.

Table 5. Model Summary of Statistics and Tobit and Tobit Regressions Marginal Effects Explanation of Repurchase Value.

Variable	Predicted		Tobit	Models		
	Sign	Model 1	Model 2	Model 3	Model 4	Model 5
Constant	(−)	−0.1311	−0.1278	−0.1549	−0.1086	−0.1463
		(<0.0001)	(<0.0001)	(<0.0001)	(<0.0001)	(<0.0001)
SCH	(+)	0.034	0.0279	0.0347		
		(<0.0001)	(<0.001)	(<0.0001)		
		0.2500	*0.2400*	*0.2500*		
SOC	(?)	0.0043		0.0045	−0.001	−0.0006
		(0.5807)		(0.5576)	(0.9012)	(0.9376)
		0.0300		*0.0300*	*−0.0100*	*−0.0100*
SIC	(+)	0.0301		0.0283	0.0312	0.0291
		(0.0017)		(0.0022)	(0.0012)	(0.0023)
		0.2200		*0.2600*	*0.2300*	*0.2100*
MC	(−)	−0.0021	−0.0062		−0.0035	
		(0.3385)	(0.0008)		(0.1051)	
		−0.0200	*−0.0500*		*−0.0300*	
AR	(−)	−0.002		−0.0016	−0.0008	0.0002
		(0.7986)		(0.8367)	(0.9172)	(0.9755)
		−0.0100		*−0.0100*	*−0.0100*	*0.0000*
MB	(−)	−0.0352		−0.0369	−0.0311	−0.0339
		(<0.0001)		(<0.0001)	(<0.0001)	(<0.0001)
		−0.2600		*−0.2700*	*−0.2300*	*−0.2500*
DP	(−)	−0.0011	−0.0003			−0.0019
		(0.7381)	(0.8973)			(0.5994)
		−0.0100	*−0.0100*			*−0.0100*
Net Lev	(−)	−0.0101		−0.0105	−0.0027	−0.003
		(<0.0001)		(<0.0001)	(0.0469)	(0.0285)
		−0.0800		*−0.0800*	*−0.0200*	*−0.0200*

Notes: The dependent variable in the Tobit regression is the aggregate value of share repurchase in fiscal year t scaled by market capitalization. Explanatory variables are as defined in Table 1. Three values are reported for each covariate: the first value is the coefficient estimate, the second (parenthesized) value is the two-tailed probability value, and the third (italicised) value is the marginal effect (except for constant). Marginal effects for Tobit regressions are equal to $\beta.\Phi\left(\frac{\beta' X_i}{\sigma}\right)$ where β is the coefficient estimate of X, Φ is the cumulative density function of the standard normal distribution and σ is the standard deviation of the repurchases scaled by market capitalization. Tobit marginal effects are evaluated at the means of the Xs. This is the marginal effect for the actual amount of cash returned to shareholders in both censored and uncensored regions. The marginal effect for the latent propensity to repurchase stock is also equal to β. Models are as defined in Table 3.

Furthermore, model 2 demonstrates that small businesses tend to repurchase shares. The results of models 3, 4, and 5 relate to model 1. Besides that, under model 4 and model 5, these findings need to be more important. However, there is proof that lower-leverage companies are more willing to allocate funds to shareholders by repurchasing stocks.

The following marginal effect explains the underlying possibility of repurchasing stock:

$$\frac{\partial E\left(y_i^* \mid X_i\right)}{\partial X_i} = \beta, \text{ where } \beta \text{ is the coefficient of X} \quad (4)$$

Model 1 of Table 5 indicates that the marginal effect of the SCH is 0.034. If the surplus cash holding is raised by 1%, cash distributed by companies through share repurchase rises by 0.034. Likewise, the distribution of funds increases by approximately 0.03% for every 1% increase in surplus investment cash flow. This result shows that companies spend cash on repurchasing shares when they have excess cash holdings and Surplus investing

cash flow. Companies do not distribute capital when they have a surplus in operating cash flow, and the company either uses the cash for operating activities or pays dividends to its shareholders. The marginal effects of the MB ratio and leverage indicate that the cash distributed through share repurchase decreases by 3.52% and by 1%, with an MB ratio increase in percentage and leverage, reflecting the increased probability of repurchasing stocks in companies with a lower MB ratio. Model 2 shows that the Log of MC increases by 1%, followed by the cash distribution decrease by more than 0.50%. Thus, large companies are less likely to buy back shares. Models 3, 4, and 5 also presented similar results.

However, the actual amount of cash allocated to shareholders can be explained in both censored and uncensored regions by the above marginal effect:

$$\frac{\partial E(y \mid X_i)}{\partial X_i} = \beta.\Pr(y^* > 0 \mid X) = \beta.\Phi(\frac{\beta' X_i}{\sigma}) \quad (5)$$

The standard deviation in repurchase is scaled by market capitalization (MC). The cumulative density function of the standard distribution by Φ (Greene 2003) and the standard deviation of the repurchases scaled by market capitalization (MC) are denoted as term σ. The marginal Tobit effects on the Xs are measured. A comparative study of the marginal effects reveals that the relationships between actual funds allocated by share repurchase and the key variables and control variables are significant. Also, the marginal effects of SCH and SIC in both censored and uncensored regions, called cash transferred to shareholders, are 0.25 and 0.22 simultaneously when the actual amount of cash is considered. The results indicate that companies allocate 0.25% and 0.22% by share repurchase correspondingly, with a % rise in SCH and SIC. Besides, companies distribute 0.08% and 0.26% by share repurchase, respectively, for a percent reduction in leverage and MB ratio. Model 2 tells that, in addition, for a percent decrease in the log of market capitalization, 0.02 pounds is distributed through stock repurchases.

In Table 5, in Tobit regression, the dependent variable is the total repurchase value for the fiscal year t, which has been scaled by market capitalization. Table 2 explains the explanatory variables. For every covariate, three values are reported: the first is the estimation of the coefficient, the second is the value of the probability of the two-tailed, and the third is the value of the marginal effect (except for constant. For Tobit regressions, marginal effects are equivalent to $\beta.\Phi\left(\frac{\beta' X_i}{\sigma}\right)$ where β is the coefficient estimate of X, Φ is the standard normal distribution's cumulative density function where σ is the standard deviation of repurchases divided by market capitalization. The marginal effects of Tobit are measured using Xs. This is the marginal effect of both censored and uncensored areas on the actual amount of cash returned to shareholders. For the latent tendency to repurchase stock, the marginal effect is also equivalent to β. The models are described in Table 2.

4.4. Further Analysis

A further evaluation to determine the robustness of the results is highlighted in this part. First, we divided the sample into market-to-book ratios based on the median values of MB that are low (<1.4379) and high (>1.4379). In Table 6, the results have been shown are very interesting. Both low MB ratios are more prone to buy back stock. This result indicates that, through equity repurchases, businesses with higher MB ratios also distribute capital to shareholders. However, this finding needs to provide more information. It is rational to conclude that smaller companies are more likely to repurchase shares than larger companies. However, in Table 6, larger companies with high MB ratios repurchase shares. Previous research indicates no connection between share repurchase and dividend pay-out, and companies repurchasing shares appear to have lower leverage. Table 6 shows that businesses repurchase their shares and appear to pay less dividends, whereas less dividend-paying companies are more likely to repurchase shares. The analysis also suggests that companies with high leverage tend to repurchase shares consistent with earlier studies (Ma et al. 2024; Segara and Yang 2022; Jena et al. 2017).

Table 6. Model Summary Statistics and Marginal Effects from Tobit Regressions Explaining.

Repurchase Value (Sample Sorted by Companies with Low and High Market-to-Book Ratios)			
	Predicted Sign	**MB_{Low}**	**MB_{High}**
Constant	(−)	−0.4748	−0.3538
		(0.1339)	(0.0021)
SCH	(+)	0.148	0.0166
		(0.0333)	(0.0403)
		0.0169	*0.0000*
SOC	(−)	−0.0568	−0.0219
		(0.3863)	(0.0409)
		−0.0065	*0.0000*
SIC	(±)	0.1534	−0.0358
		(0.0597)	(0.0309)
		0.0175	*0.0000*
MC	(±)	−0.0321	0.0275
		(17.38)	(0.001)
		−0.0037	*0.0000*
AR	(±)	0.0243	−0.096
		(0.7241)	(0.9739)
		0.0028	*0.0000*
DP	(±)	0.0042	−0.048
		(0.8108)	(0.0769)
		0.0005	*0.0000*
Net Lev	(±)	−0.0447	0.0295
		(0.2344)	(0.0049)
		−0.0051	*0.0000*

Notes: The dependent variable in the Tobit regression is the aggregate value of share repurchase in fiscal year t scaled by market capitalization. Explanatory variables are as defined in Table 1. Three values are reported for each covariate: the first value is the coefficient estimate, the second (parenthesized) value is the two-tailed probability value, and the third (*italicised*) value is the marginal effect (except for constant). Marginal effects are as defined in Table 4. The full sample is partitioned into low (MTBLOW) and high (MTBHIGH) market-to-book subsamples.

5. Conclusions

Share repurchases have been popular worldwide, likely driven by surplus cash, undervaluation, and leverage. Companies transfer funds through cash, share repurchases, or a combination. Share repurchases have surpassed dividend payments and become the fundamental way companies distribute cash to their shareholders. Share repurchase allows the company to allocate its shareholders excess capital on the balance sheet. When companies have surplus cash, they offer it to their shareholders in the form of stock buybacks. Firms have been substituting dividend distributions for share repurchases because share repurchases can be used to distribute temporarily increased cash flows. In contrast, dividends commit the firm to consistently pay out cash flows in the future. Nevertheless, share repurchase has fewer drawbacks than dividends. Therefore, it is considered the key way of distributing cash to shareholders. Besides, share repurchases alleviate overinvestment concerns by allocating surplus cash during periods of restricted investment options. Further, the study reveals that companies repurchase stocks to distribute excess capital, take advantage of the undervaluation of stocks, and alter their leverage ratio. However, dividends do not replace repurchases.

Companies repurchase stock to gain from undervalued shares and allocate surplus cash. Shares can be repurchased when the company's management believes the stock is undervalued in the Market. It repurchases shares to be sold before the share market price reflects their actual value. The lower market-to-book ratios imply that they are more likely to be undervalued. As a result, undervaluation or a depressed stock price can also encourage these repurchases. Hence, undervaluation can motivate repurchases. Moreover, the company can change its capital structure through a higher volume of repurchasing shares. The share repurchase decreases the book value per share and increases the debt-to-equity ratio. Factors of capital structure are more critical for companies when repurchasing shares

instead of raising capital. Companies often buy back shares during such periods as the option to offset dilution from stock options, prevent takeovers, and change their leverage ratio. Moreover, companies frequently observe the actions of their industry counterparts or rivals when deciding to engage in share repurchases, particularly when those counterparts have seen favorable market responses after similar endeavors (Mugerman et al. 2014). The impact of peer influence is more pronounced in competitive markets and better information environments, suggesting that firms are more likely to replicate the actions of peers when they perceive a competitive threat. Therefore, the actions of peers act as an influential benchmark, compelling firms to take similar steps to maintain their competitiveness or to project unwavering confidence in their stock. This peer-influenced behavior can initiate a chain reaction, where companies replicate each other's strategies, thereby influencing the overall market dynamics seen in share repurchase patterns. Peer effects are also notably significant in firms' share repurchase decisions, especially among larger and more mature companies. Hence, this study examines the motives that drive companies to repurchase their stock and concludes that the most significant drivers of share purchase include surplus cash, undervaluation, and leverage.

6. Implications

The research findings have plausible implications for future restructuring and corporate governance practices. In addition to monitoring companies' future value, share repurchases help markets to discover companies' fundamental value. This study also provides valuable insights to managers regarding the assumptions of the share repurchase model and corporate pay-out decisions. Moreover, the findings also guide academicians in future research.

Further, the study findings can be helpful for equity mutual fund managers, portfolio management advisors, company managers, and individual investors to increase their profits by identifying undervalued companies whose share is repurchased. The motivation for share repurchases changes over time, and company management makes decisions based on circumstances. Share-repurchasing companies with low market-to-book ratios, high excess operating cash flow, and negative stock returns can be good buys, as share buybacks bridge the divide between surplus capital and dividends, allowing companies to provide greater returns to shareholders without committing to a fixed pattern.

Potential directions for future research may encompass a comprehensive analysis of other accounting performance measurements employed to facilitate share buybacks, tax efficiency strategies, agency theory, and managerial compensation schemes with time and fixed effect models. Investigating the consequences of share repurchases and their correlation with the utilization of exercised or exercisable stock options in the context of executive remuneration is also a promising area for investigation. Employing agency theory as a conceptual framework presents an avenue for further exploration in this domain. Further, it would indeed be interesting to analyze the effect of insider ownership on repurchase activity since increased insider ownership can enhance the credibility of repurchase as a signal of undervaluation, suggesting that managers with higher ownership stakes have stronger incentives to time the market. Additionally, it would be valuable to explore how a firm's institutional ownership base influences a manager's timing ability, as institutional investors could potentially affect market conditions and management's repurchase decisions. These factors could reveal deeper insights into managerial behavior and market timing strategies.

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