Does the daily reporting of share buybacks matter?

Dimitris Andriosopoulos

January 8, 2025

Abstract

Using a comprehensive sample of open market share buybacks that are disclosed almost immediately following these trades, we find that buyback disclosures increase stock returns by 5-25 basis points. This price increase is economically significant, translating to 86.5%-95.5% excess stock returns per annum. Creating portfolios based on daily buyback disclosures yields annualized alphas of 7%-50%. Daily buyback disclosures also improve liquidity, e.g., reducing bid-ask spreads by 20-40 basis points. The effect of buyback disclosures on the market lasts only a few days and it is the disclosure itself that matters most for investors and to a lesser extent the price paid for these buybacks, but not the size of buybacks. Overall, the daily and timely reporting of share buybacks matters.

JEL classifications: G12, G14, G32, G35

Keywords: Share buybacks, disclosure, liquidity, stock returns, buyback skill, buyback intensity, dividends

Andriosopoulos is at the University of Strathclyde (d.andriosopoulos@strath.ac.uk). I thank Amedeo De Cesari, Abhinav Goyal, Patrick McColgan, Danny McGowan, Quoc Tuan Ho, Kyung Yoon Kwon, Sheng Li, Andrew Marshall, Roni Michaely, Guillem Ordonez-Calafi, Neslihan Ozkan, Rex Wang Renjie, Silvina Rubio and seminar participants at the 21st Corporate Finance Days, 2024 FMA annual meeting, University of Birmingham, University of Bristol, and the University of Strathclyde. I am grateful for research assistance with the collection of share buyback transaction data to Martin Kemmitt and Donald Campbell. All remaining errors are my own.

I. Introduction

We investigate the effect of daily disclosed share buybacks on financial markets and find that share buybacks in the UK trigger a positive market reaction ranging between 0.05% and 0.25% per day. With thousands of daily share buyback trades, this is economically significant. For instance, daily disclosed share buybacks that occur at least three days apart, generate an average excess return of 86.5% per annum. The results are robust to controlling for firm characteristics, past performance and volatility, day of trading, and placebo tests. Daily buyback disclosures can also be used as trading signals yielding profitable strategies with annualized excess returns of 7% to 50%. Therefore, the timely and frequent disclosure of share buybacks matters for investors.

Share buybacks are an important payout mechanism for corporations. The world's largest 1,200 listed companies repurchased a record $1.3tn in 2022.[1] But should one care how frequently share buybacks are disclosed? This is still debated, as we have limited evidence on the market effects of open market share buyback trades. For instance, in May 2023 the SEC amended its disclosure rules requiring repurchasing firms to disclose every fiscal quarter a daily breakdown of their share buyback activity - since March 15, 2004, share buyback activity is reported every quarter on a monthly aggregated basis. The SEC's reasoning for this change in disclosure is that share buyback trades contain material information the market should be aware of. However, two of the five SEC commissioners dissented the new disclosure regime and soon after the new disclosure rule was vacated by the Federal Court in December 19, 2023.[2]

[1] https://on.ft.com/3Olmr2i .

[2] https://www.sec.gov/news/statement/roisman-buybacks-20211215; https://www.sec.gov/news/statement/peirce-buyback-20211215; and https://www.sec.gov/rules-regulations/2024/03/s7-21-21.

Hence, we contribute to the literature and policymaking by investigating whether the timely disclosure of share buybacks matters for market participants.

Peress (2014a) provides a theoretical model where private information is partially revealed through prices, and when investors receive positive signals they buy shares which bids prices up. Share buyback transactions may contain value-relevant information. For instance, Brav, Graham, Harvey and Michaely (2005) show that 85.4% of surveyed managers consider that share buybacks convey information about their company. Also, the timing of share buybacks can result in transferring wealth from uninformed to informed investors (Ben-Rephael, Oded and Wohl, 2014). Similarly, Kumar, Langberg, Oded and Sivaramakrishnan (2017) argue that informed executives may use share buybacks to exploit their firms' mispricing at the expense of less informed investors. Hence, it is plausible that disclosing a share buyback and the price of the buyback execution can provide value-relevant information that triggers a market reaction. Bargeron and Farrell (2021) find for their sample of 19 firms with dual class shares, that during the month when share repurchases occur there is a small price increase of 40 to 70 basis points. This finding suggests that buybacks can convey value-relevant information.

The existing evidence on share buybacks and their price effect is based on monthly aggregated buyback data disclosed every quarter (e.g., Hillert, Maug and Obernberger, 2016). This means that the market can only learn that a firm has repurchased shares months after the shares have been repurchased. Even with the monthly data the market does not have information about the exact timings of and prices paid for the repurchased shares. This prevents us from assessing whether this information is value-relevant and how quickly it is reflected in share prices, if at all.

We focus on daily and timely disclosed share buybacks because daily and value-relevant firm specific news affect share prices (Boudoukh, Feldman, Kogan and Richardson, 2019). Timely news disclosures enhance the informativeness of stock prices (Jeon, McCurdy and

Zhao, 2022) and more informative news increase the stock price response to contemporaneous news (Glasserman, Li, and Mamaysky, 2023). Moreover, Bowles, Reed, Ringgenberg and Thornock (2024) find that releases of company-related information lead to abnormal returns and high trading volume, both of which last only for about a week after the information is released. The latency of buyback disclosure becomes even more important since, the amount of private information available to traders varies over time (Easley and O'Hara, 1987) and stock prices fluctuate on average by 5.6% per month (Dimson, Marsh and Staunton, 2021).

Firms listed in the London Stock Exchange need to publicly disclose the number of repurchased shares, the value-weighted average price paid, and the date of the share buyback trade, no later than 7.30am of the next business day following the buyback trade. Therefore, the UK market offers a near immediate feedback to investors compared to other major exchanges where buybacks are disclosed quarterly or monthly (e.g., US, Canada and Europe). Also, similar to Koski and Michaely (2000) this setting gives us the advantage of assessing the daily transaction-level response of prices and stock liquidity to a single daily buyback trade during different time periods and across firms.

Prima facie, the univariate results for all buybacks suggest that these disclosures trigger a small and negative market reaction, between -2 and -5 basis points. However, by looking at all share buyback disclosures can give distorted evidence due to the fact that many buybacks tend to occur in consecutive days. A market correction following some of these clustered trades can result in a negative market valuation of share buybacks. To resolve this potential clustering effect, we isolate share buybacks that are cluster-free over alternative time windows. For instance, a 3-day cluster-free buyback, is a buyback trade that is at least three business days apart from another buyback by the same firm. The unconditional average market reaction to 3-day cluster-free buybacks is approximately 10 basis points. Moreover, longer cluster-free windows yield a larger price reaction to buybacks. When controlling for firm- and business day

fixed effects along with past market size and performance, we find that 3-day and 20-day cluster-free buybacks increase stock returns by 17 and 25 basis points, respectively. These findings translate to average excess returns of 86.5% and 95.5% per annum, respectively. Buyback disclosures can also be used as a trading strategy. The results are economically significant even when considering trading costs since, the median (average) trading costs in the UK are 0.05% (0.09%) (Frazzini et al., 2018). Building calendar portfolios based on all (clustered) buyback disclosures or cluster-free disclosures, yields annualized alphas ranging between 7% and 50%. Hence, the daily and timely disclosure of share buybacks contains value-relevant information.

Share prices can reveal private information (Peress, 2014a). Therefore, the disclosed price paid for the buyback trade can drive share prices (*price impact*). If managers show skill in repurchasing shares, buybacks will be executed at a "discount" relative to a benchmark, e.g., the closing or median stock price. Instead, if firms repurchase shares to support their stock price one would expect firms to repurchase shares at a "premium" relative to a benchmark. We find that buybacks occur at an average daily discount of approximately 0.80%, consistent with the survey of Brav, Graham, Harvey and Michaely (2005) showing that managers believe they can time their share buyback trades. Also, the price paid for buybacks is information that the market considers. Share buybacks executed at a price lower than the closing, mid, or high price of the day of the buyback lead to a lower stock price increase. This finding suggests that disclosing the price paid for buybacks in a timely manner can mitigate the wealth transfer from uninformed investors to the firm (Ben-Rephael et al., 2014).

The number of repurchased shares is also revealed to the market when buybacks are disclosed. This may be value-relevant information that can affect the stock price reaction to the buyback disclosure (*size impact*). Easley and O'Hara (1987) show that the quantity of traded shares is important as it carries private information about the share's true value. Bond and

Zhong (2016) provide a theoretical model that predicts a positive relationship between the size of the buyback and the market's price response. However, we find no clear evidence that the size of share buybacks affects the stock price reaction.

Buybacks may increase stock liquidity because firms are more likely to act as informed investors and provide liquidity when they repurchase shares (Hillert et al., 2016). Alternatively, share buybacks can increase the adverse selection costs for market makers and liquidity providers who will mitigate these costs by increasing the bid-ask spread (Barclay and Smith, 1988). Also, daily disclosures of share buybacks can lead to greater noise in the market crowding out price relevant information (Bird, Karolyi, Ruchti and Truong, 2021). Hence, buybacks may reduce stock liquidity.

We assess how the disclosure of share buyback transaction affects market liquidity across three dimensions: transaction costs (bid-ask spread), trading quantity (abnormal volume), and price impact (Amihud's (2002) illiquidity). We find that share buybacks enhance market liquidity across all three dimensions. For instance, share buybacks lead to an increase in abnormal volume of approximately 8% and the effect of buybacks that occur further apart is significantly larger. For instance, 3-day cluster-free buybacks increase abnormal volume by more than 23%. With regards to transaction costs, 3-day cluster-free buybacks decrease bid-ask spread by 0.2% and 0.4% on the day the buyback is disclosed. Moreover, share buybacks have a price impact as they reduce illiquidity by approximately 7%.

The effect of buybacks on stock liquidity and market quality may be immediate or it may take longer to manifest. Liquidity providers are compensated by prices that deviate from their informational efficient levels due to the excess demand (price pressure hypothesis) but this only lasts for a few days (Scholes, 1972). We find that liquidity returns to its previous levels within two to three days depending on the liquidity dimension. This finding is consistent with the theoretical model of Glosten and Milgrom (1985) on adverse selection and liquidity,

predicting a convergence over time in the value expectations between market makers and insiders. In our case the repurchasing firm. Our findings on the quick and short-lived effect highlight the importance of a timely buyback disclosure.

Since the near immediate disclosure of buybacks carries value-relevant but transient information, we test whether disclosing the buyback price and volume is also important to the market. We find that it is primarily the disclosure of the buyback trade that affects liquidity and not the price or size of the buyback trades. This finding is also policy relevant: firms should be disclosing they have repurchased shares almost immediately, but without disclosing immediately the price or size of the buyback trade.

Share buybacks and dividend increases have similar motivating factors (Grullon and Michaely, 2004). Hence, we contextualize our findings by comparing the disclosure of share buyback transactions to dividend announcements. We find that 20-day cluster-free buybacks increase excess returns by approximately 0.28% compared to an increase of 0.48% that dividend announcements cause. Although buybacks have almost half the market valuation effect of dividend announcements, they contain value-relevant information as suggested by the price jump.

Considering there is an increase in trading volume around the dividend announcement and ex-dividend dates (Michaely and Vila, 1995; Michaely and Vila, 1996; Koski and Scruggs, 1998), we also compare the effect of share buybacks on liquidity vis-à-vis dividend announcements and ex-dividend days. We find that 3-day cluster-free buybacks have almost the same effect on stock liquidity as the ex-dividend date (approximately 3% increase) and almost half that of a dividend announcement. These findings, further support the argument that share buybacks provide value-relevant information that is economically meaningful and comparable to that of dividends, as suggested by the increase in stock returns and stock liquidity.

Our contribution is threefold. First, we use the most comprehensive and detailed hand-collected dataset on daily disclosed share buybacks with full information on the date of disclosure, transaction, price, and number of repurchased shares. Second, we identify whether the price effect is value relevant and find that the timely disclosure is important. Third, we show that buybacks have a significant effect on market quality and stock liquidity that is comparable to dividends.

This paper contributes to the literature of the value relevance of news (Peress, 2014b) and how their timely disclosure affects share prices (e.g., Boudoukh, et al., 2019; Jeon, et al., 2022). We also add to Bargeron and Farrell (2021) and the potential price impact of share buybacks by looking into a more granular level of buyback disclosures. This paper also adds to Chung et al. (2007) who find that buybacks increase liquidity using the unique share buyback system of Swiss companies where a secondary trading platform is temporarily established in which the company is the only buyer and its identity is known to potential sellers, who due to the Swiss tax system are primarily domestic corporate investors, and prices on the secondary line can differ from the ordinary trading line.

This paper also addresses the question whether managers can extract wealth from uninformed investors via share buybacks (Brav et al., 2005; Hong et al., 2008; Ben-Rephael et al., 2014; Kumar et al., 2017). Our findings also contribute to the liquidity literature (Sadka and Scherbina, 2007; Brogaard et al., 2017) and whether share buybacks affect stock liquidity (e.g., Hillert et al., 2016). Finally, our paper can have policy implications based on the findings that share buybacks convey value-relevant information that increase stock prices and market liquidity. Hence, share buybacks should be disclosed daily and timely.

II. Data

All firms listed in the London Stock Exchange must publicly disclose all share buyback transactions via the Regulatory News Service (RNS), no later than 7.30 am of the next business

day following the day during which the share buyback occurred. RNS publishes all announcements from 0:00 (midnight) to 18:31. Each announcement is dated and has a time stamp. With each disclosure, repurchasing firms need to report the date of the share repurchase, the number of shares bought, and the value weighted average price paid for the repurchased shares. The format of the announcement is unstructured and varies over time. Therefore, to ensure the accuracy of our sample, all share buyback disclosures are hand-collected from RNS.

The sample of listed companies includes all UK-registered firms that have their primary listing at the London Stock Exchange during Jan 1, 1999 to Sep 1, 2022, and excludes investment offices and trusts (SIC codes 6730-6790) and announcements concerning the repurchase of B-shares or preference shares. Global Depositary Receipts (GDRs) and cross-country listings are also excluded from the sample. We also exclude announcements regarding transfers of shares from Treasury to employee benefit trusts and share purchased on behalf of employee benefit trusts. This is also a crucial benefit of the hand collected data, as this process ensures that share transfers which can carry a headline referring to share buybacks, are not classified as such.

The firms included in the sample are required to have their share prices listed on LSEG (formerly Refinitiv) and their accounting data available on Worldscope. In total we have approximately 22.7 million daily observations from 4,520 unique firms. Initially, we identify 80,970 open market share buyback transactions. Due to missing stock return data the final sample of share buyback disclosures is 79,525 from 724 unique firms that repurchased shares in the open market and 3,796 unique firms that never repurchased shares during our timeframe.

A. Market reaction and clustered trades

Because share buybacks can be executed over consecutive days, we estimate the market reaction to the announcement of share buybacks we use the market adjusted model where FTSE All-Share index is used as the market portfolio. In the event of successive share buybacks, the

market reaction of an earlier trade may contaminate the market reaction of later events. Therefore, we identify buybacks that are not clustered (cluster-free) over alternative time windows of 3, 5, and 20 days. For instance, 3-day cluster-free buybacks are buybacks executed by firm *i* and are at least three trading days apart from each other. As expected, the longer we extend the cluster-free horizon the smaller the sample of share buybacks becomes.

B. Summary statistics

Table I reports the distribution of share buyback disclosures by year, month, and day. Also reported are the total number and market value of repurchased shares. We see that share buybacks where not commonly used in the early 2000s, followed but a significant increase from 2004 onwards. A possible explanation for the increase in buyback activity from 2004 onwards is the fact that in 2003 there was a change in regulation according to which repurchased shares could be held in treasury. Before this regulatory change, all repurchased shares were required to be cancelled. Also, during 2006 and 2007 the value of repurchases jumped by more than five and eight times, respectively, relative to 2005. From 2010 onwards, share buyback activity returned to its previous levels and remained relatively stable with moderate seasonal fluctuations. Regarding the monthly distribution, March and August display the most buyback activity, albeit, there is only a small variation across months. Finally, there is no identifiable pattern in buybacks across different days, suggesting there is no particular day of the week effect in share buyback activity.

[Insert Table I here]

Table II reports the stock performance surrounding the disclosure of share buybacks. The summary statistics show that share buybacks are preceded by a declining stock price. When considering all buyback trade disclosures, the market reaction is slightly negative (approximately -2 basis points). However, share buybacks can occur over consecutive days, in which case the market reaction of an earlier trade may contaminate the market reaction of later

events. The summary statistics on disclosures that are not clustered show that the market has a positive reaction. For instance, on the day of the buyback disclosure for those trades that are at least 3 days apart (3-day cluster-free buybacks) the price increases by 9.9 basis points. When extending the cluster-free window to 5- and 20-days, the market increase on the day of the buyback disclosures is approximately 24 and 20 basis points, respectively. Finally, the positive price increase is short lived as suggested by the negative post-disclosure windows regardless of the disclosures being clustered or cluster-free. Figure 1 provides a graphical illustration of the stock price performance during the 100 days surrounding the share buyback disclosures for the entire sample and the 3-, 5-, and 20-day cluster-free disclosure. The graphs show a clear jump in stock returns on the day share buybacks are disclosed which reverts a few days following the disclosure.

[Insert Figure 1 and Table II here]

Table III provides the annual breakdown of the market reaction to buyback disclosures for different time windows relative to the buyback disclosures. Overall, the stock performance varies across years when considering all buyback disclosures (Panel A). Panel B shows that for the 3-day cluster-free sample there is a positive stock price performance when a buyback is disclosed in almost every year.

[Insert Table IIITable III here]

Because the buyback trade can be disclosed any time from the time the trade occurred until the market opens the next trading day, we classify buyback disclosures by the time day. Table IV provides the abnormal returns of the day the buyback was disclosed across four different timeframes: the same day the buyback occurred and while the market is still open; the same day the buyback occurred and disclosed within 30 minutes before the market closed; after the market has closed; and the morning before the market opens after the buyback trade. Buybacks disclosed while the market is still open have a marginal negative performance for all trades,

but turns positive for cluster-free trades ranging between 4.84 and 29.3 basis points. However, the overwhelming majority of buybacks are disclosed after the market has closed. Buybacks disclosed in the morning of the following trading day lead to a positive market reaction of 1.8 basis points for all trades and approximately 23.5 basis points for cluster-free trades. Moreover, the fact there is a price increase on the buyback disclosure but after the buyback trade has occurred, suggests that share buybacks can provide value-relevant information to which the market reacts and any price movement is not driven by the buyback trades themselves.

[Insert Table IV here]

III. Empirical findings

A. The value-relevant information of share buybacks

To conduct formal tests on the informational content of share buyback disclosures on stock returns we estimate the following multivariate regression model:

$$\text{Return}_{i,t} = \beta 1 * \text{Buyback disclosure}_{i,t} + \beta 2 * \text{Buyback disclosure}_{i,t} * \text{N-day Cluster-free buyback}_{i,t} + X * \text{Controls}_{i,t-20} + \varphi + \theta + e_{i,t} \quad (1)$$

Where $Return_{i,t}$ is the abnormal return for firm *i* on day *t*, estimated as the market adjusted returns where FTSE All-Share index serves as the market portfolio. *Buyback disclosure* is a binary variable that takes the value of one on day *t* when firm *i* discloses a buyback trade. *N-day Cluster-free buyback* is a binary variable equal to one for those buybacks that are at least n-days apart, and equal to zero for all other buybacks. *Controls* is a vector of firm-specific controls that includes the natural logarithm of firm market capitalization *(Market Cap.)* because larger stocks can have larger signal-to-noise ratios (Jahan-Pavar and Zikes, 2023), the natural logarithm of trading volume *(Ln(Volume))* since trading volume can amplify mispricing (Han, Huang, Huang, and Zhou, 2022), share turnover *(Turnover)* similar to Kacperczyk and Pagnotta (2019), and the inverse of the share price *(Inverse price)* to control for trading costs as in Loughran and Schultz (2005). *Controls* are lagged twenty days (*t-20*). Also, we include a

binary variable *(AIM)* to control for those firms listed in the smaller and less liquid AIM market of the London Stock Exchange. φ and θ denote firm and calendar day fixed effects. To avoid effects from extreme outliers, we winsorize all continuous variables at 1%. We cluster our standard errors at the firm and calendar day level to account for cross-sectional and intertemporal correlation in residuals.[3]

Table V reports the regression estimates.[4] The results are consistent with the univariate results reported earlier. When a share buyback is disclosed there is an average stock return decrease of 3 to 4 basis points. However, this underperformance is driven by the fact of many buybacks being clustered over consecutive days. When isolating those buybacks that occur at least three days apart (3-day cluster dree buybacks) there is a net positive market reaction between 17 and 19 basis points. This suggests an excess return of 86.5% per annum (=(0.17% x 11,710 events)/23 years). Moreover, the further apart share buybacks are disclosed the larger the market reaction. For instance, the market reaction for the 20-day cluster-free buybacks is approximately 25 basis points, suggesting an average excess return of 95.5% per annum (=(0.25% x 8,787 events)/23 years). In untabulated results, we repeat the analysis including a control for same day disclosure and the results are similar (and the interaction between same day and cluster-free is not statistically significant).

[Insert Table V here]

Overall, the regression estimates suggest that the disclosure of share buybacks provides value-relevant information to the market, as shown by the market reaction. Moreover, this price

[3] The regression outcomes, standard errors and residuals, are very similar (circa 5% difference in the estimated residuals) when we cluster our standard errors only at the firm level.

[4] We run our regressions with and alternatively without volume and turnover as controls, due to the sample dropping significantly due to data unavailability from Worldscope. Our results are consistent regardless of the specification.

reaction is not driven by the buyback trade itself pushing prices up, as suggested by the results that show no difference in the price performance between buybacks reported on the same day while the market is open and buybacks reported after the market has closed.

B. The impact of buybacks disclosure on stock liquidity

Stock liquidity and transaction costs are important inputs in many financial decisions (Jahan-Parvar and Zikes, 2023) and the timeliness of news disclosure increases stock trading and volatility (Peress, 2014b). Moreover, liquidity matters for investors at the time they transact (Lang and Maffett, 2011) and the informational efficiency of share prices (Sadka and Scherbina, 2007; Brogaard, Li and Xia, 2017; Kerr, Sadka, and Sadka, 2020).

Cook et al. (2004) argue that share buybacks can potentially enhance liquidity in two ways. First, share buyback execution can have a price impact via the order flow channel, hence, increasing liquidity. Second, a firm can provide the demand side on its own shares (Hong, Wang and Yu, 2008) and place a buy limit order. The exposed limit order can reduce the quoted spread by market makers and even the knowledge by market makers that the company is buying, even without a limit order, can incentivize market makers to provide more quoted depth at the current bid. Hence, a repurchasing firm can act as a competing market maker leading to an increase in liquidity (Barclay and Smith, 1988). Moreover, because firms are more likely to act as informed investors they can provide liquidity when they repurchase shares (Chung et al., 2007; Hillert et al., 2016). And by disclosing share buybacks more frequently, liquidity can increase also via the disclosure channel: more disclosure reduces information asymmetries and increases market liquidity (Diamond and Verrecchia, 1991).

In contrast, daily disclosures of buybacks may have an adverse effect on market liquidity for two main reasons. First, the acquisition of price relevant external information from the markets that is not already known to the managers can be inhibited by disclosures of internal information (Bird, Karolyi, Ruchti and Truong, 2021). Therefore, a daily disclosure of buyback

trade can lead to greater noise in the market crowding out price relevant information and reducing stock liquidity. Also, disclosure requires processing costs which can impede users' ability to process information (Grossman and Stiglitz, 1980; Verrecchia, 1982). In turn, greater information complexity reduces trading (Miller, 2010) and delays the assimilation of information into prices (Cohen and Lou, 2012). Second, firms repurchasing shares are informed investors trading in their own stock (Skinner, 2008) and market makers are more considered with trading against informed than uninformed or noise traders (Peress and Schmidt, 2020). In turn, this can increase the adverse selection costs for market makers and liquidity providers who will mitigate these costs by increasing the bid-ask spread (Barclay and Smith, 1988). Therefore, the daily and timely disclosure of buybacks may reduce stock liquidity.

To test the effect of share buybacks on liquidity we use an array of alternative liquidity proxies. First, we use *abnormal volume* and following Barber and Odean (2008) we measure it as trading volume for firm *i* on day *t*, adjusted by the average trading volume over the previous 250 trading days. Second, we use the bid-ask spread for firm *i* on day *t* measured as the ask minus the bid price divided by the average ask and bid price. Although the bid-ask spread is a low frequency measure of liquidity and trading costs Jahan-Pavar and Zikes (2023) show that the bid-ask spread performs the best across a number of other low frequency measures and that is not affected by volatility bias. Third, following the Kerr et al. (2020) we use the natural logarithm of classic illiquidity measure of Amihud (2002). Using the natural logarithm of Amihud's (2002) illiquidity makes the interpretation of the results easier and more intuitive, while addressing data distribution issues (Kerr et al., 2020). Amihud's (2002) illiquidity is the absolute stock return of firm *i* on day *t* adjusted by the sterling trading volume. Although, we do not have access to intra-day data, Amihud's measure is highly correlated with intra-day measures of liquidity (Goyenko et al., 2009; Hasbrouck, 2009). Fourth, we use the sterling

(GBP) value equivalent estimated as trading volume firm *i* on day *t* multiplied by the closing price on day *t*.

Table VI provides the summary statistics on these four liquidity proxies. The number of observations is almost a third of the original sample due to limited data availability from Worldscope. Across all four liquidity measures we find that stock liquidity jumps on the day of the buyback disclosure. For instance, the average daily bid-ask spread across all firms is approximately 7.5% which drops to 0.6%, for all buybacks (clustered trades), and 2.2%, for the 3-day cluster-free buybacks. Similarly, the average trading volume in GBP increases by almost tenfold when buybacks are disclosed. Figures 2 to 4 provide a graphical illustration of the four liquidity proxies during the 100 days surrounding the share buyback disclosure for the entire sample and the 3-, 5-, and 20-day cluster-free disclosure.

[Insert Table VI and Figures 2 to 4 here]

Next, we address the question of whether the disclosure of share buyback trades affects stock liquidity with the following multivariate regression model:

$$\text{Liquidity}_{i,t} = \beta 1 * \text{Buyback disclosure}_{i,t} + \beta 2 * \text{Buyback disclosure}_{i,t} * \text{N-day} \quad (2)$$
$$\text{Cluster-free buyback}_{i,t} + \text{X} * \text{Controls}_{i,-20} + \varphi + \theta + e_{i,t}$$

where liquidity is each of the four alternative measures of liquidity. *Buyback disclosure* is a binary variable that takes the value of one on day *t* when firm *i* discloses a buyback trade. *N-day Cluster-free buyback* is a binary variable equal to one for those buybacks that are at least n-days apart, and equal to zero for all other buybacks. Also, we use the same firm-specific controls as in equation (1). The regression estimates reported in Table VII show that disclosing share buybacks increases market liquidity. For instance, Panel A show that abnormal volume increases by approximately 20% when buybacks that occur at least three days apart are disclosed. This suggests that buybacks contain value-relevant information that increases trading activity in the shares of the repurchasing firm. Buybacks also reduce trading costs as

shown in Panel B. The results on the cluster-free buybacks show that buyback disclosures reduce the bid-ask spread by 20-60 basis points. Similarly, market liquidity captured by Amihud's (2002) illiquidity and GBP trading volume in Panels C and D, respectively, increase on the day when buybacks are disclosed. These findings are consistent with Hillert et al. (2016) who find that stock liquidity increases during the months when firms repurchase shares.

[Insert Table VII here]

C. Does the market incorporate firms' buyback skill?

Ben-Rephael et al. (2014) and Kumar et al. (2017) argue that share buybacks can transfer wealth to the firm from less informed investors. This argument is supported by surveys (Graham and Harvey, 2001; Graham, 2022) showing that CFOs believe that for two thirds of surveyed firms their stock is undervalued and that they can time the market when repurchasing shares. A strand of the literature (e.g., Chan et al., 2007; Ben-Rephael et al., 2014; De Cesari et al., 2012; Dittmar and Field, 2015) suggests that firms can time their share buybacks, although, Bonaimé, Hankins and Harford (2014) find that this is only for the short-run. In contrast, another strand of the literature does not find evidence of market timing (e.g., Butler et al., 2005; Dittmar and Dittmar, 2008; Ginglinger and Hamon, 2007; Liu and Swanson, 2016).

Assuming, financial markets are close to being informationally efficient, there would be limited opportunity for firms to time their share buybacks (Graham, 2022). Especially, in the UK environment where share buybacks are disclosed daily. Our findings so far suggest that the disclosure of share buybacks trades has price relevant information that the market reacts to. But besides the disclosure that a share buyback occurred, the average price paid for the buyback trade is also revealed. Therefore, we can assess whether firms repurchase shares at a premium or a discount. If firms demonstrate skill in repurchasing shares then we would expect to see buyback being executed at a "discount" relative to the market. Instead, if firms repurchase shares to support their stock price we would expect firms to repurchase shares at a "premium".

We identify repurchasing skill as the percentage of the price paid for the share buyback trade by firm *i* on day *t* relative to a benchmark price (e.g. closing price on day t). We use seven alternative benchmark prices: closing price of day t; mid-price of day t; high price of day t; 5-day average closing price over the days t-5 to t-1; 10-day average closing price over the days t-10 to t-1; 20-day average closing price over the days t-20 to t-1; 50-day average closing price over the days t-50 to t-1; and 100-day average closing price over the days t-100 to t-1. Then we multiply *skill* with -1 for easier interpretation, i.e., a deeper buyback discount results in a larger positive number whereas a higher buyback premium will yield a larger negative value. Figure 5 provides the annual distribution of the five alternative measures of buyback skill for the entire sample (clustered) and the 3-day cluster-free sample. The figure shows that share buybacks mostly occur at a discount.

Similar to Figure 5, the descriptive statistics on firms' buyback skill in Table VIII show that buybacks occur at a discount regardless of the benchmark used. For instance, the average buyback occurs at a discount a 0.81% relative to the closing price of that same day. This finding is also consistent with the argument of Hong et al. (2008) that firms repurchase shares opportunistically when share prices fall, akin to speculators. The buyback discount increases when buybacks occur further apart. For instance, the buyback discount relative to the same day closing price is approximately 1.10% for the 3-day, 5-day and 20-day cluster-free buybacks. This is also comparable to Dittmar and Field (2015) who find in the US that share buybacks are executed at a price that is 0.76% lower than the average monthly closing price.

[Insert Table VIII here]

Panel B reports the buyback skill for those trades disclosed on the same day while the market is still open. Buybacks that are disclosed while the market is still open are executed at a deeper discount (larger skill) compared to all buybacks. However, buybacks reported the next day before the market opens (Panel C) are executed at a discount similar to that for all

buybacks. Overall, the summary statistics on buyback skill corroborate the findings from the survey of Graham (2022) where CFOs believe they can time the market with their buyback trades.

On average, firms repurchase shares at a discount displaying market timing ability. But is this information captured by the market and does it affect market liquidity? We answer this question by regressing buyback *skill* against on stock return and stock liquidity. Table IX provides the regression estimates for the impact of *skill* on the market reaction to the buyback disclosure and we also control whether the buyback was disclosed while the market was still open. The results for most buyback skill measures suggest that a deeper discount reduces the market reaction to the disclosure of buyback trades.

If the price paid for share buybacks (buyback skill) carries any information, a deeper discount should lead to more trading activity. In Table IX we also assess the impact of buyback skill on stock liquidity. We do not find clear evidence to suggest that buyback skill affects trading activity captured by abnormal volume (Panels A and B). We find similar results for Amihud's illiquidity and sterling (GBP) volume, Panels E to H.

[Insert Table IX here]

Panels C and D show that a deeper buyback discount increases trading costs, captured by the bid-ask spread. Our earlier results show that the buyback disclosure increases stock liquidity and reduces trading costs. However, when there is a deeper buyback discount, market makers and liquidity providers strive to mitigate the adverse selection costs by increasing the bid-ask spread (Barclay and Smith, 1988).

D. Can buyback size (intensity) explain the market effect?

The quantity of traded shares carries private information about a stock's true value (Easley and O'Hara, 1987). Therefore, larger buyback trades may lead to larger stock returns when buybacks are disclosed. We test this by regressing buyback intensity on stock returns. Share

buyback intensity is measured as the number of repurchased shares divided by six alternative benchmarks: the 20-day average number of shares outstanding during *t-20* to *t-1* relative to day *t* of the share buyback announcement *(BB Intensity$_{(Average, -20,-1)}$)*; the 63-day average number of shares outstanding during *t-83* to *t-21* relative to day *t* of the share buyback announcement *(BB Intensity$_{(Average, -83,-21)}$)*; the trading volume on day *t-1* relative to day *t* of the share buyback announcement *(BB Intensity$_{(Volume, t-1)}$)*; the trading volume on day *t-20* relative to day *t* of the share buyback announcement *(BB Intensity$_{(Volume, t-20)}$)*; the number of shares outstanding on day *t-1* relative to day *t* of the share buyback announcement *(BB Intensity$_{(nosh, t-1)}$)*; the number of shares outstanding on day *t-20* relative to day *t* of the share buyback announcement *(BB Intensity$_{(nosh, t-20)}$)*.[5] The results in Table X show that larger buybacks do not lead to larger stock returns. This finding suggests that when it comes to carrying value-relevant information, the disclosure alone suffices, as the market ignores the size of shares repurchased on a given day.

[Insert Table X here]

Earlier, we show that just the disclosure of a buyback trade increases stock liquidity. But the question of whether how many shares (buyback intensity) affect liquidity remains. Kyle and Viswanathan (2008) argue that intentionally heavy buying (or selling) can influence prices. Similarly, Bond and Zhong (2016) in their theoretical model predict a positive relationship between the size of the buyback and the price response. However, the evidence reported in Panels B to E of Table X suggest that this is not the case. Overall, we find no clear evidence that larger buyback trades increase liquidity or stock returns. What seems to matter is the disclosure of a share buyback, and to a lesser extent the price paid for a buyback trade. Not the size of the buyback trade.

[5] For the two buyback intensity measures that use the average number of shares outstanding, we require a minimum of 15 observations

E. How long does the buyback disclosure effect last?

Is the market effect of buyback disclosures transient or longer-lasting? The timely disclosure of news increases stock price informativeness (Jeon et al., 2022) and more informative news cause larger stock price jumps driven by contemporaneous news (Glasserman et al., 2023). Bowles et al. (2024) find abnormal returns in the short window immediately after relevant information is disclosed and that identifying when information is disclosed is crucial for measuring anomaly returns.

A short-term increase in stock returns relative to the day of the buyback disclosure would support the argument for buybacks to be disclosed soon after the trade takes place. In contrast, it is possible that the market does not assimilate any value-relevant information immediately and takes longer for such information to be assimilated into prices. Hence, evaluating how quickly and for how long the buyback effect lasts can have policy implications regarding the timeliness of disclosing share buybacks.

In Table XI we regress five lead and lag days relative to a buyback disclosure. The results show there is a small increase in stock returns leading to share buybacks, and that on the day of the buyback disclosure there is an increase of approximately 19 basis points for the cluster-free trades, similar to our baseline results. Following the buyback there is a price correction as shown by the negative stock returns during the two days following the buyback disclosure. However, the post-announcement negative reaction is not large enough to cancel out the positive market reaction to the buyback announcement. These results suggest that buybacks increase stock returns almost immediately with some price correction followed soon after, suggesting an immediate but short-lived price effect.

The results for stock liquidity suggest there is a small increase in stock liquidity during the two days prior to the buyback disclosure, with a larger improvement on the day of the disclosure. Then, any effect disappears approximately two days after the buyback disclosure.

[Insert Table XI here]

Our findings can be better illustrated in Figure 6, highlighting three main findings. First, there is no clear trend in stock returns prior to the buyback disclosure, as suggested by the pre-trend test (p-value=0.00). Second, buybacks occur after short dips in the stock price and result to a price increase. Third, following the immediate price jump at the buyback disclosure there is no negative or positive trend and stock returns level off within a few days following the buyback (levelling off p-value>0.10). These outcomes are similar for stock liquidity, i.e., buyback disclosures increase stock liquidity which returns to pre-buyback levels a few days later. Therefore, our results suggest that share buybacks should be disclosed very soon following the buyback trade execution.

[Insert Figure 6 here]

F. Daily buyback disclosures as trading signals.

In this section we assess whether daily buyback disclosures can be used as a trading strategy. We start with a simple trading strategy approach where a stock is traded at different time intervals following a share buyback disclosure. Because a small portion of share buybacks are disclosed on the same day the buyback trad occurred and while the market is still open, we split buybacks disclosed while the market is still open and those trades after the market closed. We do this to ensure that the results are not driven by the buyback trade itself and to identify what is the relevant closing (or open) price that a trading strategy can use. The results reported in Table XII show that an array of shorter to longer holding periods can yield positive raw returns. For instance, when a buyback is disclosed the same day the trade occurred and before the market closes, buying the stock at that day's closing price and selling two trading days later yields a raw return of 0.71%. When buybacks are disclosed after the market has closed, positive raw returns still materialize. For instance, buying a stock at the open price following the

buyback day and holding for 5 or 20 days yields a raw return of 0.07% and 0.27%, respectively. Raw returns are higher when isolating the potential contamination of clustered trades.

[Insert Table XII here]

Next, we use a calendar-time portfolio approach to test whether the daily disclosed buybacks can be used as a signal for a portfolio strategy while accounting for known market factors. We construct value- and equally-weighted portfolios with a stock being selected when a share buyback is disclosed. When a buyback is disclosed on the same day *t* the buyback occurred we use the return of day *t*. When a buyback is disclosed when the market is closed following the buyback trade we use the return of the next trading day *t+1*. For robustness we repeat our portfolio selection process by using by shifting the selection to days *t+1* and *t+2*, respectively, and our results unreported for brevity as similar. We consider an array of portfolio holding periods: 2, 3, 5, 20, 120, and 250 days.[6] We rebalance our portfolios daily and evaluate the performance of the portfolios using the following model:

$$R_{p,t} - R_{f,t} = \alpha + \beta_{Mkt} * \left(R_{m,t} - R_{f,t}\right) + \beta_{SMB} * SMB_t + \beta_{HML} * HML_t + \beta_{RMW} * RMW_t + \beta_{CMA} * CMA_t + \beta_{MOM} * MOM_t + \varepsilon_t \quad (3)$$

Where $R_{p,t}$ is the portfolio return, $R_{f,t}$ is the risk-free rate, and $R_{m,t}$ is the market return. SMB_t, HML_t, RMW_t, and CMA_t are the size, value, profitability, and investment factors, respectively (Fama and French, 2015). MOM_t is the momentum factor (Carhart, 1997). All UK-based factor returns are from Jensen, Kelly and Pedersen (2023) available on https://jkpfactors.com and are on a daily frequency.

Table XIII presents the alphas of both value- and equally-weighted portfolios of firms with a share buyback disclosure. We also report the alphas of these portfolios based on alternative holding periods for the entire sample and for the 3- and 20-day cluster-free disclosures. The results show there is a positive alpha that is statistically and economically significant. For

[6] We also consider alternative holding periods 10-, 60-, and 180-days and the results are similar to the reported nearest holding period. We do not report theses results for brevity but are available upon request.

instance, the alpha of a portfolio with a two-day holding period leads to a daily alpha ranging between 2.86 and 20.14 basis points. This finding suggests that using share buyback disclosures as a portfolio strategy results in annualized excess returns between of 7.15% and 50.35%. However, the portfolio alphas decline for longer holding periods. This supports our earlier findings suggesting that buyback disclosures provide value-relevant but short-lived information to the market.

[Insert Table XIII here]

To ensure our results are not spurious we repeat two placebo approaches.[7] First, we assign random days as placebo buybacks and match the same frequency of buybacks per firm, for those firms that have actually repurchased shares in another day in that same year. Second, we randomly select approximately 80,000 placebo days from firms that have never repurchased shares. In both cases the results yield no statistically significant alphas, and in some cases small negative alphas. In sum, buyback disclosures provide value-relevant information that increases share prices and be used as trading signals.

IV. Buybacks vs Dividends

So far, we find strong evidence that the daily disclosure of share buybacks increases both stock returns and stock liquidity. Hence, making a strong case for the importance of disclosing buybacks in a timely manner. To put our findings into context we compare buybacks to cash dividends, which have a stringent disclosure regime: dividend announcements and ex-dividend days. Ample evidence in the existing literature suggests that the announcement of intention to pay dividends. Asquith and Mullins (1983) and Kalay and Loewenstein (1985) show that dividend announcements increase stock returns and Eades, Hess, and Kim (1985) find that aggregate returns are positive even if dividend omissions are included. Similarly, Bajaj and

[7] The results for the placebo portfolios are not reported for brevity but are available from the authors upon request.

Vijh (1995) find that stock returns increase by approximately 20 basis points when dividends are announced. In contrast, share prices decline on average around the ex-dividend date (Lakonishok and Vermaelen, 1986), although, the price drop is less than the amount of the dividend (Elton and Gruber, 1970; Poterba, 1986; Michaely, 1991; Eades, Hess and Kim, 1994; Graham, Michaely, and Roberts, 2003; Naranjo, Nimalendran and Ryngaert, 2000).

To compare the effect of disclosing buybacks relative to the announcement of dividends and ex-dividend days, we identify the dates of dividend announcements and ex-dividend days retrieved from LSEG. Then we regress the days of buybacks and dividend announcements, and alternatively buybacks and ex-dividend days, on stock returns and stock liquidity. Table XIV reports the results. The regression estimates for the 3-day cluster-free buybacks show that buybacks increase stock returns (Panel A) but this effect is significantly smaller than dividend announcements. In contrast, ex-dividend days lead to a decrease in returns as expected. The results on buybacks that are further apart by at least 20-days, show that buybacks increase stock returns by approximately 25 basis points, which is about half of the effect that dividend announcements have. When we repeat our regressions with stock liquidity as the outcome (Panels B to D), we find that the effect of buybacks on liquidity is closer to that of dividends. For instance, buybacks reduce bid-ask spreads by 20 basis points. This is the same effect that dividend announcements have. Overall, our findings suggest that the disclosures of share buyback trades provide value-relevant information that is economically meaningful and comparable to that of dividends.

[Insert Table XIV here]

V. Placebo buybacks

We ensure our results are not spurious by performing placebo regressions. First, we identify the frequency of buybacks per firm (and alternatively the frequency by firm per year) in our sample. Second, we assign random days as placebo buybacks and matching the same

frequency of buybacks per firm, for those firms that have actually repurchased shares in another day in that same year.[8] These steps yield a sample of 161,693 placebo share buyback disclosures from 712 unique firms and 4,519 unique firms without a placebo buyback disclosure. Then we regress our placebo buybacks against abnormal returns, abnormal volume, bid-ask spread, and the natural logarithm of Amihud's (2002) illiquidity measure. If our earlier findings are spurious, the placebo buybacks will also yield a statistically significant effect on stock returns or stock liquidity. The results reported in Table XV show that this is not the case. Placebo buybacks have no effect on stock returns or stock liquidity which supports the validity of our findings.

[Insert Table XV here]

VI. Conclusion

Using the most comprehensive sample of actual open market share buybacks reported daily and before the start of the next trading day, we find that buybacks carry value-relevant information which the market reacts to. This information is small for each disclosure, but the large number of buybacks, in the tens of thousands, makes this effect economically significant. For instance, disclosures of buybacks that occur at least three trading days apart lead to annualized excess returns of 86.5%. Daily and timely share buyback disclosures can also be used as treading signals. Simple trading strategies following the disclosure of share buybacks yield daily raw returns of 0.07% to 0.71% on average. Meanwhile, portfolios that are long stocks that disclose share buybacks yield annualized alphas ranging between 7% to 50%.

Daily buyback disclosures also improve liquidity, both in terms of trading activity (volume) and trading costs (bid-ask spreads). We also find that it is the disclosure itself that matters most, and to a lesser extent the price paid for these buybacks. The size of the buybacks

[8] In alternative specifications we ensure that the placebo buybacks do not occur on the same day as a buyback announcement or ex-dividend day, and our results are similar.

has no effect. We also test the persistence of the effect that share buybacks have on stock prices and stock liquidity. We find the effect to be transient lasting only a few days. This finding also supports the argument of disclosing share buybacks with a lower latency.

Finally, this paper can inform policy as it shows that the daily and timely disclosure of buybacks affect both stock prices and stock liquidity. Since we find that it is the disclosure of conducting buybacks that matters most, rather than the price paid or the size of the trade, disclosing only the fact a buyback occurred can balance the trade-offs of more and costlier information when including the price and size of the buyback trade. Hence, disclosure regulations should require a timely daily disclosure and regulators should require firms to disclose their share buyback activity almost immediately.

References

Amihud, Y. (2002). Illiquidity and stock returns: cross-section and time-series effects. Journal of Financial Markets, 5(1), 31–56.

Asquith, P., & Mullins, David W. Jr. (1983). The Impact of Initiating Dividend Payments on Shareholders' Wealth Author. Journal of Business, 56(1), 77–96.

Bajaj, M., & Vijh, A. M. (1995). Trading Behavior and the Unbiasedness of the Market Reaction to Dividend Announcements. Journal of Finance, 50(1), 255–279.

Barber, B. M., & Odean, T. (2008). All that glitters: The effect of attention and news on the buying behavior of individual and institutional investors. Review of Financial Studies, 21(2), 785–818.

Barclay, M. J., & Smith, C. W. (1988). Corporate payout policy. Journal of Financial Economics, 22(1), 61–82.

Bargeron, L., & Farrell, M. (2021). The Price Effect of Stock Repurchases: Evidence from Dual Class Firms. Management Science, 67(10), 6568–6580.

Ben-Rephael, A., Oded, J., & Wohl, A. (2014). Do firms buy their stock at bargain prices? evidence from actual stock repurchase disclosures. Review of Finance, 18(4), 1299–1340.

Bird, A., Karolyi, S. A., Ruchti, T. G., & Truong, P. (2021). More is less: Publicizing information and market feedback. Review of Finance, 25(3), 745–775.

Bonaimé, A. A., Hankins, K. W., & Harford, J. (2014). Financial flexibility, risk management, and payout choice. Review of Financial Studies, 27(4), 1074–1101.

Bond, P., & Zhong, H. (2016). Buying High and Selling Low: Stock Repurchases and Persistent Asymmetric Information. Review of Financial Studies, 29(6), 1409–1452.

Boudoukh, J., Feldman, R., Kogan, S., & Richardson, M. (2019). Information, trading, and volatility: Evidence from firm-specific news. Review of Financial Studies, 32(3), 992–1033.

Bowles, T., Reed, A.V., Ringgenberg, M.C., & Thornock, J. (2024). Anomaly Time. Journal of Finance, forthcoming

Brav, A., Graham, J. R., Harvey, C. R., & Michaely, R. (2005). Payout policy in the 21st century. Journal of Financial Economics, 77(3), 483–527.

Brogaard, J., Li, D., & Xia, Y. (2017). Stock liquidity and default risk. Journal of Financial Economics, 124(3), 486–502.

Butler, A. W., Grullon, G., & Weston, J. P. (2005). Can managers forecast aggregate market returns? Journal of Finance, 60(2), 963–986.

Carhart, M.M. (1997). On Persistence of Mutual Fund Performance, Journal of Finance, 52(1), 57–82.

Chan, K., Ikenberry, D. L., & Lee, I. (2007). Do managers time the market? Evidence from open-market share repurchases. Journal of Banking and Finance, 31(9), 2673–2694.

Chung, D.Y., Isakov, D., Pérignon, C., 2007. Repurchasing shares on a second trading line. Review of Finance, 11(2), 253–285.

Cohen, L., & Lou, D. (2012). Complicated firms. Journal of Financial Economics, 104(2), 383–400.

Cook, D. O., Krigman, L., & Leach, J. C. (2004). On the timing and execution of open market repurchases. Review of Financial Studies, 17(2), 463–498.

De Cesari, A., Espenlaub, S., & Khurshed, A. (2011). Stock repurchases and treasury share sales: Do they stabilize price and enhance liquidity? Journal of Corporate Finance, 17(5), 1558–1579. https://doi.org/10.1016/j.jcorpfin.2011.08.002

Diamond, D. W., & Verrecchia, R. E. (1991). Disclosure, Liquidity, and the Cost of Capital. Journal of Finance, 46(4), 1325–1359.

Dimson, E., Marsh, P., & Staunton, M. (2021). Global Investment Returns, Yearbook 2021 Summary Edition (Issue March).

Dittmar, A. K., & Dittmar, R. F. (2008). The timing of financing decisions: An examination of the correlation in financing waves. Journal of Financial Economics, 90(1), 59–83.

Dittmar, A., & Field, L. C. (2015). Can managers time the market? Evidence using repurchase price data. Journal of Financial Economics, 115(2), 261–282.

Eades, K. M., Hess, P. J., & Kim, E. H. (1984). On interpreting security returns during the ex-dividend period. Journal of Financial Economics, 13(1), 3–34.

Eades, K. M., Hess, P. J., & Kim, E. H. (1985). Market rationality and dividend announcements. Journal of Financial Economics, 14(4), 581–604.

Easley, D., & O'Hara, M. (1987). Price, trade size, and information in securities markets. Journal of Financial Economics, 19(1), 69–90.

Elton, E. J., & Gruber, M. J. (1970). Marginal Stockholder Tax Rates and the Clientele Effect Author. Review of Economics and Statistics, 52(1), 68–74.

Fama, E.F., & French, K.R. (1992). The Cross-Section of Expected Stock Returns, Journal of Finance, 47(2), 427-465.

Fama, E.F., & French, K.R. (2015). A Five-Factor Asset Pricing Model, Journal of Financial Economics, 116(1), 1-22.

Frazzini, A., Ronen. I, & Moskowitz, T.J. (2018). Trading Costs, working paper available at: http://dx.doi.org/10.2139/ssrn.3229719

Ginglinger, E., & Hamon, J. (2007). Actual share repurchases, timing and liquidity. Journal of Banking and Finance, 31(3), 915–938.

Glasserman, P., Li, F., & Mamaysky, H. (2023). Time Variation in the News-Returns Relationship. Journal of Financial and Quantitative Analysis, 1–61.

Glosten, L. R., & Milgrom, P. R. (1985). Bid, ask and transaction prices in a specialist market with heterogeneously informed traders. Journal of Financial Economics, 14(1), 71–100.

Goyenko, R. Y., Holden, C. W., & Trzcinka, C. A. (2009). Do liquidity measures measure liquidity? Journal of Financial Economics, 92(2), 153–181.

Graham, J. R. (2022). Presidential Address: Corporate Finance and Reality. Journal of Finance, 77(4), 1975–2049.

Graham, J. R., & Harvey, C. R. (2001). The theory and practice of corporate finance: Evidence from the field. Journal of Financial Economics, 60(2–3), 187–243.

Graham, J. R., Michaely, R., & Roberts, M. R. (2003). Do Price Discreteness and Transactions Costs Affect Stock Returns? Comparing Ex-Dividend Pricing before and after Decimalization. Journal of Finance, 58(6), 2611–2636.

Grossman, S. J., & Stiglitz, J. E. (1980). On the Impossibility of Informationally Efficient Markets. American Economic Review, 70(3), 393–408.

Grullon, G., & Michaely, R. (2004). The Information Content of Share Repurchase Programs. Journal of Finance, 59(2), 651–680.

Han, Y., Huang, D., Huang, D., & Zhou, G. (2022). Expected return, volume, and mispricing. Journal of Financial Economics, 143(3), 1295–1315.

Hasbrouck, J. (2009). Trading Costs and Returns for U. S. Equities: Estimating Effective Costs from Daily Data. Journal of Finance, 64(3), 1445–1477.

Hillert, A., Maug, E., & Obernberger, S. (2016). Stock repurchases and liquidity. Journal of Financial Economics, 119(1), 186–209.

Hong, H., Wang, J., & Yu, J. (2008). Firms as buyers of last resort. Journal of Financial Economics, 88(1), 119–145.

Jahan-Parvar, M. R., & Zikes, F. (2023). When Do Low-Frequency Measures Really Measure Effective Spreads? Evidence from Equity and Foreign Exchange Markets. Review of Financial Studies, 36(10), 4190–4232.

Jensen, T. I., Kelly, B., & Pedersen, L. H. (2023). Is There a Replication Crisis in Finance? Journal of Finance, 78(5), 2465–2518.

Jensen, T.I., Kelly, B., & Pedersen, L.H. (2023). Is There a Replication Crisis in Finance? Journal of Finance 78(5), 2465-2518.

Jeon, Y., McCurdy, T. H., & Zhao, X. (2022). News as sources of jumps in stock returns: Evidence from 21 million news articles for 9000 companies. Journal of Financial Economics, 145(2), 1–17.

Kacperczyk, M., & Pagnotta, E. S. (2019). Chasing Private Information. Review of Financial Studies, 32(12), 4997–5047.

Kalay, A., & Loewenstein, U. (1985). Predictable events and excess returns: The case of dividend announcements. Journal of Financial Economics, 14(3), 423–449.

Kerr, J., Sadka, G., & Sadka, R. (2020). Illiquidity and price informativeness. Management Science, 66(1), 334–351.

Koski, J. L., & Michaely, R. (2000). Prices, liquidity, and the information content of trades. Review of Financial Studies, 13(3), 659–696.

Koski, J. L., & Scruggs, J. T. (1998). Who Trades around the Ex-Dividend Day? Evidence from NYSE Audit File Data. Financial Management, 27(3), 58.

Kumar, P., Langberg, N., Oded, J., & Sivaramakrishnan, K. (2017). Voluntary disclosure and strategic stock repurchases. Journal of Accounting and Economics, 63(2–3), 207–230.

Kyle, A. S., & Viswanathan, S. (2008). How to define illegal price manipulation. American Economic Review, 98(2), 274–279.

Lakonishok, J., & Vermaelen, T. (1986). Tax-induced trading around ex-dividend days. Journal of Financial Economics, 16(3), 287–319.

Lang, M., & Maffett, M. (2011). Transparency and liquidity uncertainty in crisis periods. Journal of Accounting and Economics, 52(2–3), 101–125.

Liu, H., & Swanson, E. P. (2016). Is price support a motive for increasing share repurchases? Journal of Corporate Finance, 38, 77–91.

Loughran, T., & Schultz, P. (2005). Liquidity: Urban versus rural firms. Journal of Financial Economics, 78(2), 341–374.

Michaely, R. (1991). Ex-Dividend Day Stock Price Behavior: The Case of the 1986 Tax Reform Act. Journal of Finance, 46(3), 845–859.

Michaely, R., & Vila, J.-L. (1995). Investor's Heterogeneity, Prices, and Volume Around the Ex-Dividend Day. Journal of Financial and Quantitative Analysis, 30(2), 171–198.

Michaely, R., & Vila, J.-L. (1996). Trading Volume with Private Valuation: Evidence from the Ex-Dividend. Review of Financial Studies, 9(2), 471–509.

Miller, B. P. (2010). The effects of reporting complexity on small and large investor trading. Accounting Review, 85(6), 2107–2143.

Naranjo, A., Nimalendran, M., & Ryngaert, M. (2000). Time Variation of Ex-Dividend Day Stock Returns and Corporate Dividend Capture: A Reexamination. Journal of Finance 55(5), 2357–2372.

Peress, J. (2014a). Learning from stock prices and economic growth. Review of Financial Studies, 27(10), 2998–3059.

Peress, J. (2014b). The media and the diffusion of information in financial markets: Evidence from newspaper strikes. Journal of Finance, 69(5), 2007–2043.

Peress, J, & Schmidt, D. (2020). Glued to the TV: Distracted noise traders and stock market liquidity. Journal of Finance, 75(2), 1083–1133.

Poterba, J. M. (1986). The market valuation of cash dividends. The citizens utilities case reconsidered. Journal of Financial Economics, 15(3), 395–405.

Sadka, R., & Scherbina, A. (2007). Analyst disagreement, mispricing, and liquidity. Journal of Finance, 62(5), 2367–2403.

Scholes, M. S. (1972). The Market for Securities: Substitution Versus Price Pressure and the Effects of Information on Share Prices. The Journal of Business, 45(2), 179–211.

Skinner, D. J. (2008). The evolving relation between earnings, dividends, and stock repurchases. Journal of Financial Economics, 87(3), 582–609.

Verrecchia, R. E. (1982). Information Acquisition in a Noisy Rational Expectations Economy. Econometrica, 50(6), 1415–1430.

Figure 1. Abnormal Returns

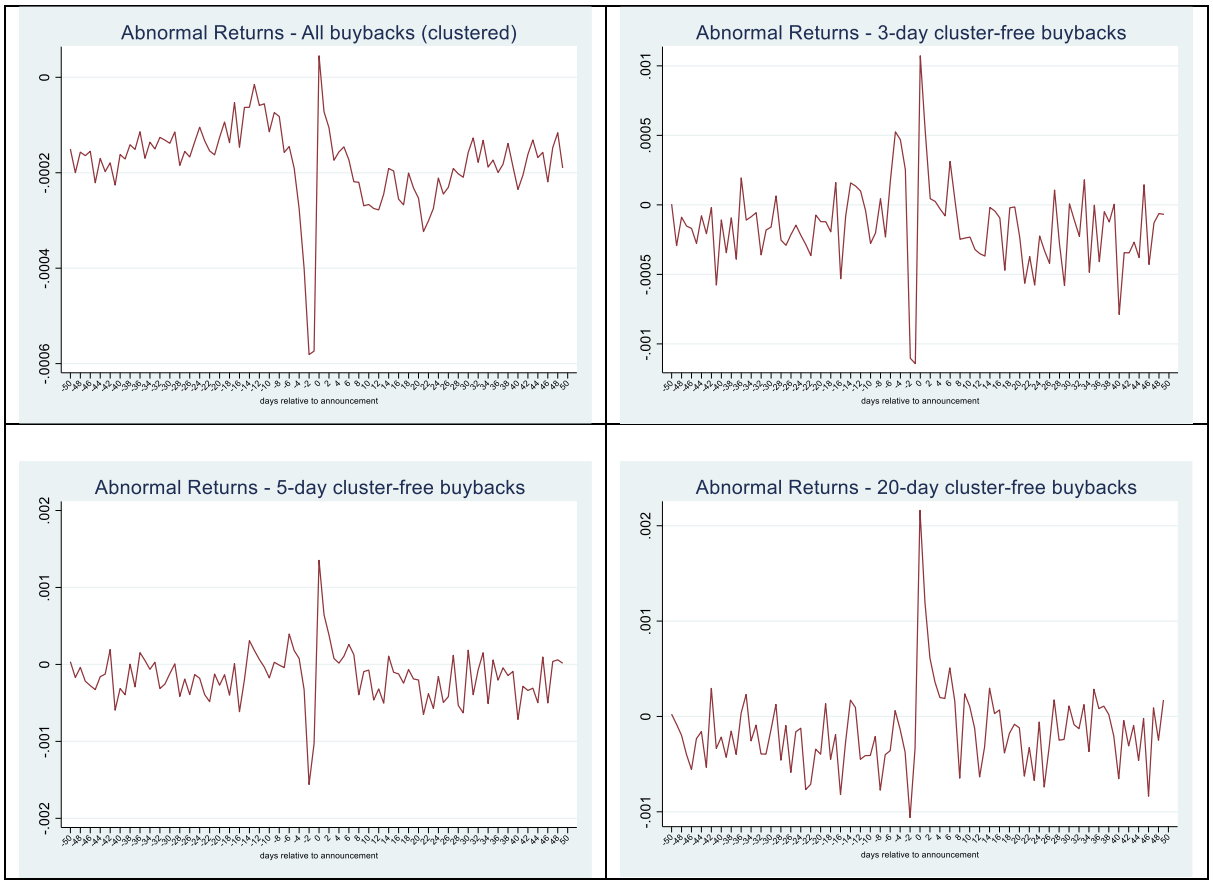


Figure 2. Abnormal Volume

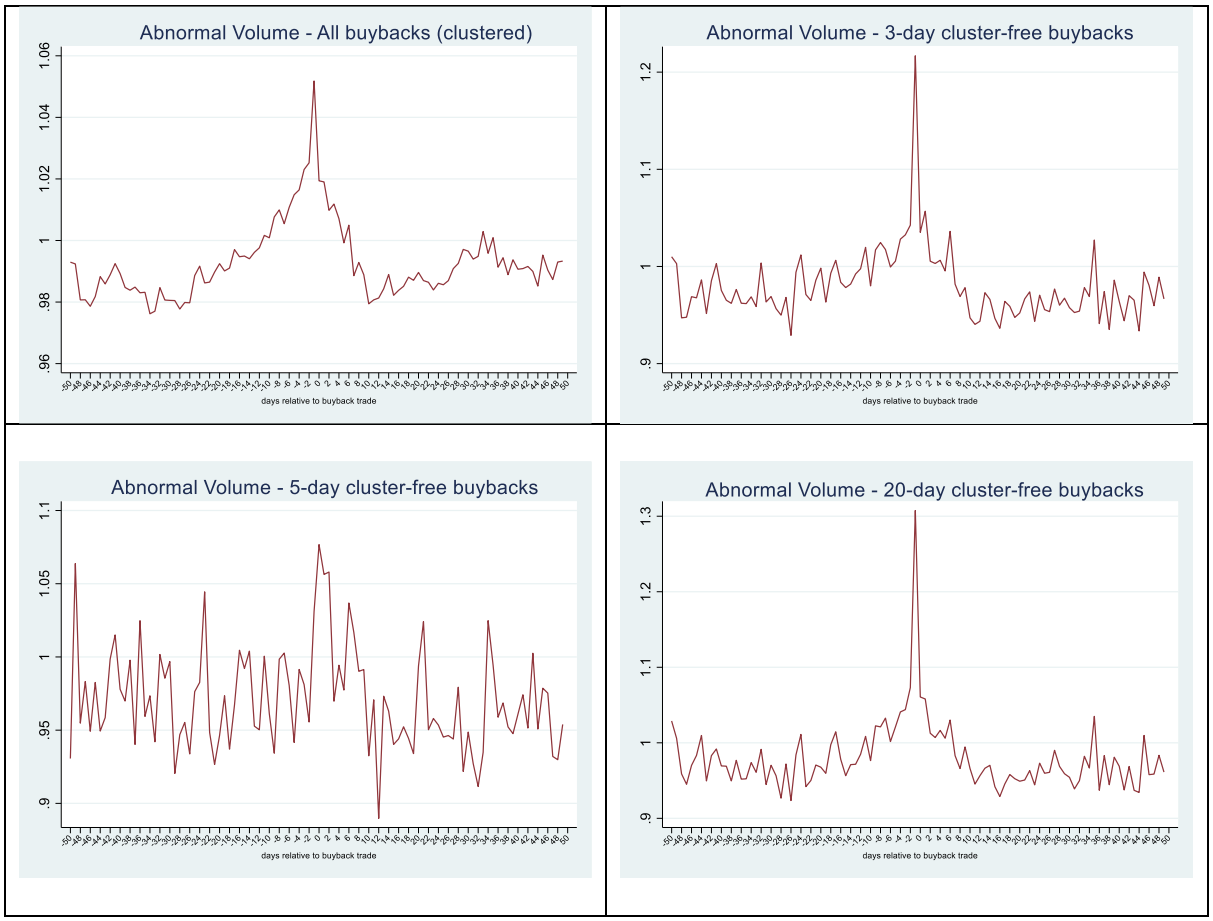


Figure 3. Bid-Ask spread

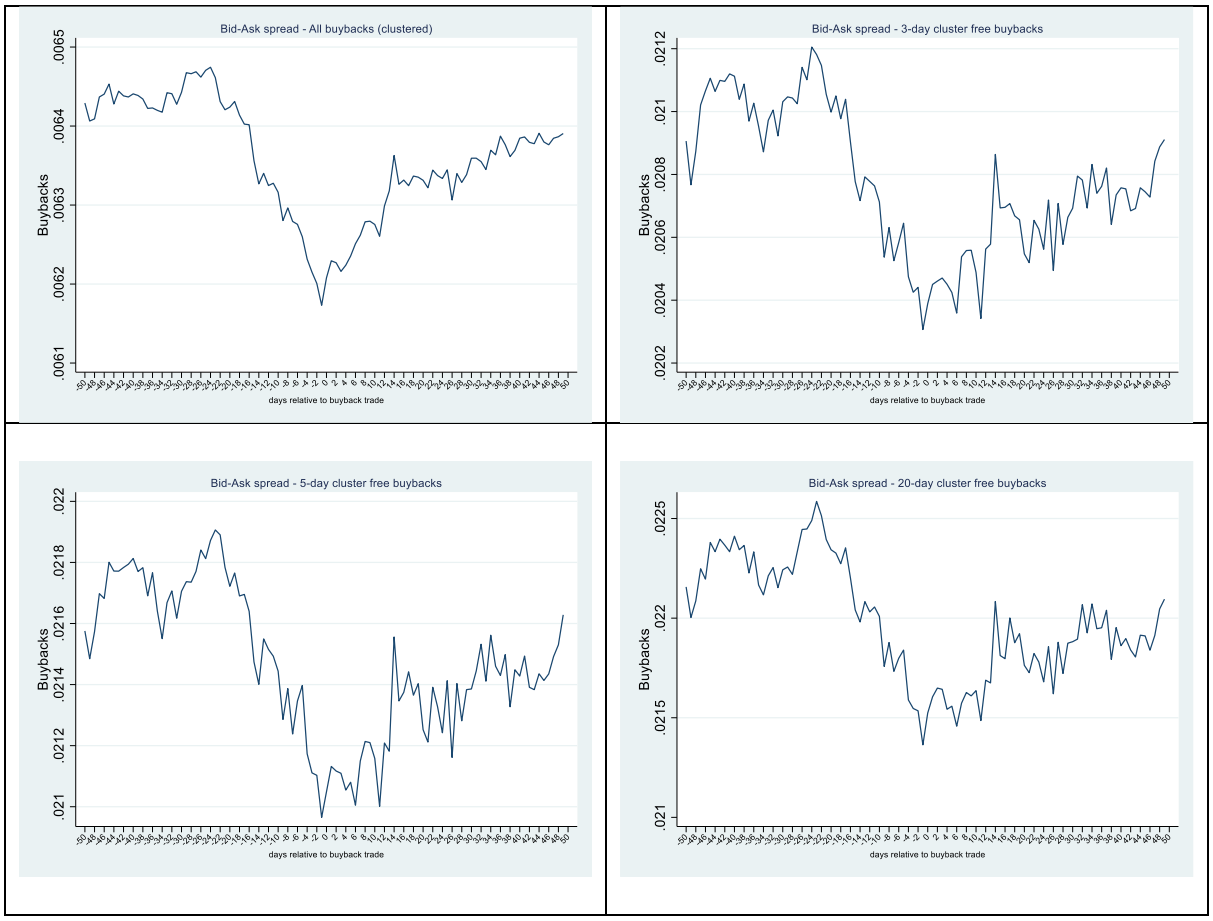


Figure 4. Amihud's illiquidity (log)

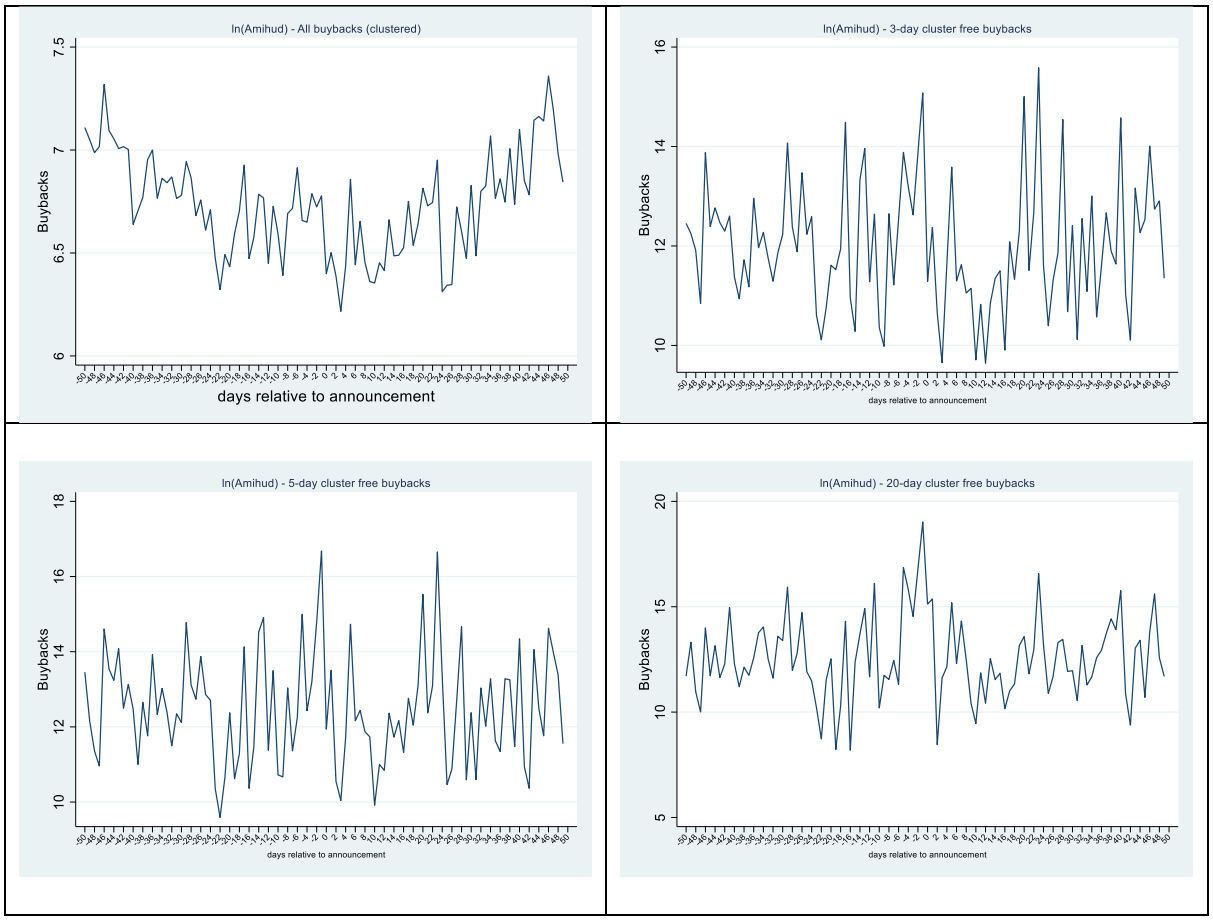


Figure 5. Annual distribution of buyback discounts (skill).

All buybacks (clustered)	3-day cluster-free buybacks

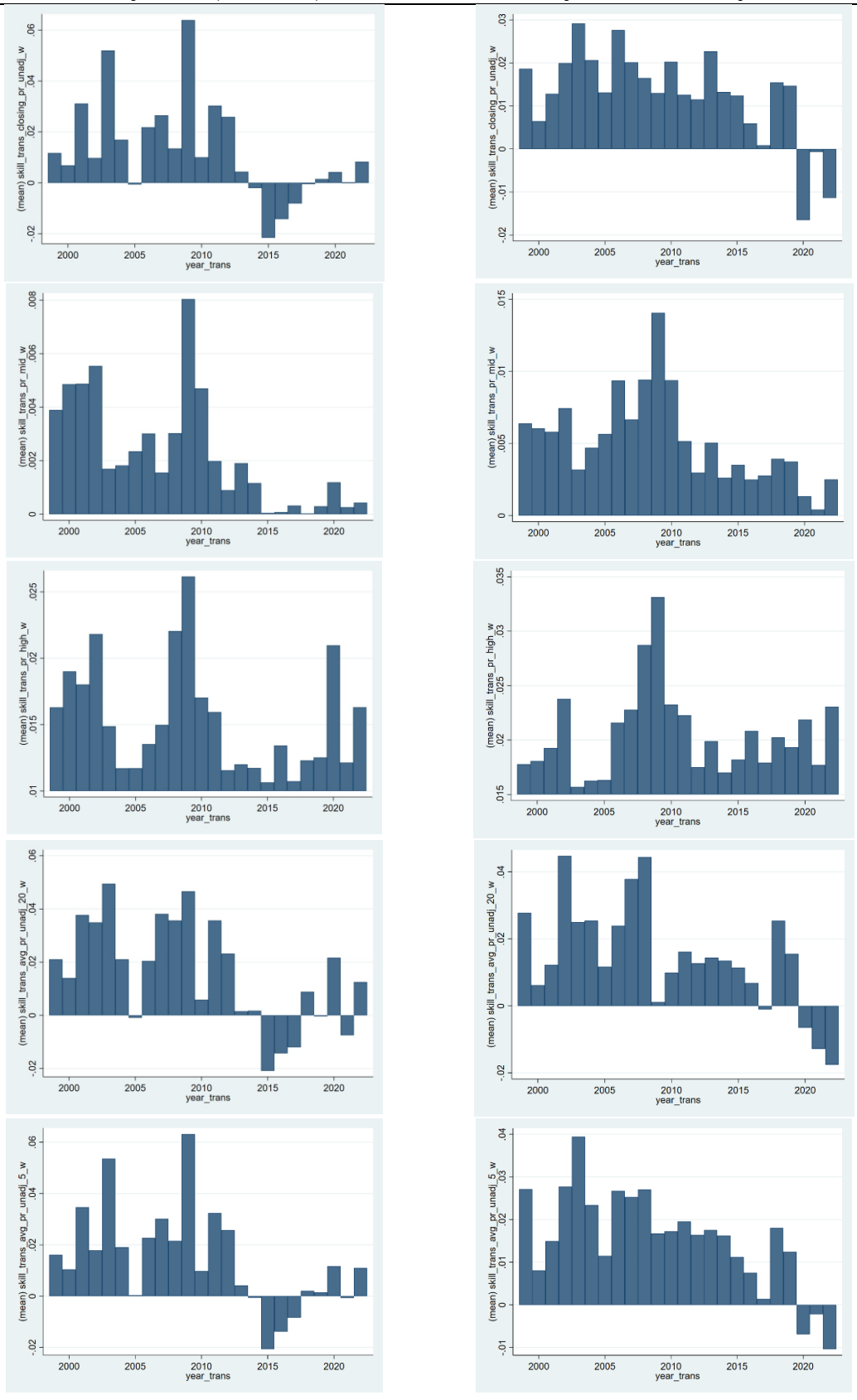
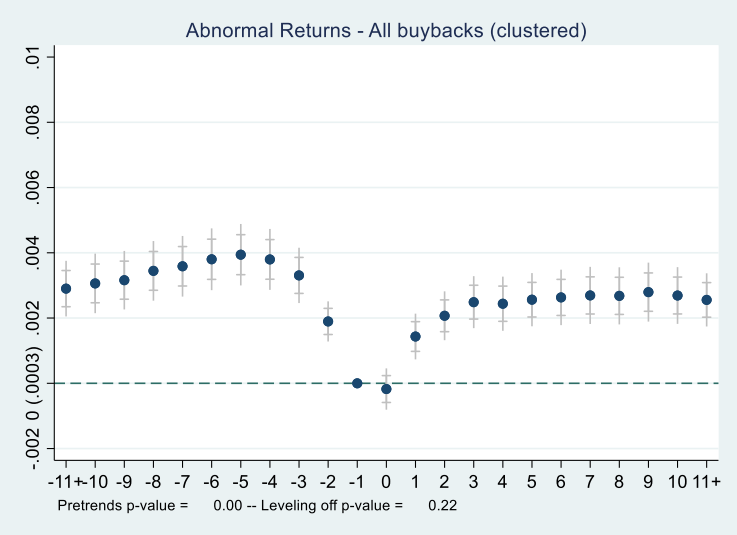
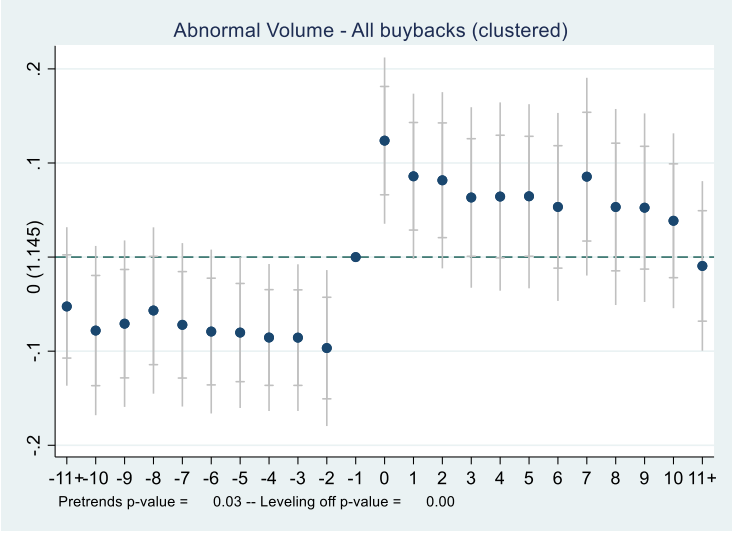


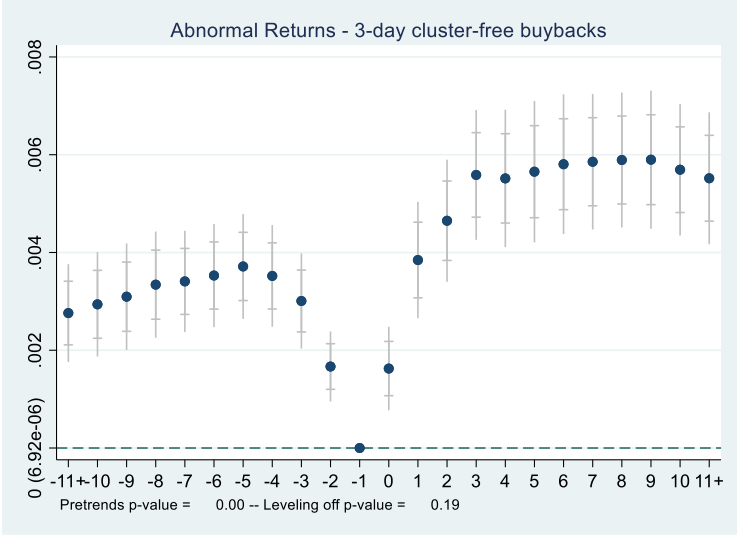
Figure 6. Do daily buybacks have a transient or permanent effect?

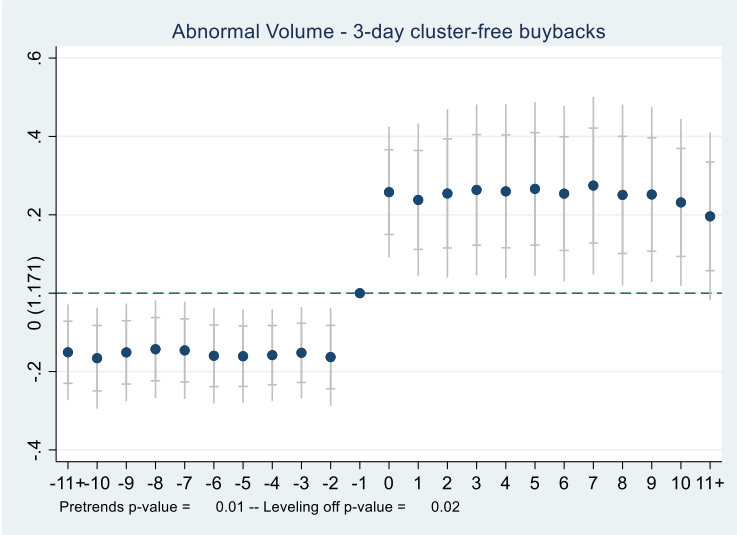
All buybacks (clustered)

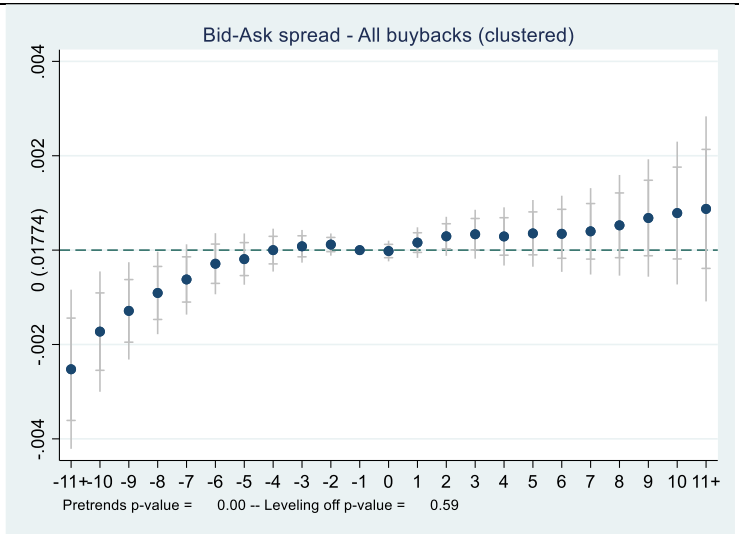


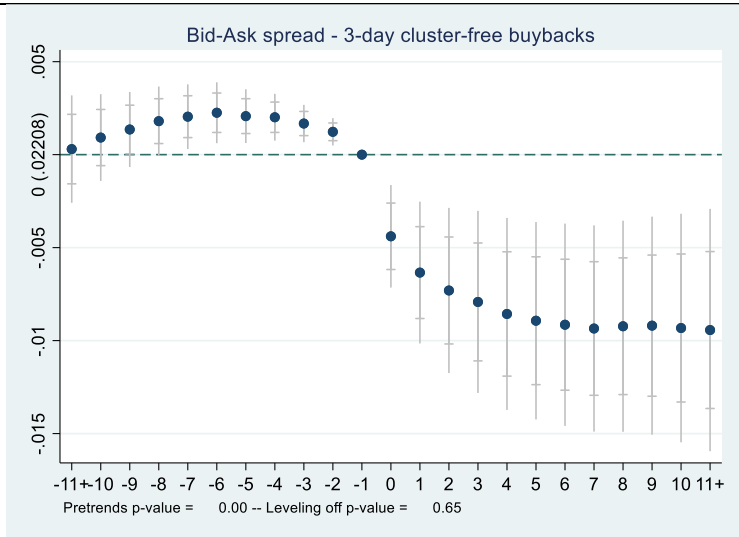


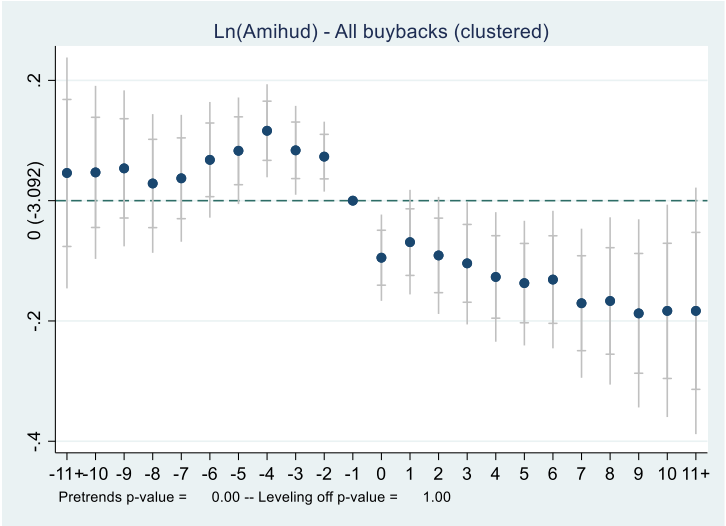
3-day cluster-free buybacks






Bid-Ask spread - All buybacks (clustered)
-.004
-.002
0 (.01774)
.002
.004
-11+ -10 -9 -8 -7 -6 -5 -4 -3 -2 -1 0 1 2 3 4 5 6 7 8 9 10 11+
Pretrends p-value = 0.00 -- Leveling off p-value = 0.59


Bid-Ask spread - 3-day cluster-free buybacks
-.015
-.01
-.005
0 (.02208)
.005
-11+ -10 -9 -8 -7 -6 -5 -4 -3 -2 -1 0 1 2 3 4 5 6 7 8 9 10 11+
Pretrends p-value = 0.00 -- Leveling off p-value = 0.65


Ln(Amihud) - All buybacks (clustered)
-.4
-.2
0 (-3.092)
.2
-11+ -10 -9 -8 -7 -6 -5 -4 -3 -2 -1 0 1 2 3 4 5 6 7 8 9 10 11+
Pretrends p-value = 0.00 -- Leveling off p-value = 1.00

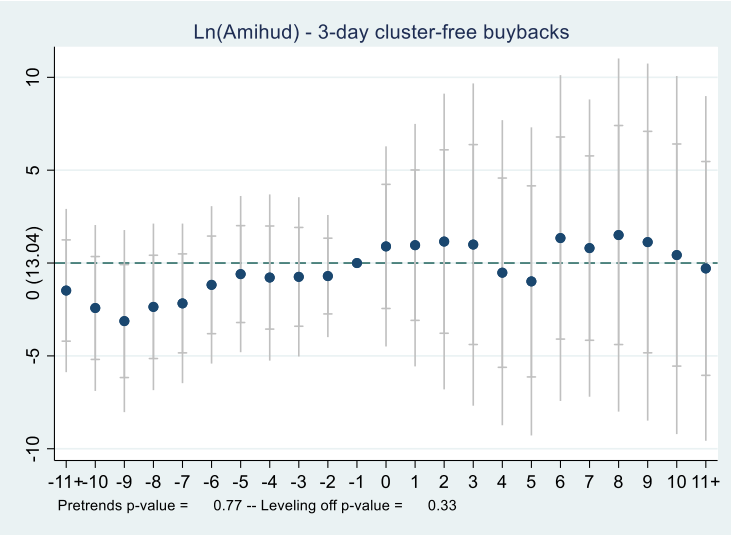

Ln(Amihud) - 3-day cluster-free buybacks
-10
-5
0 (13.04)
5
10
-11+ -10 -9 -8 -7 -6 -5 -4 -3 -2 -1 0 1 2 3 4 5 6 7 8 9 10 11+
Pretrends p-value = 0.77 -- Leveling off p-value = 0.33

Table I. Descriptive statistics of share buybacks

This table reports descriptive statistics of share buyback activity. The sample includes UK-registered firms with a primary listing in the London Stock Exchange. Panels A, B, and C report the descriptive statistics on share buybacks by year, month, and day, respectively. The sample includes 79,525 share buyback transactions from 724 unique firms that repurchased shares in the open market from Jan 1, 1999 to Sep 1, 2022.

Panel A. Share buybacks per year

		Number of repurchased shares (in millions)			Value of repurchased shares (in millions)		
Year	Obs	Total	Mean	Median	Total	Mean	Median
1999	415	387	0.93	0.50	1,450	3.50	1.94
2000	793	1,140	1.44	0.44	4,040	5.10	1.20
2001	497	452	0.91	0.25	2,980	6.00	1.01
2002	706	637	0.90	0.35	3,800	5.39	1.18
2003	930	991	1.07	0.50	4,420	4.75	2.74
2004	2,049	4,460	2.18	0.40	13,100	6.38	1.72
2005	3,433	7,910	2.30	0.38	23,600	6.87	1.68
2006	4,620	9,020	1.95	0.50	126,000	27.20	2.22
2007	6,451	11,600	1.80	0.40	193,000	29.90	2.04
2008	5,054	4,320	0.85	0.28	15,100	2.99	0.87
2009	577	218	0.38	0.09	434	0.75	0.23
2010	1,507	1,290	0.86	0.15	4,970	3.30	0.96
2011	3,577	3,960	1.11	0.27	18,000	5.03	1.19
2012	4,011	3,050	0.76	0.30	14,000	3.48	1.83
2013	4,078	3,080	0.75	0.20	20,600	5.06	1.36
2014	3,727	2,020	0.54	0.16	13,700	3.68	0.89
2015	3,472	967	0.28	0.12	6,320	1.82	0.77
2016	3,859	978	0.25	0.07	13,100	3.40	0.38
2017	4,610	2,000	0.43	0.10	19,600	4.24	0.70
2018	4,972	3,540	0.71	0.13	17,800	3.58	1.00
2019	4,845	4,540	0.94	0.12	15,400	3.18	1.07
2020	2,081	778	0.37	0.08	3,200	1.54	0.28
2021	5,108	4,800	0.94	0.15	17,200	3.37	1.07
2022	8,153	10,300	1.27	0.14	28,800	3.53	0.62
Total	**79,525**	**82,500**	**1.04**	**0.20**	**580,000**	**7.30**	**1.07**

Panel B. Share buybacks per month

		Number of repurchased shares (in millions)			Value of repurchased shares (in millions)		
Month	Obs	Total	Mean	Median	Total	Mean	Median
Jan	5,472	5,790	1.06	0.16	38,700	7.07	0.78
Feb	5,536	6,100	1.10	0.20	51,900	9.38	0.95
Mar	7,596	8,880	1.17	0.21	58,900	7.75	1.16
Apr	5,849	5,810	0.99	0.17	33,300	5.69	0.96
May	7,006	7,390	1.05	0.20	62,700	8.94	1.12

Jun	7,590	8,970	1.18	0.20	73,500	9.68	1.23
Jul	6,745	7,540	1.12	0.18	65,900	9.78	0.90
Aug	8,113	8,060	0.99	0.20	42,800	5.27	1.11
Sep	7,196	7,540	1.05	0.20	45,400	6.31	1.18
Oct	6,317	5,480	0.87	0.20	40,600	6.43	1.13
Nov	6,760	6,130	0.91	0.20	40,000	5.92	1.17
Dec	5,345	4,780	0.89	0.20	26,500	4.96	0.99

Panel C. Share buybacks per day

		Number of repurchased shares (in millions)			Value of repurchased shares (in millions)		
Day	Obs	Total	Mean	Median	Total	Mean	Median
Mon	14,694	14,500	0.99	0.20	112,000	7.61	1.02
Tue	16,011	15,900	1.00	0.20	113,000	7.08	1.09
Wed	16,523	16,800	1.02	0.20	120,000	7.25	1.09
Thur	16,461	17,900	1.09	0.20	117,000	7.09	1.08
Fri	15,835	17,200	1.09	0.20	118,000	7.48	1.08

Table II. Abnormal returns surrounding the announcement of share buyback trades

This table reports the cumulative abnormal returns (CAR), expressed in percentage points, for alternative windows relative to the announcement date of an open market share buyback trade. The abnormal returns are estimated based on the market-adjusted model where FTSE All-Share index serves as the market portfolio. *N-day cluster-free buyback* denotes share buyback announcements that were disclosed at least *n* business days apart. The sample includes 79,525 share buyback transactions from 724 unique firms, that are UK-registered and with a primary listing in the London Stock Exchange, that repurchased shares in the open market from Jan 1, 1999 to Sep 1, 2022. All variables are winsorized at the 1% and 99% tails and standard errors are reported in parentheses. $*p < 0.1$; $**p < 0.05$; $***p < 0.01$.

(%)	All buybacks (N=79,525)		3-day cluster-free buybacks (N=11,710)		5-day cluster-free buybacks (N=10,489)		20-day cluster-free buybacks (N=8,787)	
CAR(-50,-1)	-0.812***	(0.037)	-0.699***	(0.116)	-0.744***	(0.125)	-0.891***	(0.138)
CAR(-10,-2)	-0.202***	(0.016)	-0.108**	(0.050)	-0.163***	(0.054)	-0.245***	(0.060)
CAR(-20,-2)	-0.283***	(0.023)	-0.149**	(0.073)	-0.207***	(0.078)	-0.292***	(0.086)
CAR(-6,-2)	-0.159***	(0.012)	-0.045	(0.038)	-0.118***	(0.041)	-0.170***	(0.045)
CAR(-5,-1)	-0.202***	(0.012)	-0.079**	(0.039)	-0.144***	(0.041)	-0.136***	(0.046)
CAR(-6,-1)	-0.217***	(0.013)	-0.078*	(0.042)	-0.133***	(0.045)	-0.149***	(0.050)
AR day 0	-0.019***	(0.006)	0.099***	(0.019)	0.137***	(0.020)	0.196***	(0.022)
CAR(0,+1)	-0.015*	(0.008)	0.165***	(0.025)	0.215***	(0.027)	0.296***	(0.030)
CAR(0,+2)	-0.022***	(0.009)	0.199***	(0.030)	0.251***	(0.032)	0.336***	(0.036)
CAR(-1,0)	-0.077***	(0.008)	0.067***	(0.027)	0.123***	(0.029)	0.218***	(0.032)
CAR(-2,0)	-0.135***	(0.009)	0.003	(0.031)	0.041	(0.034)	0.148***	(0.038)
CAR(-1,+1)	-0.072***	(0.010)	0.132***	(0.031)	0.201***	(0.034)	0.317***	(0.038)
CAR(-2,+2)	-0.137***	(0.012)	0.103***	(0.039)	0.156***	(0.042)	0.287***	(0.047)
CAR(+1,+2)	-0.003	(0.008)	0.099***	(0.024)	0.115***	(0.025)	0.140***	(0.028)
CAR(+1,+3)	-0.003	(0.008)	0.099***	(0.024)	0.115***	(0.025)	0.140***	(0.028)
CAR(+1,+5)	-0.046***	(0.012)	0.076**	(0.036)	0.102***	(0.038)	0.136***	(0.043)
CAR(+2,+5)	-0.051***	(0.011)	0.011	(0.032)	0.024	(0.034)	0.037	(0.038)
CAR(+2,+10)	-0.153***	(0.016)	-0.093*	(0.048)	-0.060	(0.051)	-0.055	(0.057)
CAR(+2,+20)	-0.386***	(0.023)	-0.304***	(0.070)	-0.263***	(0.074)	-0.244***	(0.082)
CAR(+6,+10)	-0.102***	(0.012)	-0.104***	(0.036)	-0.084**	(0.038)	-0.092**	(0.042)
CAR(+6,+20)	-0.340***	(0.021)	-0.380***	(0.060)	-0.365***	(0.063)	-0.380***	(0.070)
CAR(+2,+50)	-0.960***	(0.037)	-1.071***	(0.108)	-1.069***	(0.114)	-1.070***	(0.126)
CAR(+1,+50)	-0.955***	(0.037)	-1.006***	(0.109)	-0.990***	(0.116)	-0.971***	(0.127)

Table III. Annual breakdown of abnormal returns surrounding the announcement of share buyback trades

This table reports the annual cumulative abnormal returns (CAR), expressed in percentage points, for alternative windows relative to the announcement date of an open market share buyback trade. The abnormal returns are estimated based on the market-adjusted model where FTSE All-Share index serves as the market portfolio. The sample includes 79,525 share buyback transactions from 724 unique firms, that are UK-registered and with a primary listing in the London Stock Exchange, that repurchased shares in the open market from Jan 1, 1999 to Sep 1, 2022. Panel A provides the annual CARs for the entire sample (all buyback announcements). Panel B provides the annual CARs for buybacks announcements disclosed at least 3 days apart (3-day cluster-free buybacks announcements). All variables are winsorized at the 1% and 99% tails and standard errors are reported in parentheses.

Panel A – All buyback announcements														
Year	*Obs*	CAR (-50,-1)	CAR (-5,-1)	AR (day 0)	CAR (0,+1)	CAR (0,+2)	CAR (+1,+2)	CAR (+1,+3)	CAR (+1,+5)	CAR (+2,+5)	CAR (+2,+10)	CAR (+2,+20)	CAR (+6,+10)	CAR (+1,+50)
1999	415	-5.414	-1.075	-0.111	-0.199	-0.249	-0.138	-0.138	-0.358	-0.270	-0.844	-2.743	-0.573	-10.121
		(0.638)	(0.211)	(0.093)	(0.141)	(0.166)	(0.136)	(0.136)	(0.194)	(0.181)	(0.272)	(0.375)	(0.217)	(0.758)
2000	793	-1.110	-0.377	-0.046	-0.019	0.061	0.107	0.107	0.272	0.245	0.109	-0.776	-0.136	0.055
		(0.569)	(0.178)	(0.078)	(0.114)	(0.141)	(0.115)	(0.115)	(0.179)	(0.160)	(0.257)	(0.369)	(0.194)	(0.569)
2001	497	5.577	0.320	0.015	0.197	0.370	0.356	0.356	0.515	0.332	-0.014	0.049	-0.347	1.638
		(0.484)	(0.203)	(0.096)	(0.130)	(0.154)	(0.131)	(0.131)	(0.190)	(0.172)	(0.251)	(0.327)	(0.187)	(0.509)
2002	706	1.205	-0.357	0.040	0.169	0.162	0.122	0.122	-0.146	-0.274	-0.469	-1.142	-0.195	-1.611
		(0.557)	(0.178)	(0.083)	(0.111)	(0.133)	(0.109)	(0.109)	(0.153)	(0.141)	(0.206)	(0.321)	(0.150)	(0.431)
2003	930	-0.959	-0.100	-0.022	-0.047	-0.056	-0.034	-0.034	-0.085	-0.060	-0.177	-0.330	-0.118	0.081
		(0.305)	(0.113)	(0.055)	(0.074)	(0.092)	(0.073)	(0.073)	(0.115)	(0.105)	(0.153)	(0.216)	(0.117)	(0.296)
2004	2,049	-1.691	-0.377	-0.096	-0.082	-0.086	0.010	0.010	-0.115	-0.129	-0.277	-0.492	-0.148	-1.270
		(0.200)	(0.065)	(0.028)	(0.039)	(0.046)	(0.036)	(0.036)	(0.055)	(0.050)	(0.077)	(0.109)	(0.059)	(0.170)
2005	3,433	-2.070	-0.378	-0.062	-0.072	-0.111	-0.048	-0.048	-0.105	-0.095	-0.190	-0.517	-0.095	-1.063
		(0.117)	(0.041)	(0.019)	(0.025)	(0.030)	(0.025)	(0.025)	(0.040)	(0.036)	(0.054)	(0.078)	(0.040)	(0.128)
2006	4,620	-0.530	-0.180	-0.013	0.008	0.001	0.014	0.014	-0.012	-0.032	-0.009	0.051	0.023	0.054
		(0.122)	(0.038)	(0.018)	(0.025)	(0.030)	(0.025)	(0.025)	(0.039)	(0.034)	(0.052)	(0.079)	(0.040)	(0.118)
2007	6,451	-3.342	-0.565	-0.068	-0.092	-0.114	-0.046	-0.046	-0.215	-0.192	-0.591	-1.323	-0.398	-3.311
		(0.118)	(0.040)	(0.019)	(0.026)	(0.032)	(0.026)	(0.026)	(0.040)	(0.036)	(0.053)	(0.080)	(0.041)	(0.140)
2008	5,054	-2.065	-0.437	-0.052	-0.032	-0.009	0.043	0.043	0.104	0.083	0.116	-0.005	0.033	-0.585
		(0.210)	(0.069)	(0.033)	(0.046)	(0.055)	(0.046)	(0.046)	(0.071)	(0.063)	(0.093)	(0.133)	(0.071)	(0.226)
2009	577	6.468	0.641	0.245	0.598	0.835	0.590	0.590	0.755	0.401	0.399	0.568	-0.002	0.303
		(0.767)	(0.248)	(0.106)	(0.153)	(0.191)	(0.153)	(0.153)	(0.241)	(0.212)	(0.314)	(0.444)	(0.213)	(0.741)
2010	1,507	-0.555	0.005	0.103	0.151	0.162	0.060	0.060	-0.037	-0.085	-0.396	-0.554	-0.311	-0.751
		(0.287)	(0.095)	(0.043)	(0.058)	(0.069)	(0.053)	(0.053)	(0.086)	(0.077)	(0.110)	(0.172)	(0.082)	(0.259)

2011	3,577	-0.232	-0.062	0.003	0.021	0.007	0.004	0.004	0.036	0.018	-0.116	-0.334	-0.133	-0.739
		(0.179)	(0.059)	(0.028)	(0.039)	(0.046)	(0.037)	(0.037)	(0.057)	(0.051)	(0.075)	(0.110)	(0.057)	(0.164)
2012	4,011	-0.992	-0.106	-0.024	-0.035	-0.064	-0.040	-0.040	-0.151	-0.139	-0.386	-0.655	-0.246	-1.445
		(0.148)	(0.043)	(0.020)	(0.028)	(0.033)	(0.027)	(0.027)	(0.042)	(0.037)	(0.055)	(0.083)	(0.042)	(0.136)
2013	4,078	-0.012	-0.114	0.000	0.014	0.031	0.031	0.031	0.060	0.045	0.106	0.292	0.061	0.279
		(0.121)	(0.040)	(0.018)	(0.025)	(0.030)	(0.025)	(0.025)	(0.039)	(0.035)	(0.052)	(0.079)	(0.039)	(0.136)
2014	3,727	-0.989	-0.251	-0.004	-0.009	-0.025	-0.021	-0.021	-0.065	-0.059	-0.164	-0.635	-0.105	-1.845
		(0.138)	(0.045)	(0.021)	(0.029)	(0.035)	(0.028)	(0.028)	(0.044)	(0.040)	(0.061)	(0.094)	(0.045)	(0.179)
2015	3,472	1.156	-0.046	0.008	0.025	0.017	0.009	0.009	0.059	0.042	0.094	0.239	0.052	0.221
		(0.135)	(0.048)	(0.021)	(0.030)	(0.037)	(0.031)	(0.031)	(0.048)	(0.042)	(0.062)	(0.091)	(0.046)	(0.157)
2016	3,859	-2.217	-0.206	-0.017	-0.024	-0.057	-0.040	-0.040	-0.114	-0.107	-0.282	-0.810	-0.174	-1.560
		(0.164)	(0.059)	(0.026)	(0.037)	(0.044)	(0.035)	(0.035)	(0.056)	(0.050)	(0.076)	(0.109)	(0.056)	(0.159)
2017	4,610	0.744	-0.007	0.034	0.081	0.120	0.086	0.086	0.181	0.134	0.204	0.385	0.070	0.047
		(0.131)	(0.041)	(0.019)	(0.026)	(0.032)	(0.026)	(0.026)	(0.041)	(0.036)	(0.054)	(0.082)	(0.040)	(0.129)
2018	4,972	-0.834	-0.223	-0.017	-0.034	-0.068	-0.050	-0.050	-0.187	-0.170	-0.320	-0.559	-0.150	-0.603
		(0.123)	(0.046)	(0.022)	(0.030)	(0.036)	(0.030)	(0.030)	(0.045)	(0.041)	(0.059)	(0.084)	(0.045)	(0.120)
2019	4,845	-1.263	-0.051	-0.008	-0.011	0.002	0.010	0.010	0.026	0.029	0.011	-0.150	-0.018	0.201
		(0.135)	(0.049)	(0.022)	(0.031)	(0.037)	(0.030)	(0.030)	(0.045)	(0.040)	(0.061)	(0.088)	(0.046)	(0.132)
2020	2,081	2.747	0.056	0.012	-0.002	0.000	-0.012	-0.012	-0.039	-0.025	0.071	0.116	0.096	0.330
		(0.291)	(0.109)	(0.050)	(0.071)	(0.085)	(0.069)	(0.069)	(0.113)	(0.103)	(0.151)	(0.227)	(0.117)	(0.355)
2021	5,108	1.511	0.004	0.021	0.045	0.056	0.035	0.035	0.046	0.022	0.036	-0.109	0.014	-0.837
		(0.144)	(0.040)	(0.019)	(0.026)	(0.032)	(0.026)	(0.026)	(0.040)	(0.036)	(0.053)	(0.081)	(0.041)	(0.134)
2022	8,153	-1.914	-0.307	-0.074	-0.125	-0.182	-0.108	-0.108	-0.265	-0.214	-0.411	-0.846	-0.198	-1.896
		(0.128)	(0.043)	(0.020)	(0.028)	(0.034)	(0.028)	(0.028)	(0.043)	(0.038)	(0.057)	(0.083)	(0.042)	(0.119)

Panel B – 3-day cluster-free buyback announcements

Year	*Obs*	CAR (-50,-1)	CAR (-5,-1)	AR (day 0)	CAR (0,+1)	CAR (0,+2)	CAR (+1,+2)	CAR (+1,+3)	CAR (+1,+5)	CAR (+2,+5)	CAR (+2,+10)	CAR (+2,+20)	CAR (+6,+10)	CAR (+1,+50)
1999	149	-6.035	-1.032	0.111	0.277	0.299	0.188	0.188	-0.230	-0.396	-1.335	-2.398	-0.939	-7.218
		(1.106)	(0.357)	(0.157)	(0.232)	(0.268)	(0.204)	(0.204)	(0.315)	(0.286)	(0.457)	(0.620)	(0.379)	(1.104)
2000	346	-1.200	0.429	0.188	0.417	0.696	0.508	0.508	0.879	0.651	1.131	0.801	0.480	1.986
		(0.820)	(0.245)	(0.109)	(0.166)	(0.207)	(0.163)	(0.163)	(0.232)	(0.195)	(0.306)	(0.461)	(0.239)	(0.648)
2001	222	5.638	0.714	0.216	0.435	0.641	0.426	0.426	0.918	0.699	0.908	1.778	0.209	4.041
		(0.741)	(0.315)	(0.149)	(0.197)	(0.233)	(0.183)	(0.183)	(0.290)	(0.253)	(0.403)	(0.529)	(0.296)	(0.765)
2002	271	0.373	-0.282	0.070	0.442	0.460	0.390	0.390	0.303	-0.069	-0.022	-0.205	0.047	-0.086
		(1.008)	(0.322)	(0.154)	(0.204)	(0.238)	(0.189)	(0.189)	(0.278)	(0.244)	(0.365)	(0.544)	(0.263)	(0.817)
2003	228	0.765	-0.037	0.185	0.243	0.103	-0.081	-0.081	-0.483	-0.541	-0.605	-0.873	-0.064	0.094
		(0.715)	(0.269)	(0.147)	(0.173)	(0.221)	(0.167)	(0.167)	(0.251)	(0.230)	(0.342)	(0.490)	(0.253)	(0.656)

2004	563	-1.333	-0.157	-0.051	0.062	0.110	0.162	0.162	0.046	-0.068	-0.280	-0.214	-0.213	-0.699
		(0.445)	(0.144)	(0.065)	(0.090)	(0.109)	(0.084)	(0.084)	(0.124)	(0.110)	(0.172)	(0.247)	(0.134)	(0.378)
2005	719	-1.309	-0.358	0.006	-0.024	-0.004	-0.010	-0.010	-0.183	-0.153	-0.117	-0.659	0.036	-0.984
		(0.320)	(0.114)	(0.057)	(0.071)	(0.086)	(0.067)	(0.067)	(0.108)	(0.094)	(0.146)	(0.201)	(0.113)	(0.326)
2006	767	0.276	0.000	0.191	0.305	0.312	0.121	0.121	0.169	0.056	0.330	0.604	0.275	1.117
		(0.352)	(0.115)	(0.054)	(0.075)	(0.085)	(0.068)	(0.068)	(0.103)	(0.090)	(0.138)	(0.202)	(0.107)	(0.325)
2007	1,005	-4.281	-0.786	-0.052	-0.018	0.007	0.059	0.059	-0.332	-0.365	-0.994	-1.823	-0.629	-3.781
		(0.382)	(0.129)	(0.064)	(0.080)	(0.097)	(0.080)	(0.080)	(0.127)	(0.112)	(0.163)	(0.246)	(0.123)	(0.412)
2008	885	-3.636	-0.561	0.082	0.019	0.015	-0.067	-0.067	-0.140	-0.077	-0.392	-0.843	-0.315	-3.257
		(0.567)	(0.201)	(0.095)	(0.130)	(0.154)	(0.130)	(0.130)	(0.195)	(0.169)	(0.261)	(0.376)	(0.190)	(0.593)
2009	247	2.460	0.807	0.392	0.891	1.192	0.800	0.800	1.317	0.818	1.048	2.079	0.230	1.709
		(1.334)	(0.447)	(0.194)	(0.271)	(0.343)	(0.264)	(0.264)	(0.421)	(0.353)	(0.523)	(0.792)	(0.369)	(1.181)
2010	411	1.065	0.412	0.264	0.431	0.518	0.254	0.254	0.317	0.151	-0.060	0.408	-0.211	0.072
		(0.631)	(0.205)	(0.103)	(0.139)	(0.162)	(0.123)	(0.123)	(0.195)	(0.178)	(0.244)	(0.394)	(0.180)	(0.557)
2011	553	0.238	0.006	0.032	0.122	0.157	0.125	0.125	0.135	0.045	-0.040	-0.362	-0.085	-1.446
		(0.559)	(0.179)	(0.093)	(0.128)	(0.143)	(0.105)	(0.105)	(0.158)	(0.140)	(0.210)	(0.310)	(0.161)	(0.463)
2012	481	-1.476	-0.249	-0.100	-0.042	-0.126	-0.026	-0.026	-0.213	-0.271	-0.268	-0.443	0.003	-1.462
		(0.554)	(0.150)	(0.082)	(0.110)	(0.122)	(0.092)	(0.092)	(0.142)	(0.123)	(0.190)	(0.298)	(0.147)	(0.505)
2013	499	0.876	0.209	0.082	0.214	0.244	0.163	0.163	0.184	0.052	0.126	0.468	0.074	1.288
		(0.438)	(0.152)	(0.079)	(0.096)	(0.109)	(0.082)	(0.082)	(0.141)	(0.127)	(0.181)	(0.260)	(0.132)	(0.437)
2014	423	-0.591	-0.290	0.069	0.165	0.139	0.070	0.070	0.161	0.065	0.137	0.106	0.072	-1.354
		(0.488)	(0.160)	(0.077)	(0.104)	(0.119)	(0.094)	(0.094)	(0.141)	(0.124)	(0.187)	(0.275)	(0.146)	(0.455)
2015	372	1.853	0.213	0.097	0.128	-0.021	-0.118	-0.118	-0.094	-0.125	-0.150	0.119	-0.025	0.326
		(0.597)	(0.191)	(0.097)	(0.125)	(0.147)	(0.121)	(0.121)	(0.180)	(0.156)	(0.210)	(0.310)	(0.171)	(0.503)
2016	452	-0.920	0.152	0.105	0.141	0.020	-0.085	-0.085	-0.199	-0.235	-0.636	-1.518	-0.401	-2.945
		(0.606)	(0.206)	(0.109)	(0.149)	(0.164)	(0.116)	(0.116)	(0.188)	(0.172)	(0.271)	(0.353)	(0.203)	(0.522)
2017	534	0.822	0.227	0.131	0.249	0.390	0.260	0.260	0.540	0.421	0.464	0.909	0.042	0.622
		(0.424)	(0.147)	(0.081)	(0.105)	(0.126)	(0.094)	(0.094)	(0.135)	(0.121)	(0.168)	(0.253)	(0.128)	(0.399)
2018	552	-0.185	-0.213	0.173	0.198	0.157	-0.016	-0.016	-0.032	-0.057	0.035	-0.373	0.092	-1.103
		(0.415)	(0.154)	(0.087)	(0.104)	(0.121)	(0.102)	(0.102)	(0.147)	(0.132)	(0.193)	(0.287)	(0.144)	(0.408)
2019	649	-1.576	-0.058	0.106	0.098	0.225	0.118	0.118	0.207	0.215	-0.008	-0.464	-0.223	-0.700
		(0.425)	(0.146)	(0.068)	(0.101)	(0.115)	(0.089)	(0.089)	(0.120)	(0.108)	(0.168)	(0.234)	(0.130)	(0.363)
2020	377	3.763	0.594	0.141	-0.009	0.080	-0.061	-0.061	0.022	0.172	0.500	0.483	0.328	0.506
		(0.780)	(0.270)	(0.130)	(0.181)	(0.210)	(0.160)	(0.160)	(0.258)	(0.237)	(0.344)	(0.508)	(0.277)	(0.810)
2021	401	2.021	0.236	0.293	0.336	0.442	0.149	0.149	0.550	0.507	0.551	0.823	0.043	-0.089
		(0.649)	(0.168)	(0.101)	(0.128)	(0.157)	(0.123)	(0.123)	(0.186)	(0.160)	(0.223)	(0.348)	(0.166)	(0.538)
2022	604	-3.087	-0.043	0.157	0.084	0.111	-0.046	-0.046	-0.358	-0.285	-0.891	-2.167	-0.606	-4.287
		(0.495)	(0.181)	(0.089)	(0.119)	(0.137)	(0.110)	(0.110)	(0.165)	(0.145)	(0.220)	(0.312)	(0.165)	(0.431)

Table IV. Abnormal returns on the announcement of share buyback trades by time of announcement

This table reports the daily abnormal returns (AR_0), expressed in percentage points, for alternative times of the day the share buyback was disclosed. The abnormal returns are estimated based on the market-adjusted model where FTSE All-Share index serves as the market portfolio. *N-day cluster-free buyback* denotes share buyback announcements that were disclosed at least *n* business days apart. The sample includes 79,525 share buyback transactions from 724 unique firms, that are UK-registered and with a primary listing in the London Stock Exchange, that repurchased shares in the open market from Jan 1, 1999 to Sep 1, 2022. Of the 79,525 share buyback transactions. All variables are winsorized at the 1% and 99% tails and standard errors are reported in parentheses. *$p < 0.1$; **$p < 0.05$; ***$p < 0.01$.

Abnormal returns % (day 0)	Buybacks - all trades (clustered)	3-day cluster-free buybacks	5-day cluster-free buybacks	20-day cluster-free buybacks
All disclosures	*N=79,525*	*N=11,710*	*N=10,489*	*N=8,787*
	-0.0192***	0.0992***	0.1369***	0.1965***
	(0.0056)	*(0.0190)*	*(0.0203)*	*(0.0225)*
Same day open market hours	*N=3,126*	*N=1,151*	*N=962*	*N=574*
	-0.0107	0.0484	0.1372*	0.2926**
	(0.0378)	*(0.0672)*	*(0.0750)*	*(0.1077)*
Same day 30mins before market close	*N=488*	*N=229*	*N=197*	*N=111*
	-0.0948	-0.0146	0.0342	0.1899
	(0.0887)	*(0.1318)*	*(0.1451)*	*(0.2197)*
After market close	*N=76,399*	*N=10,559*	*N=9,527*	*N=8,213*
	-0.0195***	0.1047***	0.1368***	0.1897***
	(0.0057)	(0.0198)	(0.0210)	(0.0228)
Next day before market open (0:00:01-8:29:59)	*N=23,756*	*N= 4,917*	*N=4,914*	*N=4,911*
	0.0185*	0.2345***	0.2350***	0.2350***
	(0.0111)	*(0.0280)*	*(0.0281)*	*(0.0281)*

Table V. Does the market react when share buyback trades are announced?

This table reports panel regressions of share buyback trade announcements on stock abnormal returns expressed in basis points. The dependent variable is the daily abnormal return for firm *i* on day *t* estimated based on the market-adjusted model, where FTSE All-Share index serves as the market portfolio. *N-day cluster-free buyback* denotes share buyback announcements that were disclosed at least *n* business days apart. The sample includes approximately 22.7 million daily observations from 4,520 unique firms. The sample includes 79,525 share buyback transactions from 724 unique firms that repurchased shares in the open market and 3,796 unique firms that have never repurchased shares. The sample date range is from Jan 1, 1999 to Sep 1, 2022. Table A.1 defines all variables in detail. All variables are winsorized at the 1% and 99% tails and standard errors are reported in parentheses. *$p < 0.1$; **$p < 0.05$; ***$p < 0.01$.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Buyback (annce.)	-0.040***	-0.034***	-0.032**	-0.068***	-0.061***	-0.061***	-0.073***	-0.066***	-0.067***	-0.080***	-0.073***	-0.070***
	(0.013)	(0.013)	(0.015)	(0.014)	(0.014)	(0.016)	(0.014)	(0.014)	(0.016)	(0.014)	(0.014)	(0.016)
3-day cluster-free buyback				0.176***	0.170***	0.190***						
				(0.030)	(0.030)	(0.047)						
5-day cluster-free buyback							0.233***	0.227***	0.255***			
							(0.032)	(0.032)	(0.050)			
20-day cluster-free buyback										0.330***	0.324***	0.328***
										(0.034)	(0.034)	(0.054)
Market Cap.$_{(t-20)}$		-0.000***	-0.000***		-0.000***	-0.000***		-0.000***	-0.000***		-0.000***	-0.000***
		(0.000)	(0.000)		(0.000)	(0.000)		(0.000)	(0.000)		(0.000)	(0.000)
Inverse price$_{(t-20)}$		0.000***	0.000**		0.000***	0.000**		0.000***	0.000**		0.000***	0.000**
		(0.000)	(0.000)		(0.000)	(0.000)		(0.000)	(0.000)		(0.000)	(0.000)
Ln(Volume$_{(t-20)}$)			-0.001			-0.001			-0.001			-0.001
			(0.001)			(0.001)			(0.001)			(0.001)
Turnover$_{(t-20)}$			-0.001			-0.001			-0.001			-0.001
			(0.002)			(0.002)			(0.002)			(0.002)
AIM	-0.107***	-0.106***	-0.105***	-0.107***	-0.106***	-0.105***	-0.107***	-0.106***	-0.105***	-0.107***	-0.106***	-0.105***
	(0.005)	(0.005)	(0.009)	(0.005)	(0.005)	(0.009)	(0.005)	(0.005)	(0.009)	(0.005)	(0.005)	(0.009)
Abnormal return$_{(t-20)}$		0.002	0.001		0.002	0.001		0.002	0.001		0.002	0.001
		(0.001)	(0.001)		(0.001)	(0.001)		(0.001)	(0.001)		(0.001)	(0.001)
Constant	-0.023***	-0.018***	-0.005	-0.023***	-0.018***	-0.005	-0.023***	-0.018***	-0.005	-0.023***	-0.018***	-0.005
	(0.001)	(0.001)	(0.011)	(0.001)	(0.001)	(0.011)	(0.001)	(0.001)	(0.011)	(0.001)	(0.001)	(0.011)

Observations	22,725,145	22,628,161	5,888,439	22,725,145	22,628,161	5,888,439	22,725,145	22,628,161	5,888,439	22,725,145	22,628,161	5,888,439
Adj. R^2	0.287	0.288	0.204	0.287	0.288	0.204	0.287	0.288	0.204	0.287	0.288	0.204
Firm & Calendar Day FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm & Day Cluster	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

Table VI. Liquidity descriptive statistics

This table reports the descriptive statistics (mean, standard error reported in parentheses, and observations in *italics*) for five alternative stock liquidity measures. *Abnormal volume* is measured as trading volume for firm *i* on day *t*, adjusted by the average trading volume over the previous 250 trading days. *Bid-Ask* is measured as the ask minus the bid price divided by the average ask and bid price for firm *i* on day *t*. *Amihud's* (2002) illiquidity is the absolute stock return of firm *i* on day *t*, adjusted by the sterling trading volume. *Ln(Amihud)* is the natural logarithm of Amihud's (2002) illiquidity. Sterling (£) value of volume (*£Volume*) is estimated as trading volume firm *i* on day *t* multiplied by the closing price on day *t*, and expressed in thousands (000s). *N-day cluster-free buyback* denotes share buybacks that were disclosed at least *n* business days apart. All variables are winsorized at the 1% and 99% tails.

Liquidity measures	All days	Non-buyback days	Buybacks - all trades (clustered)	3-day cluster-free buybacks	5-day cluster-free buybacks	20-day cluster-free buybacks
Abnormal volume	0.9709	0.9705	1.0566	1.1877	1.1768	1.1469
	(0.001)	(0.001)	(0.007)	(0.027)	(0.028)	(0.030)
obs	*6,388,268*	*6,359,691*	*28,577*	*3,897*	*3,511*	*2983*
Bid-Ask (%)	7.5033	7.5624	0.6198	2.2452	2.3303	2.3704
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
obs	*9,005,129*	*8,928,453*	*76,676*	*11,514*	*10,329*	*8,666*
Amihud ($x10^5$)	15.4167	15.4641	6.4971	11.4490	11.7468	11.9299
	(0.037)	(0.037)	(0.290)	(1.024)	(1.083)	(1.210)
obs	*5,657,876*	*5,628,025*	*29,851*	*4,172*	*3,762*	*3,187*
Ln(Amihud)	-0.2643	-0.2116	-4.0051	-2.5380	-2.4510	-2.4424
	(0.003)	(0.003)	(0.021)	(0.066)	(0.070)	(0.076)
obs	*1,871,064*	*1,845,070*	*25,994*	*3,197*	*2,865*	*2,429*
£Volume (000s)	3,070.87	2,934.13	29,350.98	17,139.89	16,540.50	16,808.88
	(5.056)	(4.911)	(200.911)	(478.511)	(500.080)	(552.376)
obs	*5,806,442*	*5,776,387*	*30,055*	*4,246*	*3,829*	*3,244*

Table VII. Do daily buybacks affect stock liquidity?

This table reports panel regressions of share buyback trade announcements on alternative stock liquidity measures. *N-day cluster-free buyback* denotes share buyback announcements that were disclosed at least *n* business days apart. In Panel A the dependent variable is *abnormal volume.* In Panel B the dependent variable is *bid-ask.* In Panel C the dependent variable is the natural logarithm of Amihud's illiquidity measure *(Ln(Amihud))*. In Panel D the dependent variable is Sterling (£) value of volume (*£Volume*). The sample includes 79,525 share buyback transactions from 724 unique firms that repurchased shares in the open market and 3,796 unique firms that have never repurchased shares. The sample date range is from Jan 1, 1999 to Sep 1, 2022. Table A.1 defines all variables in detail. All variables are winsorized at the 1% and 99% tails and standard errors are reported in parentheses. *$p < 0.1$; **$p < 0.05$; ***$p < 0.01$.

Panel A. Abnormal Volume	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Buyback (annce.)	0.084***	0.074***	0.073***	0.060***	0.054***	0.053***	0.065***	0.057***	0.056***	0.072***	0.063***	0.062***
	(0.020)	(0.019)	(0.018)	(0.018)	(0.017)	(0.017)	(0.019)	(0.018)	(0.017)	(0.020)	(0.018)	(0.017)
3-day cluster-free buyback				0.158***	0.142***	0.136***						
				(0.042)	(0.041)	(0.040)						
5-day cluster-free buyback							0.144***	0.135***	0.131***			
							(0.044)	(0.044)	(0.043)			
20-day cluster-free buyback										0.105**	0.100**	0.098**
										(0.042)	(0.042)	(0.042)
Market Cap.$_{(t-20)}$		-0.000	-0.000		-0.000	-0.000		-0.000	-0.000		-0.000	-0.000
		(0.000)	(0.000)		(0.000)	(0.000)		(0.000)	(0.000)		(0.000)	(0.000)
Inverse price$_{(t-20)}$		0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000
		(0.000)	(0.000)		(0.000)	(0.000)		(0.000)	(0.000)		(0.000)	(0.000)
Ln(Volume$_{(t-20)}$)			-0.015***			-0.015***			-0.015***			-0.015***
			(0.002)			(0.002)			(0.002)			(0.002)
Turnover$_{(t-20)}$			-0.006**			-0.006**			-0.006**			-0.006**
			(0.003)			(0.003)			(0.003)			(0.003)
AIM	0.003	-0.001	-0.001	0.003	-0.002	-0.002	0.003	-0.002	-0.002	0.003	-0.002	-0.002
	(0.008)	(0.010)	(0.010)	(0.008)	(0.010)	(0.010)	(0.008)	(0.010)	(0.010)	(0.008)	(0.010)	(0.010)
Abnormal volume$_{(t-20)}$		0.059***	0.066***		0.059***	0.066***		0.059***	0.066***		0.059***	0.066***
		(0.001)	(0.002)		(0.001)	(0.002)		(0.001)	(0.002)		(0.001)	(0.002)
Constant	0.962***	0.915***	1.187***	0.962***	0.915***	1.187***	0.962***	0.915***	1.187***	0.962***	0.915***	1.187***
	(0.002)	(0.003)	(0.028)	(0.002)	(0.003)	(0.028)	(0.002)	(0.003)	(0.028)	(0.002)	(0.003)	(0.028)

Observations	6,882,848	5,171,143	5,028,487	6,882,848	5,171,143	5,028,487	6,882,848	5,171,143	5,028,487	6,882,848	5,171,143	5,028,487
Adj. R^2	0.020	0.024	0.024	0.020	0.024	0.024	0.020	0.024	0.024	0.020	0.024	0.024
Firm & Calendar Day FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm & Day Cluster	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Panel B. Bid-Ask spread	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Buyback (annce.)	0.002***	0.000	0.000	0.003***	0.000**	0.000	0.003***	0.000**	0.000	0.003***	0.000*	0.000
	(0.001)	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)
3-day cluster-free buyback				-0.008***	-0.002***	-0.002***						
				(0.001)	(0.000)	(0.001)						
5-day cluster-free buyback							-0.008***	-0.002***	-0.002***			
							(0.001)	(0.000)	(0.001)			
20-day cluster-free buyback										-0.009***	-0.003***	-0.002***
										(0.001)	(0.000)	(0.001)
Market Cap.$_{(t-20)}$		-0.000	-0.000		-0.000	-0.000		-0.000	-0.000		-0.000	-0.000
		(0.000)	(0.000)		(0.000)	(0.000)		(0.000)	(0.000)		(0.000)	(0.000)
Inverse price$_{(t-20)}$		0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000
		(0.000)	(0.000)		(0.000)	(0.000)		(0.000)	(0.000)		(0.000)	(0.000)
Ln(Volume$_{(t-20)}$)			-0.001***			-0.001***			-0.001***			-0.001***
			(0.000)			(0.000)			(0.000)			(0.000)
Turnover$_{(t-20)}$			0.001***			0.001***			0.001***			0.001***
			(0.000)			(0.000)			(0.000)			(0.000)
AIM	-0.078***	-0.021***	-0.010*	-0.078***	-0.021***	-0.010*	-0.078***	-0.021***	-0.010*	-0.078***	-0.021***	-0.010*
	(0.013)	(0.004)	(0.005)	(0.013)	(0.004)	(0.005)	(0.013)	(0.004)	(0.005)	(0.013)	(0.004)	(0.005)
Bid-Ask spread(%)$_{(t-20)}$		0.749***	0.693***		0.749***	0.693***		0.749***	0.693***		0.749***	0.693***
		(0.004)	(0.007)		(0.004)	(0.007)		(0.004)	(0.007)		(0.004)	(0.007)
Constant	0.113***	0.029***	0.035***	0.113***	0.029***	0.035***	0.113***	0.029***	0.035***	0.113***	0.029***	0.035***
	(0.007)	(0.002)	(0.003)	(0.007)	(0.002)	(0.003)	(0.007)	(0.002)	(0.003)	(0.007)	(0.002)	(0.003)
Observations	9,866,927	9,751,054	3,265,619	9,866,927	9,751,054	3,265,619	9,866,927	9,751,054	3,265,619	9,866,927	9,751,054	3,265,619
Adj. R^2	0.570	0.808	0.785	0.570	0.808	0.785	0.570	0.808	0.785	0.570	0.808	0.785
Firm & Calendar Day FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Firm & Day Cluster	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Panel C. Ln(Amihud)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Buyback (annce.)	-0.192**	-0.077**	-0.070**	-0.198**	-0.081**	-0.074**	-0.200**	-0.082**	-0.075**	-0.198**	-0.079**	-0.072**
	(0.076)	(0.036)	(0.036)	(0.082)	(0.036)	(0.036)	(0.081)	(0.037)	(0.037)	(0.080)	(0.036)	(0.036)
3-day cluster-free buyback				0.047	0.038	0.031						
				(0.085)	(0.052)	(0.052)						
5-day cluster-free buyback							0.074	0.054	0.047			
							(0.091)	(0.059)	(0.059)			
20-day cluster-free buyback										0.069	0.028	0.020
										(0.097)	(0.064)	(0.063)
Market Cap.$_{(t-20)}$		-0.000***	-0.000***		-0.000***	-0.000***		-0.000***	-0.000***		-0.000***	-0.000***
		(0.000)	(0.000)		(0.000)	(0.000)		(0.000)	(0.000)		(0.000)	(0.000)
Inverse price$_{(t-20)}$		0.002*	0.002*		0.002*	0.002*		0.002*	0.002*		0.002*	0.002*
		(0.001)	(0.001)		(0.001)	(0.001)		(0.001)	(0.001)		(0.001)	(0.001)
Ln(Volume$_{(t-20)}$)			0.086***			0.086***			0.086***			0.086***
			(0.019)			(0.019)			(0.019)			(0.019)
Turnover$_{(t-20)}$			-0.050			-0.050			-0.050			-0.050
			(0.040)			(0.040)			(0.040)			(0.040)
AIM	-1.192***	-0.676***	-0.631***	-1.192***	-0.676***	-0.632***	-1.192***	-0.676***	-0.632***	-1.192***	-0.676***	-0.632***
	(0.283)	(0.171)	(0.164)	(0.283)	(0.171)	(0.164)	(0.283)	(0.171)	(0.164)	(0.283)	(0.171)	(0.164)
Ln(Amihud)$_{(t-20)}$		0.374***	0.421***		0.374***	0.421***		0.374***	0.421***		0.374***	0.421***
		(0.012)	(0.013)		(0.012)	(0.013)		(0.012)	(0.013)		(0.012)	(0.013)
Constant	0.169	-0.333***	-1.958***	0.169	-0.333***	-1.958***	0.169	-0.333***	-1.958***	0.169	-0.333***	-1.958***
	(0.108)	(0.056)	(0.353)	(0.108)	(0.056)	(0.353)	(0.108)	(0.056)	(0.353)	(0.108)	(0.056)	(0.353)
		-0.000***										
Observations	1,984,557	1,379,506	1,379,506	1,984,557	1,379,506	1,379,506	1,984,557	1,379,506	1,379,506	1,984,557	1,379,506	1,379,506
Adj. R^2	0.740	0.779	0.779	0.740	0.779	0.779	0.740	0.779	0.779	0.740	0.779	0.779
Firm & Calendar Day FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm & Day Cluster	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Panel D. £ Volume	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)

Buyback (annce.)	2,488.006**	1,206.484**	1,179.430**	2,582.845**	1,153.506*	1,119.452*	2,608.249**	1,181.431*	1,148.225*	2,613.390**	1,204.208**	1,171.998**
	(1,127.923)	(545.501)	(541.404)	(1,277.002)	(609.549)	(603.627)	(1,266.188)	(609.095)	(603.588)	(1,247.730)	(600.603)	(595.447)
3-day cluster-free				-620.303	358.934	411.475						
				(1,111.340)	(568.804)	(566.087)						
5-day cluster-free							-869.191	187.822	236.797			
							(1,134.151)	(605.456)	(604.176)			
20-day cluster-free										-1,067.636	20.051	66.177
										(1,169.796)	(612.978)	(611.613)
Market Cap.$_{(t-20)}$		0.000***	0.000***		0.000***	0.000***		0.000***	0.000***		0.000***	0.000***
		(0.000)	(0.000)		(0.000)	(0.000)		(0.000)	(0.000)		(0.000)	(0.000)
Inverse price$_{(t-20)}$		-0.132	-0.147		-0.132	-0.147		-0.132	-0.147		-0.132	-0.147
		(0.142)	(0.163)		(0.142)	(0.163)		(0.142)	(0.163)		(0.142)	(0.163)
Ln(Volume$_{(t-20)}$)			-56.749***			-56.769***			-56.759***			-56.752***
			(18.376)			(18.377)			(18.376)			(18.376)
Turnover$_{(t-20)}$			-97.383			-97.363			-97.376			-97.382
			(206.156)			(206.150)			(206.153)			(206.155)
AIM	683.891	208.005	181.596	683.954	207.949	181.525	683.995	207.974	181.553	684.016	208.002	181.586
	(463.458)	(267.079)	(275.836)	(463.467)	(267.093)	(275.851)	(463.466)	(267.092)	(275.850)	(463.463)	(267.089)	(275.846)
GBP Volume$_{(t-20)}$		0.478***	0.481***		0.478***	0.481***		0.478***	0.481***		0.478***	0.481***
		(0.021)	(0.021)		(0.021)	(0.021)		(0.021)	(0.021)		(0.021)	(0.021)
Constant	2,825.009***	1,206.075***	2,296.711***	2,824.956***	1,206.028***	2,297.007***	2,824.933***	1,206.053***	2,296.858***	2,824.924***	1,206.073***	2,296.749***
	(132.561)	(111.449)	(323.411)	(132.575)	(111.452)	(323.424)	(132.574)	(111.448)	(323.420)	(132.572)	(111.444)	(323.410)
Observations	6,131,541	5,539,608	5,357,195	6,131,541	5,539,608	5,357,195	6,131,541	5,539,608	5,357,195	6,131,541	5,539,608	5,357,195
Adj. R^2	0.687	0.773	0.773	0.687	0.773	0.773	0.687	0.773	0.773	0.687	0.773	0.773
Firm & Calendar Day FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm & Day Cluster	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table VIII. Descriptive statistics on repurchasing skill

This table reports summary statistics on the s*kill* shown by firms when repurchasing shares. *Skill* is defined as the percentage of the price paid for the share buyback trade by firm *i* on day *t* relative to a benchmark price (e.g. closing price on day t). The prices used as a benchmark for estimating each measure of buyback skill are: closing price of day *t*; mid-price of day *t*; high price of day *t*; 5-day average closing price over the days *t-5* to *t-1*; 10-day average closing price over the days *t-10* to *t-1*; 20-day average closing price over the days *t-20* to *t-1*; 50-day average closing price over the days *t-50* to *t-1*; 100-day average closing price over the days *t-100* to *t-1*. *Skill* is then multiplied with -1 for easier interpretation, i.e., a deeper discount will give a larger positive *skill* value. *N-day cluster-free buyback* denotes share buyback announcements that were disclosed at least *n* business days apart. The sample includes 79,525 share buyback transactions from 724 unique firms, that are UK-registered and with a primary listing in the London Stock Exchange, that repurchased shares in the open market from Jan 1, 1999 to Sep 1, 2022. All variables are winsorized at the 1% and 99% tails and standard errors are reported in parentheses. $*p < 0.1$; $**p < 0.05$; $***p < 0.01$.

Panel A. All hours of disclosure	All buybacks		3-day cluster-free buybacks		5-day cluster-free buybacks		20-day cluster-free buybacks	
	Obs	Avg skill (%) *(st. error)*	Obs	Avg skill (%) *(st. error)*	Obs	Avg skill (%) *(st. error)*	Obs	Avg skill (%) *(st. error)*
Skill (closing price)	79,525	0.8071*** *(0.0326)*	11,712	1.1320*** *(0.0770)*	10,491	1.1084 *(0.0798)*	8,789	1.0816 *(0.0855)*
Skill (mid price)	76,525	0.1401*** *(0.0043)*	11,390	0.4529*** *(0.0178)*	10,208	0.4468 *(0.0188)*	8,561	0.4267 *(0.0203)*
Skill (high price)	76,525	1.4212*** *(0.0056)*	11,390	1.8887*** *(0.0217)*	10,208	1.8957 *(0.0230)*	8,561	1.9033 *(0.0250)*
Skill (5-day avg price)	79,525	0.9844*** *(0.0330)*	11,712	1.3187*** *(0.0792)*	10,491	1.2765 *(0.0820)*	8,789	1.1787 *(0.0882)*
Skill (10-day avg price)	79,525	1.0875*** *(0.0341)*	11,712	1.3537*** *(0.0835)*	10,491	1.3433 *(0.0867)*	8,789	1.2877 *(0.0936)*
Skill (20-day avg price)	79,525	1.1275*** *(0.0362)*	11,709	1.3386*** *(0.0917)*	10,488	1.3234 *(0.0956)*	8,786	1.3166 *(0.1038)*
Skill (50-day avg price)	79,525	1.1007*** *(0.0419)*	11,702	1.3022*** *(0.1132)*	10,482	1.2840 *(0.1189)*	8,780	1.3127 *(0.1305)*
Skill (100-day avg price)	79,525	0.9039*** *(0.0497)*	11,696	1.2149*** *(0.1415)*	10,477	1.1710 *(0.1495)*	8,776	1.2561 *(0.1651)*

Panel B. Same day open hours		All buybacks		3-day cluster-free buybacks		5-day cluster-free buybacks		20-day cluster-free buybacks
	Obs	Avg skill (%) *(st. error)*	Obs	Avg skill (%) *(st. error)*	Obs	Avg skill (%) *(st. error)*	Obs	Avg skill (%) *(st. error)*
Skill (closing price)	3,125	0.9410*** *(0.1646)*	1,150	2.2490*** *(0.3096)*	961	2.5313*** *(0.3418)*	573	3.0263*** *(0.4824)*
Skill (mid price)	3,031	0.4369*** *(0.0421)***	1,109	1.0500*** *(0.0862)*	925	1.1126*** *(0.0947)*	553	1.2330*** *(0.1257)*
Skill (high price)	3,031	1.9089*** *(0.0474)*	1,109	2.4137*** *(0.0988)*	925	2.4923*** *(0.1094)*	553	2.7289*** *(0.1488)*
Skill (5-day avg price)	3,125	1.1701*** *(0.1675)*	1,150	2.4477*** *(0.3191)*	961	2.6305*** *(0.3482)*	573	3.0991*** *(0.4932)*
Skill (10-day avg price)	3,125	1.2720*** *(0.1742)*	1,150	2.4074*** *(0.3298)*	961	2.6181*** *(0.3596)*	573	3.1500*** *(0.5086)*
Skill (20-day avg price)	3,125	1.2959*** *(0.1910)*	1,150	2.2049*** *(0.3535)*	961	2.4689*** *(0.3841)*	573	3.0567*** *(0.5405)*
Skill (50-day avg price)	3,125	1.5214*** *(0.2311)*	1,150	1.8365*** *(0.4100)*	961	2.1737*** *(0.4449)*	573	2.9952*** *(0.6167)*
Skill (100-day avg price)	3,124	1.6945*** *(0.2866)*	1,150	1.1308*** *(0.4949)*	961	1.4680*** *(0.5346)*	573	2.4765*** *(0.7312)*
Panel C. Next day before market open		All buybacks		3-day cluster-free buybacks		5-day cluster-free buybacks		20-day cluster-free buybacks
	Obs	Avg skill (%) *(st. error)*	Obs	Avg skill (%) *(st. error)*	Obs	Avg skill (%) *(st. error)*	Obs	Avg skill (%) *(st. error)*
Skill (closing price)	23,943	0.7070*** *(0.0524)*	4,920	0.6990*** *(0.0841)*	4,917	0.7002*** *(0.0842)*	4,914	0.7008*** *(0.0842)*
Skill (mid price)	23,483	0.0943*** *(0.0066)*	4,850	0.2913*** *(0.0198)*	4,847	0.2921*** *(0.0198)*	4,844	0.2928*** *(0.0199)*
Skill (high price)	23,483	1.4781*** *(0.0093)*	4,850	1.7323*** *(0.0264)*	4,847	1.7332*** *(0.0264)*	4,844	1.7340*** *(0.0264)*
Skill (5-day avg price)	23,943	0.8892*** *(0.0535)*	4,920	0.7228*** *(0.0878)*	4,917	0.7233*** *(0.0879)*	4,914	0.7244*** *(0.0879)*

Skill (10-day avg price)	23,943	0.9853***	4,920	0.8101***	4,917	0.8108***	4,914	0.8121***
		(0.0561)		*(0.0960)*		*(0.0960)*		*(0.0961)*
Skill (20-day avg price)	23,939	0.9837***	4,918	0.8240***	4,915	0.8250***	4,912	0.8261***
		(0.0613)		*(0.1136)*		*(0.1136)*		*(0.1137)*
Skill (50-day avg price)	23,926	0.8560***	4,912	0.8078***	4,909	0.8091***	4,906	0.8105***
		(0.0745)		*(0.1558)*		*(0.1559)*		*(0.1560)*
Skill (100-day avg price)	23,917	0.7536***	4,911	0.8703***	4,908	0.8713***	4,905	0.8744***
		(0.0910)		*(0.2053)*		*(0.2054)*		*(0.2055)*

Table IX. Does the market pick up on buyback skill?

This table reports panel regressions of buyback s*kill* on abnormal returns and alternative measures of stock liquidity. *Skill* is defined as the percentage of the price paid for the share buyback trade by firm *i* on day *t* relative to a benchmark price (e.g. closing price on day t). The prices used as a benchmark for estimating each measure of buyback skill are: closing price of day *t*; mid-price of day *t*; high price of day *t*; 5-day average closing price over the days *t-5* to *t-1*; 10-day average closing price over the days *t-10* to *t-1*; 20-day average closing price over the days *t-20* to *t-1*; 50-day average closing price over the days *t-50* to *t-1*; 100-day average closing price over the days *t-100* to *t-1*. *Skill* is then multiplied with -1 for easier interpretation, i.e., a deeper discount will give a larger positive *skill* value. The regressions also include as controls a binary variable capturing firms listed in the AIM market, along with Market Cap., inverse price, and the dependent variable, all lagged at t-20. Same day announcement is a binary variable capturing buybacks disclosed the same day as the buyback transaction while the market was still open. Panels A and B provide the regression estimates for all share buybacks and the 3-day cluster-free buybacks, respectively, with *abnormal returns* (expressed in basis points) as the dependent variable. Panels C and D provide the regression estimates for all share buybacks and the 3-day cluster-free buybacks, respectively, with *abnormal volume* as the dependent variable. Panels E and F provide the regression estimates for all share buybacks and the 3-day cluster-free buybacks, respectively, with *Bid-Ask* spread as the dependent variable. Panels G and H provide the regression estimates for the all share buybacks and the 3-day cluster-free buybacks, respectively, with the natural logarithm of Amihud's illiquidity measure (*Ln(Amihud)*) as the dependent variable. Panels I and J provide the regression estimates for the all share buybacks and the 3-day cluster-free buybacks, respectively, with the Sterling (£) value of volume (*£Volume*) as the dependent variable. The sample includes 79,525 share buyback transactions from 724 unique firms, that are UK-registered and with a primary listing in the London Stock Exchange, that repurchased shares in the open market. The sample date range is from Jan 1, 1999 to Sep 1, 2022. Table A.1 defines all variables in detail. All variables are winsorized at the 1% and 99% tails and standard errors are reported in parentheses. *$p < 0.1$; **$p < 0.05$; ***$p < 0.01$.

Panel A. Abnormal Ret **All buybacks**	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Discount (closing)	1.124							
	(0.684)							
Discount (mid)		-12.375***						
		(2.431)						
Discount (high)			-9.481***					
			(1.669)					
Discount (5-day avg)				-1.159				
				(0.785)				
Discount (10-day avg)					-1.253			
					(0.784)			

Discount (20-day avg)						-1.101*		
						(0.609)		
Discount (50-day avg)							-0.737**	
							(0.318)	
Discount (100-day avg)								-0.499***
								(0.177)
Same day announcement	-0.109**	-0.089*	-0.096*	-0.104**	-0.103**	-0.103**	-0.103**	-0.103**
	(0.049)	(0.054)	(0.052)	(0.049)	(0.049)	(0.049)	(0.049)	(0.049)
Constant	0.009	0.025	0.153***	-0.035	-0.035	-0.031	-0.031	-0.033
	(0.044)	(0.031)	(0.040)	(0.048)	(0.048)	(0.048)	(0.046)	(0.046)
Observations	79,183	75,996	76,006	79,183	79,183	79,183	79,166	79,147
Adj. R^2	0.071	0.068	0.068	0.071	0.071	0.071	0.070	0.069
Financial controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm & Calendar Day FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm & Day Cluster	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Panel B. Abnormal Ret								
3-day cluster-free	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Discount (closing)	1.660***							
	(0.533)							
Discount (mid)		-8.433***						
		(2.450)						
Discount (high)			-7.637***					
			(2.124)					
Discount (5-day avg)				-2.574***				
				(0.623)				
Discount (10-day avg)					-2.604***			
					(0.582)			
Discount (20-day avg)						-2.237***		
						(0.494)		
Discount (50-day avg)							-1.515***	
							(0.354)	
Discount (100-day avg)								-1.034***

								(0.280)
Same day announcement	-0.062	-0.010	-0.013	-0.035	-0.038	-0.041	-0.045	-0.045
	(0.099)	(0.107)	(0.107)	(0.101)	(0.100)	(0.100)	(0.100)	(0.100)
Constant	0.229	0.311***	0.425***	0.231	0.230	0.231	0.197	0.163
	(0.301)	(0.096)	(0.105)	(0.286)	(0.287)	(0.288)	(0.289)	(0.284)
Observations	6,656	6,357	6,357	6,656	6,656	6,656	6,655	6,650
Adj. R^2	0.156	0.157	0.157	0.161	0.162	0.161	0.158	0.156
Financial controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm & Calendar Day FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm & Day Cluster	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Panel C. Abnormal Vol								
All buybacks	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Discount (closing)	0.007							
	(0.073)							
Discount (mid)		0.946						
		(0.894)						
Discount (high)			4.473***					
			(1.373)					
Discount (5-day avg)				0.055				
				(0.093)				
Discount (10-day avg)					0.084			
					(0.107)			
Discount (20-day avg)						0.114		
						(0.123)		
Discount (50-day avg)							0.145	
							(0.137)	
Discount (100-day avg)								0.101
								(0.120)
Same day announcement	0.284***	0.292***	0.278***	0.284***	0.284***	0.285***	0.284***	0.284***
	(0.068)	(0.070)	(0.069)	(0.068)	(0.069)	(0.069)	(0.068)	(0.068)
Constant	0.889***	0.871***	0.810***	0.893***	0.895***	0.897***	0.901***	0.898***
	(0.071)	(0.076)	(0.080)	(0.071)	(0.072)	(0.072)	(0.072)	(0.072)

Observations	26,868	24,696	24,696	26,868	26,868	26,868	26,868	26,868
Adj. R^2	0.147	0.150	0.152	0.147	0.147	0.147	0.147	0.147
Financial controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm & Calendar Day FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm & Day Cluster	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Panel D. Abnormal Vol								
3-day cluster-free	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Discount (closing)	0.754							
	(1.043)							
Discount (mid)		8.407*						
		(4.756)						
Discount (high)			7.159*					
			(3.948)					
Discount (5-day avg)				0.855				
				(0.961)				
Discount (10-day avg)					0.623			
					(0.873)			
Discount (20-day avg)						0.424		
						(0.785)		
Discount (50-day avg)							-0.201	
							(0.694)	
Discount (100-day avg)								-0.759
								(0.590)
Same day announcement	0.304	0.274	0.288	0.302	0.298	0.294	0.272	0.256
	(0.287)	(0.276)	(0.279)	(0.290)	(0.289)	(0.289)	(0.286)	(0.284)
Constant	0.449*	0.592**	0.494*	0.441*	0.444*	0.446*	0.464*	0.490*
	(0.252)	(0.245)	(0.256)	(0.252)	(0.252)	(0.251)	(0.252)	(0.255)
Observations	970	868	868	970	970	970	970	970
Adj. R^2	0.148	0.141	0.141	0.148	0.148	0.147	0.147	0.150
Financial controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm & Calendar Day FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Firm & Day Cluster	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Panel E. Bid-Ask spread								
All buybacks	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Discount (closing)	0.005**							
	(0.002)							
Discount (mid)		0.035***						
		(0.010)						
Discount (high)			0.040***					
			(0.008)					
Discount (5-day avg)				0.007***				
				(0.002)				
Discount (10-day avg)					0.008***			
					(0.002)			
Discount (20-day avg)						0.008***		
						(0.002)		
Discount (50-day avg)							0.006***	
							(0.001)	
Discount (100-day avg)								0.004***
								(0.001)
Same day announcement	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Constant	0.017***	0.003***	0.003***	0.017***	0.017***	0.017***	0.017***	0.017***
	(0.002)	(0.000)	(0.000)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Observations	76,120	75,967	75,976	76,120	76,120	76,120	76,103	76,084
Adj. R^2	0.830	0.823	0.823	0.830	0.830	0.830	0.830	0.830
Financial controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm & Calendar Day FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm & Day Cluster	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Panel F. Bid-Ask spread								
3-day cluster-free	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)

Discount (closing)	0.010							
	(0.006)							
Discount (mid)		0.070***						
		(0.020)						
Discount (high)			0.080***					
			(0.016)					
Discount (5-day avg)				0.015**				
				(0.007)				
Discount (10-day avg)					0.019***			
					(0.006)			
Discount (20-day avg)						0.021***		
						(0.005)		
Discount (50-day avg)							0.017***	
							(0.004)	
Discount (100-day avg)								0.011***
								(0.003)
Same day announcement	-0.001	-0.002	-0.002*	-0.002	-0.002	-0.002	-0.002	-0.002
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Constant	0.038***	0.008***	0.007***	0.037***	0.037***	0.037***	0.038***	0.038***
	(0.012)	(0.002)	(0.002)	(0.012)	(0.012)	(0.012)	(0.012)	(0.012)
Observations	6,463	6,341	6,341	6,463	6,463	6,463	6,462	6,457
Adj. R^2	0.841	0.834	0.835	0.841	0.842	0.842	0.842	0.842
Financial controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm & Calendar Day FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm & Day Cluster	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Panel G. Ln(Amihud								
All buybacks	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Discount (closing)	-1.496**							
	(0.665)							
Discount (mid)		0.470						
		(1.784)						
Discount (high)			8.331***					

			(2.694)					
Discount (5-day avg)				-0.371				
				(0.666)				
Discount (10-day avg)					0.071			
					(0.592)			
Discount (20-day avg)						0.546		
						(0.489)		
Discount (50-day avg)							0.580*	
							(0.334)	
Discount (100-day avg)								0.654***
								(0.251)
Same day announcement	-0.128	-0.133	-0.150	-0.131	-0.133	-0.134	-0.136	-0.138
	(0.096)	(0.097)	(0.096)	(0.097)	(0.097)	(0.097)	(0.097)	(0.096)
Constant	-3.204***	-3.186***	-3.289***	-3.189***	-3.185***	-3.180***	-3.174***	-3.164***
	(0.304)	(0.302)	(0.297)	(0.303)	(0.302)	(0.300)	(0.297)	(0.293)
Observations	22,706	22,705	22,705	22,706	22,706	22,706	22,706	22,702
Adj. R^2	0.829	0.828	0.829	0.828	0.828	0.829	0.829	0.829
Financial controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm & Calendar Day FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm & Day Cluster	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Panel H. Ln(Amihud)								
3-day cluster-free	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Discount (closing)	-2.141							
	(1.297)							
Discount (mid)		-6.917						
		(4.920)						
Discount (high)			-1.723					
			(3.532)					
Discount (5-day avg)				-0.304				
				(1.025)				
Discount (10-day avg)					0.258			
					(1.072)			

Discount (20-day avg)						0.769		
						(0.977)		
Discount (50-day avg)							0.909	
							(0.870)	
Discount (100-day avg)								0.499
								(0.727)
Same day announcement	-0.216	-0.267	-0.223	-0.161	-0.150	-0.128	-0.117	-0.104
	(0.419)	(0.429)	(0.431)	(0.421)	(0.421)	(0.425)	(0.429)	(0.429)
Constant	-2.546***	-2.559***	-2.522***	-2.523***	-2.529***	-2.540***	-2.540***	-2.465***
	(0.372)	(0.373)	(0.385)	(0.370)	(0.372)	(0.372)	(0.367)	(0.391)
Observations	984	980	980	984	984	984	984	980
Adj. R^2	0.863	0.863	0.862	0.862	0.862	0.862	0.862	0.863
Financial controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm & Calendar Day FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm & Day Cluster	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Panel I. £Volume								
All buybacks	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Discount (closing)	33,701.161***							
	(4,599.835)							
Discount (mid)		16,527.397*						
		(8,624.480)						
Discount (high)			58,831.553***					
			(15,485.736)					
Discount (5-day avg)				33,464.100***				
				(4,655.122)				
Discount (10-day avg)					32,295.592***			
					(4,937.461)			
Discount (20-day avg)						30,207.224***		
						(5,445.423)		
Discount (50-day avg)							25,548.644***	
							(6,158.881)	
Discount (100-day avg)								19,658.258***

								(6,375.238)
Same day announcement	-207.812	114.032	-66.490	-240.106	-252.601	-250.276	-380.434	-387.223
	(571.085)	(565.360)	(543.707)	(575.333)	(578.428)	(585.027)	(598.798)	(608.732)
Constant	10,337.980***	10,200.619***	9,394.734***	10,207.264***	10,039.119***	9,856.634***	9,494.130***	8,986.043***
	(1,470.543)	(1,703.577)	(1,713.242)	(1,481.918)	(1,512.956)	(1,570.542)	(1,773.966)	(2,056.407)
Observations	27,790	25,616	25,616	27,790	27,790	27,790	27,790	27,784
Adj. R^2	0.895	0.899	0.900	0.895	0.894	0.894	0.893	0.891
Financial controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm & Calendar Day FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm & Day Cluster	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Panel J. £ Volume 3-day cluster-free	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Discount (closing)	13,290.917**							
	(6,275.882)							
Discount (mid)		44,941.403*						
		(25,627.634)						
Discount (high)			61,095.787***					
			(23,200.810)					
Discount (5-day avg)				14,042.328**				
				(6,155.036)				
Discount (10-day avg)					13,213.456**			
					(5,839.280)			
Discount (20-day avg)						11,825.877**		
						(5,434.399)		
Discount (50-day avg)							9,837.760**	
							(4,193.960)	
Discount (100-day avg)								6,019.246**
								(3,016.935)
Same day announcement	1,844.640	1,988.723	1,909.795	1,757.566	1,708.927	1,687.158	1,628.366	1,558.046
	(1,346.406)	(1,434.239)	(1,416.284)	(1,353.247)	(1,347.245)	(1,341.360)	(1,347.002)	(1,366.797)
Constant	4,779.736*	4,936.573**	3,958.223	4,610.664*	4,552.427*	4,538.207*	4,609.375*	4,726.944*

	(2,523.845)	(2,477.213)	(2,582.799)	(2,520.873)	(2,515.972)	(2,516.185)	(2,496.511)	(2,514.811)
Observations	1,933	1,792	1,792	1,933	1,933	1,933	1,933	1,929
Adj. R^2	0.906	0.905	0.905	0.906	0.906	0.906	0.906	0.906
Financial controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm & Calendar Day FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm & Day Cluster	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table X. The effect of share buyback intensity

This table reports panel regressions of share buyback intensity on stock abnormal returns and alternative measures of stock liquidity. Panel A provides the regression estimates with *abnormal returns* (expressed in basis points) as the dependent variable based on the market-adjusted model, where FTSE All-Share index serves as the market portfolio. Panel B provides the regression estimates with *abnormal volume* as the dependent variable. Panel C provides the regression estimates with *Bid-Ask* spread as the dependent variable. Panel D provides the regression estimates with the natural logarithm of Amihud's illiquidity measure (*Ln(Amihud)*) as the dependent variable. Panel E provides the regression estimates with the Sterling (£) value of Volume (*£Volume*) as the dependent variable. Share buyback intensity is measured as the number of repurchased shares divided by six alternative benchmarks: the 20-day average number of shares outstanding during *t-20* to *t-1* relative to day *t* of the share buyback announcement *(BB Intensity$_{(Average, -20,-1)}$)*; the 63-day average number of shares outstanding during *t-83* to *t-21* relative to day *t* of the share buyback announcement *(BB Intensity$_{(Average, -83,-21)}$)*; the trading volume on day *t-1* relative to day *t* of the share buyback announcement *(BB Intensity$_{(Volume, t-1)}$)*; the trading volume on day *t-20* relative to day *t* of the share buyback announcement *(BB Intensity$_{(Volume, t-20)}$)*; the number of shares outstanding on day *t-1* relative to day *t* of the share buyback announcement *(BB Intensity$_{(nosh, t-1)}$)*; the number of shares outstanding on day *t-20* relative to day *t* of the share buyback announcement *(BB Intensity$_{(nosh, t-20)}$)*. The regressions also include as controls a binary variable capturing firms listed in the AIM market, along with Market Cap., inverse price, and the dependent variable, all lagged at t-20. Same day announcement is a binary variable capturing buybacks disclosed the same day as the buyback transaction while the market was still open. The sample includes 79,525 share buyback transactions from 724 unique firms, that are UK-registered and with a primary listing in the London Stock Exchange, that repurchased shares in the open market. The sample date range is from Jan 1, 1999 to Sep 1, 2022. Table A.1 defines all variables in detail. All variables are winsorized at the 1% and 99% tails and standard errors are reported in parentheses. *$p < 0.1$; **$p < 0.05$; ***$p < 0.01$.

Panel A.	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Abnormal returns	All buybacks (clustered)						3-day cluster-free buybacks					
BB Intensity $_{(Average, -20,-1)}$	0.000						-0.000					
	(0.000)						(0.000)					
BB Intensity $_{(Average,-83,-21)}$		-0.000						0.000***				
		(0.000)						(0.000)				
BB Intensity $_{(volume, t-1)}$			0.000						-0.000			
			(0.000)						(0.000)			
BB Intensity $_{(volume, t-20)}$				0.000***						0.000		
				(0.000)						(0.000)		
BB Intensity $_{(nosh, t-1)}$					-0.112						0.288	
					(0.335)						(0.454)	
BB Intensity $_{(nosh, t-20)}$						-0.068						0.541
						(0.405)						(0.492)
Same day announcement	-0.091	-0.081	-0.005	-0.028	-0.091**	-0.091**	-0.476*	-0.405	-0.464**	-0.337	-0.119	-0.121
	(0.088)	(0.085)	(0.079)	(0.084)	(0.045)	(0.045)	(0.271)	(0.265)	(0.232)	(0.237)	(0.094)	(0.094)

Constant	-0.181***	-1.113***	-0.958***	-0.815***	-0.104	-0.104	-0.378*	-4.604***	-1.508	-2.054	-0.369	-0.372
	(0.057)	(0.334)	(0.314)	(0.310)	(0.069)	(0.069)	(0.203)	(1.480)	(2.190)	(2.469)	(0.297)	(0.297)
Observations	30,209	30,291	32,102	31,921	79,525	79,525	3,104	3,173	3,601	3,462	11,239	11,239
Adj. R^2	0.048	0.045	0.053	0.053	0.072	0.072	0.116	0.115	0.133	0.121	0.119	0.119
Financial controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm & Day FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm & Day Cluster	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Panel B.	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Abnormal volume	All buybacks (clustered)						3-day cluster-free buybacks					
BB Intensity (Average, -20,-1)	-0.000**						-0.000*					
	(0.000)						(0.000)					
BB Intensity (Average,-83,-21)		-0.000***						-0.000***				
		(0.000)						(0.000)				
BB Intensity (volume, t-1)			-0.000**						-0.000			
			(0.000)						(0.000)			
BB Intensity (volume, t-20)				-0.000						-0.000		
				(0.000)						(0.000)		
BB Intensity (nosh, t-1)					-0.064						0.869	
					(1.178)						(1.147)	
BB Intensity (nosh, t-20)						-0.062						0.876
						(1.186)						(1.160)
Same day announcement	0.201***	0.173***	0.214***	0.190***	0.178***	0.178***	0.275	0.264	0.235	0.218	0.229	0.229
	(0.066)	(0.065)	(0.067)	(0.065)	(0.065)	(0.065)	(0.269)	(0.267)	(0.261)	(0.260)	(0.263)	(0.263)
Constant	0.967***	0.984***	0.900***	0.937***	0.959***	0.959***	1.295***	-0.178	-0.430	-0.119	-0.238	-0.238
	(0.073)	(0.334)	(0.321)	(0.318)	(0.320)	(0.320)	(0.252)	(3.393)	(2.807)	(2.667)	(2.695)	(2.695)
Observations	28,740	28,837	28,823	29,267	29,397	29,397	2,787	2,830	2,786	2,863	2,930	2,930
Adj. R^2	0.170	0.162	0.165	0.164	0.169	0.169	0.189	0.207	0.196	0.198	0.201	0.201
Financial controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Calendar Day FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm & Day Cluster	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Panel C.	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Bid-Ask spread	All buybacks (clustered)						3-day cluster-free buybacks					
BB Intensity (Average, -20,-1)	0.000*						0.000					

	(0.000)						(0.000)					
BB Intensity (Average,-83,-21)		0.000						-0.000*				
		(0.000)						(0.000)				
BB Intensity (volume, t-1)			0.000						-0.000			
			(0.000)						(0.000)			
BB Intensity (volume, t-20)				0.000						0.000		
				(0.000)						(0.000)		
BB Intensity (nosh, t-1)					0.003						0.005**	
					(0.002)						(0.002)	
BB Intensity (nosh, t-20)						0.003						0.006**
						(0.002)						(0.003)
Same day announcement	0.001*	0.001	0.000	0.001	-0.000	-0.000	0.002	0.001	0.001	0.001	-0.001	-0.001
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)	(0.002)	(0.003)	(0.001)	(0.001)
Constant	0.002**	0.001*	0.002**	0.002**	0.021***	0.021***	0.009***	0.008***	0.005*	0.005*	0.056***	0.056***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.003)	(0.003)	(0.002)	(0.002)	(0.003)	(0.003)	(0.010)	(0.010)
Observations	27,984	28,065	29,883	29,707	79,525	79,525	2,933	2,998	3,434	3,292	13,959	13,959
Adj. R^2	0.802	0.800	0.811	0.805	0.832	0.832	0.813	0.822	0.816	0.804	0.825	0.825
Financial controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Calendar Day FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm & Day Cluster	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Panel D.	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Ln(Amihud)	All buybacks (clustered)						3-day cluster-free buybacks					
BB Intensity (Average, -20,-1)	0.001***						0.000					
	(0.000)						(0.000)					
BB Intensity (Average,-83,-21)		0.001***						0.001**				
		(0.000)						(0.000)				
BB Intensity (volume, t-1)			0.000*						0.000**			
			(0.000)						(0.000)			
BB Intensity (volume, t-20)				0.000						-0.000		
				(0.000)						(0.000)		
BB Intensity (nosh, t-1)					-5.251						7.537	
					(7.856)						(6.401)	
BB Intensity (nosh, t-20)						-5.432						7.634
						(7.957)						(6.387)
Same day announcement	-0.165*	-0.134	-0.121	-0.115	-0.108	-0.108	-0.777**	-0.728**	-0.829**	-0.795**	-0.858**	-0.859**

	(0.090)	(0.089)	(0.090)	(0.094)	(0.092)	(0.092)	(0.346)	(0.363)	(0.332)	(0.356)	(0.370)	(0.370)
Constant	-3.375***	-3.689***	-3.253***	-3.164***	-3.138***	-3.138***	-2.601***	-2.633***	-2.666***	-2.552***	-2.566***	-2.566***
	(0.290)	(0.234)	(0.276)	(0.267)	(0.272)	(0.272)	(0.349)	(0.342)	(0.334)	(0.340)	(0.341)	(0.341)
Observations	23,732	23,612	23,926	24,517	24,517	24,517	1,458	1,470	1,465	1,550	1,550	1,550
Adj. R^2	0.828	0.836	0.827	0.831	0.831	0.831	0.860	0.857	0.856	0.858	0.858	0.858
Financial controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Calendar Day FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm & Day Cluster	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Panel D.	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
£ Volume	All buybacks (clustered)						3-day cluster-free buybacks					
BB Intensity (Average, -20,-1)	-2.573***						-1.354*					
	(0.903)						(0.741)					
BB Intensity (Average,-83,-21)		-0.035						-0.037*				
		(0.042)						(0.021)				
BB Intensity (volume, t-1)			-0.392*						-0.962***			
			(0.234)						(0.303)			
BB Intensity (volume, t-20)				-0.217						-0.254		
				(0.193)						(0.159)		
BB Intensity (nosh, t-1)					6,323.649						-2,508.072	
					(4,959.547)						(5,406.411)	
BB Intensity (nosh, t-20)						6,422.469						-2,437.414
						(5,024.230)						(5,429.331)
Same day announcement	-722.233	-791.299	-753.712	-630.166	-678.969	-678.990	1,652.521	1,445.019	1,350.875	1,146.587	1,302.154	1,302.250
	(614.974)	(625.120)	(618.948)	(596.761)	(595.469)	(595.462)	(1,110.547)	(1,132.716)	(1,047.208)	(1,076.057)	(1,038.489)	(1,038.471)
Constant	7,254.993**	19,085.193**	13,070.371*	12,129.301	12,358.219*	12,357.304*	4,943.559**	-8,038.647	-4,851.324	281.995	-119.686	-118.285
	(3,627.577)	(8,571.955)	(7,829.337)	(7,529.365)	(7,355.635)	(7,355.700)	(2,046.091)	(14,037.774)	(11,392.508)	(9,806.134)	(9,672.706)	(9,672.850)
Observations	29,319	29,136	29,557	30,259	30,465	30,465	2,904	2,921	2,948	3,096	3,181	3,181
Adj. R^2	0.890	0.891	0.890	0.891	0.891	0.891	0.913	0.912	0.912	0.911	0.911	0.911
Financial controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Calendar Day FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm & Day Cluster	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table XI. How quickly does the market respond to share buybacks?

This table reports panel regressions of the lead and lag effect of share buyback trade execution announcements on abnormal returns and alternative measures of stock liquidity. Panel A provides the regression estimates with *abnormal returns* (expressed in basis points) as the dependent variable. Panel B provides the regression estimates with *abnormal volume* as the dependent variable. Panel C provides the regression estimates with *Bid-Ask* spread as the dependent variable. Panel D provides the regression estimates with the natural logarithm of Amihud's illiquidity measure (*Ln(Amihud)*) as the dependent variable. Panel E provides the regression estimates with the Sterling (£) value of Volume (*£Volume*) as the dependent variable. The sample includes 79,525 share buyback transactions from 724 unique firms that repurchased shares in the open market and 3,796 unique firms that have never repurchased shares. The sample date range is from Jan 1, 1999 to Sep 1, 2022. Table A.1 defines all variables in detail. All variables are winsorized at the 1% and 99% tails and standard errors are reported in parentheses. *$p < 0.1$; **$p < 0.05$; ***$p < 0.01$.

Panel A.	(1)	(2)	(3)	(4)	(5)	(6)	(4)	(5)	(6)
Abnormal Returns (bps)	All buybacks - clustered			3-day cluster-free			20-day cluster-free		
Buyback (t+5)	0.039***	0.040***	0.037*	0.035**	0.036**	0.040	0.028*	0.029*	0.044*
	(0.013)	(0.013)	(0.020)	(0.015)	(0.015)	(0.025)	(0.016)	(0.016)	(0.026)
Buyback (t+4)	0.010	0.012	0.025	0.008	0.010	0.029	0.008	0.010	0.023
	(0.012)	(0.012)	(0.020)	(0.016)	(0.016)	(0.026)	(0.016)	(0.016)	(0.027)
Buyback (t+3)	-0.025*	-0.023*	0.002	-0.016	-0.015	0.013	-0.015	-0.014	0.010
	(0.013)	(0.013)	(0.020)	(0.017)	(0.017)	(0.026)	(0.017)	(0.017)	(0.028)
Buyback (t+2)	-0.104***	-0.103***	-0.086***	-0.103***	-0.103***	-0.090***	-0.102***	-0.101***	-0.081***
	(0.015)	(0.015)	(0.020)	(0.018)	(0.018)	(0.029)	(0.019)	(0.019)	(0.029)
Buyback (t+1)	-0.121***	-0.120***	-0.154***	-0.113***	-0.113***	-0.145***	-0.101***	-0.102***	-0.139***
	(0.018)	(0.018)	(0.031)	(0.022)	(0.022)	(0.036)	(0.022)	(0.022)	(0.037)
Buyback (t)	0.027	0.027	0.027	0.193***	0.193***	0.202***	0.363***	0.362***	0.379***
	(0.018)	(0.018)	(0.028)	(0.028)	(0.028)	(0.042)	(0.041)	(0.041)	(0.065)
Buyback (t-1)	0.107***	0.108***	0.126***	0.161***	0.161***	0.185***	0.156***	0.156***	0.179***
	(0.016)	(0.016)	(0.024)	(0.022)	(0.022)	(0.031)	(0.022)	(0.022)	(0.031)
Buyback (t-2)	0.032**	0.032**	0.028	0.059***	0.059***	0.058**	0.054***	0.054***	0.051*
	(0.015)	(0.015)	(0.024)	(0.019)	(0.019)	(0.029)	(0.018)	(0.018)	(0.029)
Buyback (t-3)	0.019	0.020	0.007	0.059***	0.059***	0.022	0.051***	0.051***	0.012
	(0.013)	(0.013)	(0.019)	(0.018)	(0.018)	(0.027)	(0.018)	(0.018)	(0.027)
Buyback (t-4)	-0.009	-0.008	-0.026	-0.021	-0.020	-0.037*	-0.018	-0.017	-0.026
	(0.012)	(0.012)	(0.017)	(0.015)	(0.015)	(0.022)	(0.015)	(0.015)	(0.022)
Buyback (t-5)	-0.002	-0.000	-0.002	-0.015	-0.014	-0.008	0.000	0.001	0.006

	(0.012)	(0.012)	(0.017)	(0.015)	(0.015)	(0.024)	(0.016)	(0.016)	(0.024)
Market Capitalization$_{(t-20)}$		-0.000***	-0.000***		-0.000***	-0.000***		-0.000***	-0.000***
		(0.000)	(0.000)		(0.000)	(0.000)		(0.000)	(0.000)
Inverse price$_{(t-20)}$		0.000***	0.000***		0.000***	0.000***		0.000***	0.000***
		(0.000)	(0.000)		(0.000)	(0.000)		(0.000)	(0.000)
Abnormal return$_{(t-20)}$		0.002	0.001		0.002	0.001		0.002	0.001
		(0.006)	(0.004)		(0.006)	(0.004)		(0.006)	(0.004)
Ln(Volume$_{(t-20)}$)			-0.000			-0.000			-0.000
			(0.001)			(0.001)			(0.001)
Turnover$_{(t-20)}$			-0.002			-0.002			-0.002
			(0.002)			(0.002)			(0.002)
AIM	-0.106***	-0.105***	-0.103***	-0.106***	-0.105***	-0.103***	-0.106***	-0.105***	-0.103***
	(0.006)	(0.005)	(0.009)	(0.006)	(0.005)	(0.009)	(0.006)	(0.005)	(0.009)
Constant	-0.024*	-0.020	-0.012	-0.024*	-0.020	-0.013	-0.024*	-0.020	-0.013
	(0.012)	(0.012)	(0.025)	(0.012)	(0.012)	(0.025)	(0.012)	(0.012)	(0.025)
Observations	22,692,733	22,605,586	5,883,142	22,622,202	22,535,057	5,856,604	22,617,143	22,529,999	22,617,143
Adj. R^2	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Calendar Day FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm & Day Cluster	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Panel B.	(1)	(2)	(3)	(4)	(5)	(6)	(4)	(5)	(6)
Abnormal Volume	All buybacks - clustered			3-day cluster-free			20-day cluster-free		
Buyback (t+5)	-0.020	-0.019	-0.017	-0.014	-0.012	-0.011	-0.008	-0.008	-0.009
	(0.015)	(0.015)	(0.015)	(0.021)	(0.021)	(0.021)	(0.022)	(0.022)	(0.022)
Buyback (t+4)	-0.018	-0.019	-0.017	-0.006	-0.009	-0.008	-0.006	-0.009	-0.008
	(0.014)	(0.014)	(0.014)	(0.019)	(0.019)	(0.019)	(0.019)	(0.019)	(0.019)
Buyback (t+3)	-0.004	-0.004	-0.004	0.005	0.005	0.010	0.001	0.003	0.007
	(0.016)	(0.015)	(0.015)	(0.020)	(0.020)	(0.020)	(0.020)	(0.021)	(0.021)
Buyback (t+2)	-0.015	-0.024*	-0.027*	-0.012	-0.021	-0.030	-0.014	-0.020	-0.027
	(0.015)	(0.015)	(0.015)	(0.021)	(0.021)	(0.021)	(0.021)	(0.021)	(0.021)
Buyback (t+1)	0.094***	0.098***	0.101***	0.162***	0.163***	0.170***	0.175***	0.172***	0.178***
	(0.027)	(0.028)	(0.028)	(0.041)	(0.042)	(0.042)	(0.043)	(0.044)	(0.044)

Buyback (t)	0.128***	0.114***	0.109***	0.260***	0.248***	0.239***	0.396***	0.387***	0.375***
	(0.029)	(0.028)	(0.026)	(0.054)	(0.054)	(0.052)	(0.077)	(0.079)	(0.078)
Buyback (t-1)	-0.039***	-0.034**	-0.032**	-0.019	-0.024	-0.024	-0.024	-0.028	-0.028
	(0.014)	(0.015)	(0.014)	(0.021)	(0.021)	(0.021)	(0.022)	(0.021)	(0.022)
Buyback (t-2)	-0.007	-0.004	-0.009	0.015	0.020	0.012	0.011	0.016	0.008
	(0.013)	(0.014)	(0.014)	(0.020)	(0.021)	(0.020)	(0.020)	(0.021)	(0.020)
Buyback (t-3)	-0.031**	-0.029**	-0.023**	-0.002	0.002	0.009	-0.007	-0.003	0.004
	(0.012)	(0.012)	(0.011)	(0.017)	(0.017)	(0.017)	(0.017)	(0.017)	(0.017)
Buyback (t-4)	-0.011	-0.007	-0.008	-0.015	-0.010	-0.011	-0.016	-0.010	-0.012
	(0.014)	(0.014)	(0.014)	(0.018)	(0.018)	(0.018)	(0.018)	(0.018)	(0.018)
Buyback (t-5)	-0.030**	-0.028**	-0.031**	-0.026	-0.024	-0.026	-0.018	-0.014	-0.015
	(0.013)	(0.013)	(0.013)	(0.017)	(0.017)	(0.017)	(0.018)	(0.018)	(0.018)
Market Capitalization$_{(t-20)}$		-0.000*	-0.000		-0.000	-0.000		-0.000	-0.000
		(0.000)	(0.000)		(0.000)	(0.000)		(0.000)	(0.000)
Inverse price$_{(t-20)}$		0.000	0.000		0.000	0.000		0.000	0.000
		(0.000)	(0.000)		(0.000)	(0.000)		(0.000)	(0.000)
Abnormal volume$_{(t-20)}$		0.060***	0.068***		0.060***	0.068***		0.060***	0.068***
		(0.001)	(0.002)		(0.001)	(0.002)		(0.001)	(0.002)
Ln(Volume$_{(t-20)}$)			-0.015***			-0.015***			-0.015***
			(0.002)			(0.002)			(0.002)
Turnover$_{(t-20)}$			-0.006*			-0.006*			-0.006*
			(0.003)			(0.003)			(0.003)
AIM	-0.001	0.001	0.001	-0.001	0.001	0.001	-0.001	0.001	0.001
	(0.008)	(0.010)	(0.010)	(0.008)	(0.010)	(0.010)	(0.008)	(0.010)	(0.010)
Constant	0.963***	0.913***	1.191***	0.963***	0.913***	1.189***	0.963***	0.913***	1.190***
	(0.003)	(0.004)	(0.028)	(0.003)	(0.004)	(0.028)	(0.003)	(0.004)	(0.028)
Observations	6,873,845	5,166,196	5,023,581	6,848,331	5,141,523	4,998,968	6,846,706	5,140,007	4,997,479
Adj. R^2	0.009	0.014	0.013	0.009	0.014	0.013	0.009	0.014	0.013
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Calendar Day FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm & Day Cluster	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Panel C.	(1)	(2)	(3)	(4)	(5)	(6)	(4)	(5)	(6)
Bid-Ask spread	All buybacks - clustered			3-day cluster-free			20-day cluster-free		
Buyback (t+5)	0.000***	0.000	-0.000	0.000	-0.000	-0.000	0.000	-0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Buyback (t+4)	0.000***	0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Buyback (t+3)	0.000	0.000	-0.000	-0.000	-0.000	-0.000	-0.000**	-0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Buyback (t+2)	0.000	-0.000	-0.000	-0.000***	-0.000**	-0.000	-0.001***	-0.000**	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Buyback (t+1)	-0.000	-0.000***	-0.000	-0.001***	-0.001***	-0.000	-0.002***	-0.001***	-0.001*
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Buyback (t)	0.000	-0.000	-0.000	-0.004***	-0.001***	-0.001*	-0.004***	-0.001***	-0.001**
	(0.000)	(0.000)	(0.000)	(0.001)	(0.000)	(0.001)	(0.001)	(0.000)	(0.001)
Buyback (t-1)	0.000**	0.000	0.000	-0.002***	-0.001***	-0.001	-0.002***	-0.001***	-0.001
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Buyback (t-2)	0.000*	0.000	0.000	-0.001***	-0.000*	-0.000	-0.001***	-0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Buyback (t-3)	0.000	0.000	0.000	-0.001***	-0.000	0.000	-0.001**	-0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Buyback (t-4)	0.000	-0.000	-0.000*	-0.001***	-0.000*	-0.001***	-0.001***	-0.000	-0.001***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Buyback (t-5)	0.000*	0.000**	0.000*	-0.000	0.000	0.000	-0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Market Capitalization$_{(t-20)}$		-0.000*	-0.000*		-0.000*	-0.000*		-0.000*	-0.000*
		(0.000)	(0.000)		(0.000)	(0.000)		(0.000)	(0.000)
Inverse price$_{(t-20)}$		0.000	0.000		0.000	0.000		0.000	0.000
		(0.000)	(0.000)		(0.000)	(0.000)		(0.000)	(0.000)
Bid-Ask$_{(t-20)}$		0.752***	0.696***		0.752***	0.696***		0.752***	0.696***
		(0.004)	(0.007)		(0.004)	(0.007)		(0.004)	(0.007)
Ln(Volume$_{(t-20)}$)			-0.001***			-0.001***			-0.001***
			(0.000)			(0.000)			(0.000)
Turnover$_{(t-20)}$			0.001***			0.001***			0.001***
			(0.000)			(0.000)			(0.000)

AIM	-0.078***	-0.021***	-0.010**	-0.078***	-0.021***	-0.010**	-0.078***	-0.021***	-0.010**
	(0.013)	(0.003)	(0.005)	(0.013)	(0.003)	(0.005)	(0.013)	(0.003)	(0.005)
Constant	0.113***	0.029***	0.035***	0.114***	0.029***	0.035***	0.114***	0.029***	0.035***
	(0.007)	(0.002)	(0.003)	(0.007)	(0.002)	(0.003)	(0.007)	(0.002)	(0.003)
Observations	9,852,600	9,744,964	3,263,479	9,784,738	9,677,293	3,238,913	9,779,790	9,672,347	3,237,265
Adj. R^2	0.563	0.806	0.783	0.561	0.805	0.782	0.561	0.805	0.782
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Calendar Day FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm & Day Cluster	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Panel D.	(1)	(2)	(3)	(4)	(5)	(6)	(4)	(5)	(6)
Ln(Amihud)		All buybacks			3-day cluster-free			20-day cluster-free	
Buyback (t+5)	0.018	0.032*	0.033**	0.014	0.039	0.039	0.012	0.037	0.038
	(0.024)	(0.017)	(0.017)	(0.032)	(0.027)	(0.027)	(0.035)	(0.030)	(0.030)
Buyback (t+4)	0.031	0.030	0.033*	0.014	0.008	0.010	0.009	0.001	0.004
	(0.021)	(0.020)	(0.020)	(0.027)	(0.026)	(0.026)	(0.027)	(0.026)	(0.026)
Buyback (t+3)	-0.045**	-0.024	-0.022	-0.071***	-0.039	-0.039	-0.070**	-0.036	-0.035
	(0.019)	(0.018)	(0.018)	(0.026)	(0.025)	(0.025)	(0.028)	(0.027)	(0.027)
Buyback (t+2)	-0.009	-0.008	-0.008	-0.002	-0.007	-0.007	0.005	-0.002	-0.002
	(0.021)	(0.019)	(0.020)	(0.027)	(0.026)	(0.026)	(0.028)	(0.027)	(0.027)
Buyback (t+1)	-0.072***	-0.044**	-0.043**	-0.087***	-0.060**	-0.061**	-0.090***	-0.052*	-0.054*
	(0.019)	(0.020)	(0.020)	(0.027)	(0.028)	(0.027)	(0.029)	(0.031)	(0.031)
Buyback (t)	-0.094***	-0.065***	-0.064***	-0.096*	-0.031	-0.030	-0.078	-0.044	-0.040
	(0.024)	(0.024)	(0.024)	(0.053)	(0.045)	(0.045)	(0.062)	(0.060)	(0.061)
Buyback (t-1)	0.024	0.022	0.023	0.049	0.067**	0.065**	0.047	0.063**	0.061*
	(0.021)	(0.020)	(0.020)	(0.034)	(0.031)	(0.032)	(0.033)	(0.031)	(0.032)
Buyback (t-2)	-0.024	-0.008	-0.008	-0.066**	-0.053*	-0.055*	-0.069**	-0.057**	-0.059**
	(0.019)	(0.019)	(0.019)	(0.028)	(0.029)	(0.029)	(0.028)	(0.029)	(0.029)
Buyback (t-3)	-0.014	-0.004	-0.002	-0.012	0.007	0.009	-0.017	0.001	0.002
	(0.019)	(0.017)	(0.017)	(0.028)	(0.027)	(0.028)	(0.027)	(0.027)	(0.027)
Buyback (t-4)	-0.029	-0.015	-0.015	-0.056*	-0.039	-0.041	-0.048	-0.031	-0.033
	(0.022)	(0.023)	(0.023)	(0.031)	(0.032)	(0.032)	(0.032)	(0.032)	(0.033)

Buyback (t-5)	-0.009	0.022	0.024	-0.032	0.007	0.009	-0.026	0.012	0.015
	(0.023)	(0.020)	(0.020)	(0.031)	(0.028)	(0.028)	(0.033)	(0.030)	(0.031)
Market Capitalization$_{(t-20)}$		-0.000***	-0.000***		-0.000***	-0.000***		-0.000***	-0.000***
		(0.000)	(0.000)		(0.000)	(0.000)		(0.000)	(0.000)
Inverse price$_{(t-20)}$		0.002	0.002*		0.002	0.002*		0.002	0.002*
		(0.001)	(0.001)		(0.001)	(0.001)		(0.001)	(0.001)
Ln(Amihud$_{(t-20)}$)		0.377***	0.426***		0.377***	0.428***		0.377***	0.428***
		(0.012)	(0.013)		(0.012)	(0.013)		(0.012)	(0.013)
Ln(Volume$_{(t-20)}$)			0.091***			0.094***			0.094***
			(0.018)			(0.017)			(0.017)
Turnover$_{(t-20)}$			-0.049			-0.049			-0.049
			(0.041)			(0.041)			(0.041)
AIM	-1.204***	-0.695***	-0.647***	-1.206***	-0.694***	-0.644***	-1.206***	-0.694***	-0.644***
	(0.276)	(0.174)	(0.167)	(0.276)	(0.174)	(0.167)	(0.276)	(0.174)	(0.167)
Constant	0.174*	-0.323***	-2.043***	0.225**	-0.295***	-2.081***	0.227**	-0.294***	-2.082***
	(0.106)	(0.057)	(0.342)	(0.107)	(0.057)	(0.331)	(0.107)	(0.057)	(0.331)
Observations	1,982,077	1,378,363	1,378,363	1,958,542	1,356,757	1,356,757	1,957,263	1,355,725	1,355,725
Adj. R^2	0.734	0.773	0.774	0.730	0.769	0.770	0.730	0.769	0.770
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Calendar Day FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm & Day Cluster	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Panel E.	(1)	(2)	(3)	(4)	(5)	(6)	(4)	(5)	(6)
£ Volume	All buybacks - clustered			3-day cluster-free			20-day cluster-free		
Buyback (t+5)	569.160*	320.756	310.338	874.194***	546.518**	536.454**	882.064***	564.228**	554.240**
	(305.876)	(209.381)	(209.978)	(339.191)	(263.772)	(266.487)	(342.069)	(265.423)	(268.269)
Buyback (t+4)	401.511	107.602	102.939	779.257***	385.468**	381.598**	753.720***	335.821*	331.978*
	(249.477)	(169.308)	(169.647)	(286.470)	(192.924)	(194.407)	(285.084)	(189.417)	(190.967)
Buyback (t+3)	392.607**	265.437**	257.406*	808.323***	646.312***	640.546***	788.899***	625.239***	620.883***
	(165.474)	(134.167)	(134.861)	(184.171)	(169.514)	(171.291)	(177.198)	(163.781)	(165.511)
Buyback (t+2)	215.639*	108.124	103.590	336.271***	290.475**	288.821**	345.992***	328.227**	328.543**
	(120.139)	(118.559)	(120.087)	(122.897)	(132.948)	(134.652)	(131.499)	(132.791)	(134.150)

Buyback (t+1)	352.418***	242.874*	245.628*	484.069**	347.524*	355.560*	388.874*	274.581	282.217
	(133.355)	(140.961)	(142.981)	(201.694)	(188.330)	(190.262)	(213.224)	(197.331)	(199.421)
Buyback (t)	741.806***	815.741***	830.006***	1,040.501***	1,165.618***	1,192.453***	1,257.299***	1,647.704***	1,683.111***
	(166.627)	(170.221)	(171.276)	(333.893)	(269.057)	(274.006)	(311.972)	(327.538)	(333.943)
Buyback (t-1)	8.772	-132.460	-139.631	-185.920	-276.502	-284.168	-164.211	-263.318	-271.618
	(138.702)	(112.394)	(113.095)	(220.561)	(190.141)	(192.350)	(211.803)	(184.854)	(187.030)
Buyback (t-2)	16.037	-143.094	-154.546	86.090	-53.595	-65.162	91.198	-53.611	-65.824
	(130.649)	(116.200)	(117.429)	(132.720)	(122.746)	(124.153)	(143.730)	(128.297)	(129.676)
Buyback (t-3)	20.144	-205.795**	-215.400**	278.481	23.932	17.444	268.192	10.043	2.672
	(130.754)	(91.883)	(92.279)	(192.033)	(177.221)	(179.494)	(205.218)	(191.453)	(194.083)
Buyback (t-4)	345.464	150.825	148.114	645.188**	408.885*	414.626*	703.239**	467.362*	474.248*
	(219.842)	(156.778)	(157.308)	(307.175)	(247.441)	(250.888)	(317.898)	(248.162)	(251.386)
Buyback (t-5)	277.345	-85.392	-94.390	542.763*	17.086	6.770	560.072**	26.023	15.546
	(257.286)	(172.227)	(172.439)	(303.158)	(239.395)	(240.661)	(278.600)	(224.052)	(224.800)
Market Capitalization$_{(t-20)}$		0.000***	0.000***		0.000***	0.000***		0.000***	0.000***
		(0.000)	(0.000)		(0.000)	(0.000)		(0.000)	(0.000)
Inverse price$_{(t-20)}$		-0.125	-0.141		-0.126	-0.142		-0.126	-0.142
		(0.139)	(0.160)		(0.140)	(0.161)		(0.140)	(0.161)
Abnormal return$_{(t-20)}$		0.476***	0.479***		0.475***	0.479***		0.475***	0.479***
		(0.021)	(0.021)		(0.021)	(0.021)		(0.021)	(0.021)
£ Volume$_{(t-20)}$			-67.764***			-67.095***			-67.082***
			(18.741)			(18.742)			(18.732)
Turnover$_{(t-20)}$			-95.910			-94.850			-94.914
			(206.425)			(206.672)			(206.668)
AIM	689.440	218.447	192.363	700.842	233.080	208.039	701.194	233.392	208.376
	(463.078)	(268.051)	(276.767)	(460.393)	(266.944)	(275.513)	(460.347)	(266.907)	(275.474)
Constant	2,819.649***	1,207.294***	2,500.471***	2,701.106***	1,164.020***	2,443.384***	2,698.061***	1,162.816***	2,441.906***
	(132.936)	(111.803)	(327.042)	(131.679)	(109.894)	(325.630)	(131.674)	(109.841)	(325.436)
Observations	6,123,740	5,534,579	5,352,208	6,097,013	5,509,169	5,326,901	6,095,258	5,507,560	5,325,327
Adj. R^2	0.686	0.771	0.772	0.674	0.762	0.762	0.674	0.762	0.762
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Calendar Day FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm & Day Cluster	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table XII - Naive trading strategies

This table reports the price changes (raw returns) expressed in percentages based on the closing or opening price following the disclosure of share buybacks. *N-day cluster-free buyback* denotes share buyback announcements that were disclosed at least *n* business days apart. The sample includes 79,525 share buyback transactions from 724 unique firms that repurchased shares in the open market from Jan 1, 1999 to Sep 1, 2022. All variables are winsorized at the 1% and 99% tails. $*p < 0.1$; $**p < 0.05$; $***p < 0.01$.

All buyback announcements	obs	Mean(%)	St.err(%)	P1(%)	Median(%)	P99(%)
	Disclosed same day as buyback trade while market is open					
Buy at close price of t & Sell at open price of t+1	2,900	0.319	0.300	-4.552	0.000	4.037
Buy at close price of t & Sell at close price of t+1	3,125	0.348	0.297	-6.061	0.000	6.742
Buy at close price of t & Sell at open price of t+2	2,904	0.464	0.325	-6.338	0.000	7.639
Buy at close price of t & Sell at close price of t+2	3,124	0.713*	0.419	-8.318	0.000	10.182
Buy at close price of t & Sell at close price of t+5	3,122	0.719*	0.375	-12.162	0.000	14.286
Buy at close price of t & Sell at close price of t+20	3,107	0.380	0.373	-28.378	0.000	26.735
Buy at open price of t+1 & Sell at close price of t+1	2,900	0.047	0.044	-5.777	0.000	6.788
Buy at open price of t+1 & Sell at open price of t+2	2,828	0.119***	0.044	-6.250	0.000	7.120
Buy at open price of t+1 & Sell at close price of t+2	2,899	0.449	0.329	-7.855	0.000	9.756
Buy at open price of t+1 & Sell at close price of t+5	2,897	0.468	0.298	-12.500	0.000	14.324
Buy at open price of t+1 & Sell at close price of t+20	2,882	0.067	0.306	-29.358	0.000	26.250
	Disclosed after the market closed					
Buy at open price of t & Sell at close price of t+1	73,207	0.003	0.007	-4.911	0.000	5.075
Buy at open price of t & Sell at close price of t+2	72,485	0.079***	0.021	-16.213	0.000	17.348
Buy at open price of t & Sell at close price of t+5	72,932	0.073***	0.016	-11.610	0.068	11.429
Buy at open price of t & Sell at close price of t+20	72,079	0.266***	0.034	-22.945	0.329	23.090
Buy at close price of t & Sell at close price of t+1	76,506	0.026***	0.007	-5.138	0.000	5.261
Buy at close price of t & Sell at close price of t+2	76,444	0.048***	0.010	-7.403	0.000	7.420
Buy at close price of t & Sell at close price of t+5	76,324	0.082***	0.015	-10.373	0.000	10.190
Buy at close price of t & Sell at close price of t+20	75,423	0.268***	0.032	-22.311	0.000	22.260

3-day cluster-free buyback announcements	obs	Mean(%)	St.err(%)	P1(%)	Median(%)	P99(%)

	Disclosed same day as buyback trade while market is open					
Buy at close price of t & Sell at open price of t+1	1,017	0.842	0.852	-3.822	0.000	4.009
Buy at close price of t & Sell at close price of t+1	1,151	0.912	0.803	-5.769	0.000	8.302
Buy at close price of t & Sell at open price of t+2	1,025	1.126	0.915	-6.283	0.000	9.449
Buy at close price of t & Sell at close price of t+2	1,151	1.012	0.785	-8.333	0.000	10.680
Buy at close price of t & Sell at close price of t+5	1,151	1.073	0.703	-11.417	0.000	18.182
Buy at close price of t & Sell at close price of t+20	1,146	1.069	0.726	-29.207	0.000	33.010
Buy at open price of t+1 & Sell at close price of t+1	1,017	0.156*	0.084	-6.283	0.000	6.897
Buy at open price of t+1 & Sell at open price of t+2	971	0.213***	0.077	-6.283	0.000	9.312
Buy at open price of t+1 & Sell at close price of t+2	1,017	0.294***	0.112	-8.129	0.000	10.256
Buy at open price of t+1 & Sell at close price of t+5	1,017	0.397***	0.179	-12.261	0.000	15.625
Buy at open price of t+1 & Sell at close price of t+20	1,012	0.288	0.354	-30.000	0.000	31.148
	Disclosed after the market closed					
Buy at open price of t & Sell at close price of t+1	10,017	0.201***	0.021	-5.183	0.000	6.849
Buy at open price of t & Sell at close price of t+2	9,972	0.505***	0.080	-19.956	0.000	23.859
Buy at open price of t & Sell at close price of t+5	10,023	0.330***	0.059	-12.385	0.000	13.725
Buy at open price of t & Sell at close price of t+20	9,981	0.615***	0.117	-25.492	0.251	29.661
Buy at close price of t & Sell at close price of t+1	10,558	0.096***	0.020	-5.453	0.000	6.787
Buy at close price of t & Sell at close price of t+2	10,553	0.164***	0.029	-7.692	0.000	9.249
Buy at close price of t & Sell at close price of t+5	10,543	0.282***	0.054	-11.039	0.000	12.694
Buy at close price of t & Sell at close price of t+20	10,496	0.560***	0.109	-24.613	0.000	28.387

20-day cluster-free buyback announcements	obs	Mean(%)	St.err(%)	P1(%)	Median(%)	P99(%)
	Disclosed same day as buyback trade while market is open					
Buy at close price of t & Sell at open price of t+1	498	1.747	1.739	-3.497	0.000	5.556
Buy at close price of t & Sell at close price of t+1	574	1.869	1.608	-5.769	0.000	11.009
Buy at close price of t & Sell at open price of t+2	504	2.174	1.857	-6.283	0.000	11.009
Buy at close price of t & Sell at close price of t+2	574	1.941	1.569	-8.333	0.000	11.538
Buy at close price of t & Sell at close price of t+5	574	1.979	1.387	-9.441	0.000	18.628

Buy at close price of t & Sell at close price of t+20	572	3.012**	1.361	-19.954	0.385	42.424
Buy at open price of t+1 & Sell at close price of t+1	498	0.343**	0.150	-6.667	0.000	11.009
Buy at open price of t+1 & Sell at open price of t+2	475	0.281***	0.117	-6.449	0.000	11.009
Buy at open price of t+1 & Sell at close price of t+2	498	0.464***	0.192	-8.333	0.000	11.765
Buy at open price of t+1 & Sell at close price of t+5	498	0.690***	0.239	-10.714	0.000	18.628
Buy at open price of t+1 & Sell at close price of t+20	496	1.738***	0.449	-21.260	0.623	45.455
	Disclosed after the market closed					
Buy at open price of t & Sell at close price of t+1	7,772	0.260***	0.025	-5.150	0.000	7.568
Buy at open price of t & Sell at close price of t+2	7,729	0.634***	0.102	-21.970	0.000	26.196
Buy at open price of t & Sell at close price of t+5	7,784	0.394***	0.071	-12.462	0.000	14.813
Buy at open price of t & Sell at close price of t+20	7,746	0.616***	0.123	-25.658	0.240	31.522
Buy at close price of t & Sell at close price of t+1	8,214	0.108***	0.024	-5.528	0.000	7.194
Buy at close price of t & Sell at close price of t+2	8,210	0.184***	0.033	-7.801	0.000	9.732
Buy at close price of t & Sell at close price of t+5	8,202	0.337***	0.066	-11.145	0.000	13.365
Buy at close price of t & Sell at close price of t+20	8,159	0.558***	0.115	-24.882	0.000	30.000

Table XIII. Calendar portfolios based on buyback disclosures

This table reports the daily values of alphas and robust standard errors (reported in parentheses) of portfolios formed based on the disclosure of share buybacks. A stock is added to a portfolio whenever a share buyback trade is disclosed. The performance of equally weighted (EW) and value weighted (VW) portfolios is evaluated over 2-, 3-, 5-, 20-, 120-, and 250-day holding periods, respectively, with daily rebalancing. We report the calendar portfolio alphas from alternative models: CAPM, Fama and French (1992) three factors, Fama and French (1992) three factors with the Carhart (1997) momentum factor, Fama and French (2015) five factors, and the Fama and French (2015) five factors with the Carhart (1997) momentum factor. The UK-based factors are from Jensen et al. (2023) available from their dedicated website (https://jkpfactors.com) and are on a daily frequency. *N-day cluster-free buyback* denotes share buyback announcements that were disclosed at least *n* business days apart. The sample includes 79,525 share buyback transactions from 724 unique firms that repurchased shares in the open market from Jan 1, 1999 to Sep 1, 2022. All variables are winsorized at the 1% and 99% tails. *$p < 0.1$; **$p < 0.05$; ***$p < 0.01$.

	alpha		alpha		alpha	
2-day holding	all buybacks (clustered)		3-day cluster-free buybacks		20-day cluster-free buybacks	
	EW	*VW*	*EW*	*VW*	*EW*	*VW*
CAPM	0.0618***	0.0286**	0.1468***	0.1161***	0.2014***	0.1557***
	(0.0095)	(0.0116)	(0.0153)	(0.0184)	(0.0177)	(0.0210)
3 FF	0.0593***	0.0260**	0.1456***	0.1140***	0.2014***	0.1544***
	(0.0093)	(0.0115)	(0.0152)	(0.0184)	(0.0176)	(0.0211)
3 FF & MOM	0.0586***	0.0224*	0.1476***	0.1163***	0.2033***	0.1567***
	(0.0095)	(0.0117)	(0.0153)	(0.0185)	(0.0178)	(0.0212)
5 FF	0.0540***	0.0157	0.1438***	0.1090***	0.1991***	0.1489***
	(0.0094)	(0.0116)	(0.0152)	(0.0184)	(0.0177)	(0.0211)
5 FF & MOM	0.0538***	0.0148	0.1448***	0.1107***	0.2001***	0.1507***
	(0.0095)	(0.0117)	(0.0153)	(0.0185)	(0.0178)	(0.0211)
Obs.	5,784	5,784	5,524	5,524	5,263	5,263

	alpha		alpha		alpha	
3-day holding	all buybacks (clustered)		3-day cluster-free buybacks		20-day cluster-free buybacks	
	EW	*VW*	*EW*	*VW*	*EW*	*VW*
CAPM	0.0535***	0.0164	0.1174***	0.0679***	0.1596***	0.1042***
	(0.0088)	(0.0113)	(0.0129)	(0.0163)	(0.0149)	(0.0184)
3 FF	0.0509***	0.0136	0.1156***	0.0650***	0.1587***	0.1017***
	(0.0086)	(0.0112)	(0.0128)	(0.0162)	(0.0148)	(0.0184)
3 FF & MOM	0.0499***	0.0096	0.1172***	0.0665***	0.1607***	0.1038***
	(0.0087)	(0.0113)	(0.0128)	(0.0163)	(0.0149)	(0.0185)
5 FF	0.0462***	0.0036	0.1144***	0.0592***	0.1569***	0.0947***
	(0.0087)	(0.0113)	(0.0128)	(0.0162)	(0.0148)	(0.0184)
5 FF & MOM	0.0458***	0.0023	0.1149***	0.0604***	0.1580***	0.0965***
	(0.0087)	(0.0113)	(0.0128)	(0.0162)	(0.0148)	(0.0184)
Obs.	5,816	5,816	5,715	5,715	5,567	5,567

	alpha		alpha		alpha	
5-day holding	all buybacks (clustered)		3-day cluster-free buybacks		20-day cluster-free buybacks	
	EW	*VW*	*EW*	*VW*	*EW*	*VW*
CAPM	0.0488***	0.0133	0.0879***	0.0481***	0.1167***	0.0794***
	(0.0078)	(0.0105)	(0.0100)	(0.0139)	(0.0117)	(0.0159)
3 FF	0.0460***	0.0103	0.0860***	0.0444***	0.1153***	0.0762***
	(0.0076)	(0.0104)	(0.0099)	(0.0138)	(0.0116)	(0.0159)
3 FF & MOM	0.0450***	0.0065	0.0868***	0.0444***	0.1160***	0.0755***
	(0.0077)	(0.0105)	(0.0099)	(0.0139)	(0.0117)	(0.0160)

5 FF	0.0423***	0.0011	0.0844***	0.0392***	0.1134***	0.0689***
	(0.0076)	(0.0104)	(0.0098)	(0.0139)	(0.0116)	(0.0158)
5 FF & MOM	0.0416***	-0.0004	0.0844***	0.0392***	0.1136***	0.0689***
	(0.0076)	(0.0105)	(0.0099)	(0.0139)	(0.0116)	(0.0159)
Obs.	5,839	5,839	5,812	5,812	5,760	5,760

20-day holding	alpha all buybacks (clustered)		alpha 3-day cluster-free buybacks		alpha 20-day cluster-free buybacks	
	EW	*VW*	*EW*	*VW*	*EW*	*VW*
CAPM	0.0184***	0.0028	0.0250***	0.0174*	0.0352***	0.0205*
	(0.0059)	(0.0093)	(0.0063)	(0.0104)	(0.0070)	(0.0114)
3 FF	0.0155***	-0.0012	0.0224***	0.0128	0.0331***	0.0162
	(0.0056)	(0.0091)	(0.0061)	(0.0103)	(0.0067)	(0.0113)
3 FF & MOM	0.0143**	-0.0055	0.0218***	0.0106	0.0324***	0.0144
	(0.0057)	(0.0091)	(0.0061)	(0.0104)	(0.0068)	(0.0114)
5 FF	0.0122**	-0.0102	0.0201***	0.0063	0.0303***	0.0085
	(0.0056)	(0.0091)	(0.0060)	(0.0103)	(0.0067)	(0.0113)
5 FF & MOM	0.0113**	-0.0119	0.0194***	0.0053	0.0297***	0.0079
	(0.0056)	(0.0091)	(0.0060)	(0.0104)	(0.0067)	(0.0114)
Obs.	5,848	5,848	5,848	5,848	5,848	5,848

120-day holding	alpha all buybacks (clustered)		alpha 3-day cluster-free buybacks		alpha 20-day cluster-free buybacks	
	EW	*VW*	*EW*	*VW*	*EW*	*VW*
CAPM	0.0033	-0.0010	0.0039	0.0008	0.0046	0.0033
	(0.0048)	(0.0066)	(0.0048)	(0.0068)	(0.0048)	(0.0070)
3 FF	0.0004	-0.0053	0.0011	-0.0034	0.0019	-0.0013
	(0.0044)	(0.0063)	(0.0044)	(0.0066)	(0.0044)	(0.0068)
3 FF & MOM	-0.0003	-0.0091	0.0005	-0.0074	0.0014	-0.0050
	(0.0044)	(0.0064)	(0.0045)	(0.0066)	(0.0045)	(0.0068)
5 FF	-0.0018	-0.0161***	-0.0011	-0.0139**	-0.0001	-0.0107
	(0.0043)	(0.0062)	(0.0043)	(0.0065)	(0.0044)	(0.0067)
5 FF & MOM	-0.0024	-0.0169***	-0.0017	-0.0149**	-0.0007	-0.0118*
	(0.0043)	(0.0063)	(0.0044)	(0.0066)	(0.0044)	(0.0068)
Obs.	5,848	5,848	5,848	5,848	5,848	5,848

250-day holding	alpha all buybacks (clustered)		alpha 3-day cluster-free buybacks		alpha 20-day cluster-free buybacks	
	EW	*VW*	*EW*	*VW*	*EW*	*VW*
CAPM	-0.0015	-0.0028	-0.0014	-0.0020	-0.0014	-0.0023
	(0.0045)	(0.0058)	(0.0045)	(0.0058)	(0.0045)	(0.0060)
3 FF	-0.0050	-0.0076	-0.0046	-0.0065	-0.0046	-0.0068
	(0.0040)	(0.0054)	(0.0040)	(0.0055)	(0.0040)	(0.0057)
3 FF & MOM	-0.0052	-0.0103*	-0.0048	-0.0095*	-0.0047	-0.0101*
	(0.0041)	(0.0054)	(0.0041)	(0.0055)	(0.0041)	(0.0057)
5 FF	-0.0055	-0.0168***	-0.0053	-0.0163***	-0.0052	-0.0163***
	(0.0040)	(0.0053)	(0.0040)	(0.0054)	(0.0040)	(0.0055)
5 FF & MOM	-0.0061	-0.0170***	-0.0058	-0.0166***	-0.0057	-0.0168***
	(0.0040)	(0.0053)	(0.0040)	(0.0054)	(0.0040)	(0.0056)
Obs.	5,848	5,848	5,848	5,848	5,848	5,848

Table XIV. Comparing buybacks to dividends

This table reports panel regressions of share buyback announcements, dividend announcements, and ex-dividend dates on stock abnormal returns and alternative measures of stock liquidity. Panel A provides the regression estimates with *abnormal returns* (expressed in basis points) as the dependent variable. Panel B provides the regression estimates with *abnormal volume* as the dependent variable. Panel C provides the regression estimates with *Bid-Ask* spread as the dependent variable. Panel D provides the regression estimates with the natural logarithm of Amihud's illiquidity measure (*Ln(Amihud)*) as the dependent variable. Panel E provides the regression estimates with the Sterling (£) value of Volume (*£Volume*) as the dependent variable. The sample includes 79,525 share buyback transactions from 724 unique firms that repurchased shares in the open market and 3,796 unique firms that have never repurchased shares. The sample date range is from Jan 1, 1999 to Sep 1, 2022. Table A.1 defines all variables in detail. All variables are winsorized at the 1% and 99% tails and standard errors are reported in parentheses. *$p < 0.1$; **$p < 0.05$; ***$p < 0.01$.

Panel A	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Abn. Ret. (bps)	All buybacks (clustered)				3-day cluster-free buybacks				20-day cluster-free buybacks			
Buyback	-0.034**	-0.031**	-0.031**	-0.028*	0.046	0.077*	0.059*	0.089**	0.240***	0.279***	0.263***	0.298***
	(0.013)	(0.015)	(0.013)	(0.015)	(0.031)	(0.046)	(0.031)	(0.045)	(0.043)	(0.066)	(0.042)	(0.065)
Dividend announcement	0.527***	0.478***			0.529***	0.483***			0.529***	0.482***		
	(0.022)	(0.034)			(0.022)	(0.034)			(0.022)	(0.034)		
Ex-Dividend date			-1.242***	-1.286***			-1.237***	-1.280***			-1.237***	-1.279***
			(0.023)	(0.036)			(0.023)	(0.036)			(0.023)	(0.036)
Market Cap.$_{(t-20)}$	-0.000***	-0.000***	-0.000***	-0.000***	-0.000***	-0.000***	-0.000***	-0.000***	-0.000***	-0.000***	-0.000***	-0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Inverse price$_{(t-20)}$	0.000***	0.000**	0.000***	0.000**	0.000***	0.000**	0.000***	0.000**	0.000***	0.000**	0.000***	0.000**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Ln(Volume$_{(t-20)}$)		-0.001		-0.001		-0.001		-0.000		-0.001		-0.000
		(0.001)		(0.001)		(0.001)		(0.001)		(0.001)		(0.001)
Turnover$_{(t-20)}$		-0.001		-0.001		-0.001		-0.001		-0.001		-0.001
		(0.002)		(0.002)		(0.002)		(0.002)		(0.002)		(0.002)
AIM	-0.107***	-0.106***	-0.105***	-0.104***	-0.107***	-0.107***	-0.106***	-0.104***	-0.107***	-0.107***	-0.106***	-0.104***
	(0.005)	(0.009)	(0.005)	(0.009)	(0.005)	(0.009)	(0.005)	(0.009)	(0.005)	(0.009)	(0.005)	(0.009)
Abn. returns$_{(t-20)}$	0.002	0.001	0.002	0.001	0.002	0.001	0.002	0.001	0.002	0.001	0.002	0.001
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Constant	-0.019***	-0.006	-0.017***	-0.004	-0.020***	-0.007	-0.017***	-0.005	-0.020***	-0.007	-0.017***	-0.005
	(0.001)	(0.011)	(0.001)	(0.011)	(0.001)	(0.011)	(0.001)	(0.011)	(0.001)	(0.011)	(0.001)	(0.011)

Observations	22,628,161	5,888,439	22,630,722	5,889,005	22,557,336	5,861,792	22,557,336	5,861,792	22,552,271	5,860,076	22,552,271	5,860,076
Adj. R^2	0.288	0.204	0.289	0.205	0.289	0.205	0.290	0.206	0.289	0.205	0.290	0.206
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Calendar Day FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm & Day Cluster	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Panel B.	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Abn. Volume	All buybacks (clustered)				3-day cluster-free buybacks				20-day cluster-free buybacks			
Buyback	0.076***	0.074***	0.074***	0.073***	0.287***	0.279***	0.292***	0.284***	0.422***	0.409***	0.437***	0.425***
	(0.019)	(0.018)	(0.019)	(0.018)	(0.054)	(0.051)	(0.054)	(0.051)	(0.079)	(0.078)	(0.080)	(0.079)
Div. Announce	0.538***	0.543***			0.538***	0.543***			0.538***	0.543***		
	(0.034)	(0.035)			(0.034)	(0.035)			(0.034)	(0.035)		
Ex-Dividend date			0.034***	0.032**			0.035***	0.033**			0.034**	0.032**
			(0.013)	(0.013)			(0.013)	(0.013)			(0.013)	(0.013)
Market Cap.$_{(t-20)}$	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Inverse price$_{(t-20)}$	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Ln(Volume$_{(t-20)}$)		-0.015***		-0.015***		-0.015***		-0.015***		-0.015***		-0.015***
		(0.002)		(0.002)		(0.002)		(0.002)		(0.002)		(0.002)
Turnover$_{(t-20)}$		-0.006**		-0.006**		-0.006**		-0.006**		-0.006**		-0.006**
		(0.003)		(0.003)		(0.003)		(0.003)		(0.003)		(0.003)
AIM	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.001	-0.001
	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)
Abn. volume$_{(t-20)}$	0.059***	0.066***	0.059***	0.066***	0.059***	0.066***	0.059***	0.066***	0.059***	0.066***	0.059***	0.066***
	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)
Constant	0.914***	1.186***	0.915***	1.187***	0.914***	1.184***	0.915***	1.185***	0.914***	1.185***	0.915***	1.186***
	(0.003)	(0.028)	(0.003)	(0.028)	(0.003)	(0.028)	(0.003)	(0.028)	(0.003)	(0.028)	(0.003)	(0.028)
Observations	5,171,143	5,028,487	5,171,143	5,028,487	5,146,365	5,003,769	5,146,365	5,003,769	5,144,846	5,002,277	5,144,846	5,002,277
Adj. R^2	0.025	0.024	0.024	0.024	0.025	0.024	0.024	0.024	0.025	0.024	0.024	0.024
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Calendar Day FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Firm & Day Cluster	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Panel C.	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Bid-Ask spread	All buybacks (clustered)				3-day cluster-free buybacks				20-day cluster-free buybacks			
Buyback	0.000	0.000	0.000	0.000	-0.002***	-0.002**	-0.002***	-0.002**	-0.002***	-0.002***	-0.002***	-0.002***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)	(0.000)	(0.001)	(0.000)	(0.001)	(0.000)	(0.001)
Div. Announce	-0.002***	-0.002***			-0.002***	-0.002***			-0.002***	-0.002***		
	(0.000)	(0.000)			(0.000)	(0.000)			(0.000)	(0.000)		
Ex-Dividend date			-0.001***	-0.001***			-0.001***	-0.001***			-0.001***	-0.001***
			(0.000)	(0.000)			(0.000)	(0.000)			(0.000)	(0.000)
Market Cap.$_{(t-20)}$	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Inverse price$_{(t-20)}$	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Ln(Volume$_{(t-20)}$)		-0.001***		-0.001***		-0.001***		-0.001***		-0.001***		-0.001***
		(0.000)		(0.000)		(0.000)		(0.000)		(0.000)		(0.000)
Turnover$_{(t-20)}$		0.001***		0.001***		0.001***		0.001***		0.001***		0.001***
		(0.000)		(0.000)		(0.000)		(0.000)		(0.000)		(0.000)
AIM	-0.021***	-0.010*	-0.021***	-0.010*	-0.021***	-0.010*	-0.021***	-0.010*	-0.021***	-0.010*	-0.021***	-0.010*
	(0.004)	(0.005)	(0.004)	(0.005)	(0.004)	(0.005)	(0.004)	(0.005)	(0.004)	(0.005)	(0.004)	(0.005)
Bid-Ask $_{(t-20)}$	0.749***	0.693***	0.749***	0.693***	0.749***	0.693***	0.749***	0.693***	0.749***	0.693***	0.749***	0.693***
	(0.004)	(0.007)	(0.004)	(0.007)	(0.004)	(0.007)	(0.004)	(0.007)	(0.004)	(0.007)	(0.004)	(0.007)
Constant	0.029***	0.035***	0.029***	0.035***	0.030***	0.035***	0.030***	0.035***	0.030***	0.035***	0.030***	0.035***
	(0.002)	(0.003)	(0.002)	(0.003)	(0.002)	(0.003)	(0.002)	(0.003)	(0.002)	(0.003)	(0.002)	(0.003)
Observations	9,751,054	3,265,619	9,751,054	3,265,619	9,683,098	3,240,955	9,683,098	3,240,955	9,678,145	3,239,304	9,678,145	3,239,304
Adj. R^2	0.808	0.785	0.808	0.785	0.807	0.784	0.807	0.784	0.807	0.784	0.807	0.784
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Calendar Day FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm & Day Cluster	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Panel D.	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Ln(Amihud)	All buybacks (clustered)				3-day cluster-free buybacks				20-day cluster-free buybacks			

Buyback	-0.076**	-0.069*	-0.078**	-0.071**	-0.165**	-0.156**	-0.163**	-0.154**	-0.115*	-0.111*	-0.106*	-0.101
	(0.036)	(0.036)	(0.036)	(0.036)	(0.064)	(0.061)	(0.065)	(0.061)	(0.064)	(0.064)	(0.064)	(0.064)
Div. Announce	0.334***	0.338***			0.300***	0.289***			0.334***	0.338***		
	(0.028)	(0.028)			(0.026)	(0.027)			(0.028)	(0.028)		
Ex-Dividend date			0.332***	0.334***			0.271***	0.288***			0.325***	0.327***
			(0.026)	(0.026)			(0.023)	(0.023)			(0.026)	(0.026)
Market Cap.$_{(t-20)}$	-0.000***	-0.000***	-0.000***	-0.000***	-0.000***	-0.000***	-0.000***	-0.000***	-0.000***	-0.000***	-0.000***	-0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Inverse price$_{(t-20)}$	0.002*	0.002*	0.002*	0.002*	0.002*	0.002*	0.002*	0.002*	0.002*	0.002*	0.002*	0.002*
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Ln(Volume$_{(t-20)}$)		0.086***		0.086***		0.090***		0.089***		0.090***		0.090***
		(0.019)		(0.019)		(0.018)		(0.018)		(0.018)		(0.018)
Turnover$_{(t-20)}$		-0.050		-0.050		-0.050		-0.050		-0.050		-0.050
		(0.040)		(0.040)		(0.040)		(0.039)		(0.040)		(0.039)
AIM	-0.676***	-0.631***	-0.676***	-0.632***	-0.676***	-0.629***	-0.676***	-0.629***	-0.676***	-0.629***	-0.676***	-0.629***
	(0.171)	(0.164)	(0.171)	(0.164)	(0.171)	(0.163)	(0.171)	(0.163)	(0.170)	(0.163)	(0.170)	(0.163)
Ln(Amihud) $_{(t-20)}$	0.374***	0.421***	0.374***	0.421***	0.375***	0.423***	0.375***	0.423***	0.375***	0.423***	0.375***	0.423***
	(0.012)	(0.013)	(0.012)	(0.013)	(0.012)	(0.013)	(0.012)	(0.013)	(0.012)	(0.013)	(0.012)	(0.013)
Constant	-0.336***	-1.962***	-0.335***	-1.961***	-0.308***	-2.002***	-0.308***	-2.000***	-0.307***	-2.002***	-0.306***	-2.000***
	(0.056)	(0.353)	(0.056)	(0.353)	(0.056)	(0.342)	(0.056)	(0.342)	(0.056)	(0.341)	(0.056)	(0.341)
Observations	1,379,506	1,379,506	1,379,506	1,379,506	1,357,807	1,357,807	1,357,807	1,357,807	1,356,772	1,356,772	1,356,772	1,356,772
Adj. R^2	0.779	0.779	0.779	0.779	0.775	0.775	0.775	0.775	0.775	0.775	0.775	0.775
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Calendar Day FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm & Day Cluster	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Panel E.	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
£ Volume	All buybacks (clustered)				3-day cluster-free buybacks				20-day cluster-free buybacks			
Buyback	1,210.097**	1,183.341**	1,205.698**	1,178.606**	1,906.846***	1,936.255***	1,922.486***	1,953.497***	2,251.462***	2,285.111***	2,300.296***	2,337.929***
	(545.942)	(541.876)	(545.517)	(541.422)	(407.121)	(412.038)	(408.267)	(413.231)	(442.964)	(448.431)	(447.223)	(452.911)
Div. Announce	1,812.519***	1,911.640***			1,791.035***	1,889.188***			1,792.680***	1,890.931***		
	(222.910)	(234.194)			(219.635)	(230.838)			(219.469)	(230.662)		
Ex-Dividend date			261.159**	271.673**			259.715***	270.459***			259.971***	270.630***

			(106.954)	(111.248)			(97.058)	(100.964)			(96.233)	(100.113)
Market Cap.$_{(t-20)}$	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Inverse price$_{(t-20)}$	-0.132	-0.147	-0.132	-0.147	-0.133	-0.148	-0.133	-0.148	-0.133	-0.148	-0.133	-0.148
	(0.142)	(0.163)	(0.142)	(0.163)	(0.143)	(0.164)	(0.142)	(0.164)	(0.142)	(0.164)	(0.142)	(0.164)
Ln(Volume$_{(t-20)}$)		-56.709***		-56.762***		-56.325***		-56.376***		-56.310***		-56.361***
		(18.374)		(18.377)		(18.369)		(18.371)		(18.359)		(18.361)
Turnover$_{(t-20)}$		-97.227		-97.356		-96.487		-96.623		-96.521		-96.658
		(206.216)		(206.165)		(206.465)		(206.414)		(206.460)		(206.409)
AIM	205.299	178.821	207.719	181.300	220.783	195.366	223.143	197.781	221.245	195.871	223.605	198.287
	(267.087)	(275.843)	(267.066)	(275.822)	(265.883)	(274.493)	(265.865)	(274.475)	(265.847)	(274.455)	(265.830)	(274.437)
£ volume$_{(t-20)}$	0.478***	0.481***	0.478***	0.481***	0.478***	0.480***	0.478***	0.481***	0.478***	0.480***	0.478***	0.481***
	(0.021)	(0.021)	(0.021)	(0.021)	(0.021)	(0.021)	(0.021)	(0.021)	(0.021)	(0.021)	(0.021)	(0.021)
Constant	1,201.708***	2,291.474***	1,205.564***	2,296.412***	1,160.285***	2,241.681***	1,164.067***	2,246.507***	1,159.039***	2,240.101***	1,162.822***	2,244.943***
	(111.513)	(323.370)	(111.470)	(323.402)	(109.552)	(321.860)	(109.516)	(321.891)	(109.501)	(321.657)	(109.465)	(321.687)
Observations	5,539,608	5,357,195	5,539,608	5,357,195	5,514,093	5,331,783	5,514,093	5,331,783	5,512,481	5,330,206	5,512,481	5,330,206
Adj. R^2	0.773	0.773	0.773	0.773	0.764	0.764	0.763	0.764	0.763	0.764	0.763	0.764
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Calendar Day FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm & Day Cluster	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table XV. Placebo regressions

This table reports panel regressions of placebo share buyback announcements on stock abnormal returns and alternative measures of stock liquidity. Placebo buyback days are random days selected as false buyback announcement days for those firms that have actual repurchased shares in another day in that same year. The sample includes 161,693 placebo share buyback disclosures from 712 unique firms and 4,519 unique firms without a placebo buyback disclosure. The sample date range is from Jan 1, 1999 to Sep 1, 2022. Table A.1 defines all variables in detail. All variables are winsorized at the 1% and 99% tails and standard errors are reported in parentheses. *$p < 0.1$; **$p < 0.05$; ***$p < 0.01$.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Abnormal return (basis points)			Abnormal Volume			Bid-Ask spread			Ln(Amihud)		
Placebo Buyback	-0.007	-0.004	-0.003	-0.007	-0.008	-0.004	0.000	0.000	0.000	-0.102	-0.037	-0.036
	(0.005)	(0.005)	(0.009)	(0.009)	(0.008)	(0.008)	(0.001)	(0.000)	(0.000)	(0.109)	(0.065)	(0.069)
Market Cap.$_{(t-20)}$		-0.000***	-0.000***		-0.000	-0.000		-0.000	-0.000		-0.000***	-0.000***
		(0.000)	(0.000)		(0.000)	(0.000)		(0.000)	(0.000)		(0.000)	(0.000)
Inverse price$_{(t-20)}$		0.000***	0.000**		0.000	0.000		0.000	0.000		0.002*	0.002*
		(0.000)	(0.000)		(0.000)	(0.000)		(0.000)	(0.000)		(0.001)	(0.001)
Ln(Volume$_{(t-20)}$)			-0.001			-0.015***			-0.001***			0.090***
			(0.001)			(0.002)			(0.000)			(0.018)
Turnover$_{(t-20)}$			-0.001			-0.006*			0.001***			-0.050
			(0.002)			(0.003)			(0.000)			(0.040)
AIM	-0.108***	-0.107***	-0.106***	0.003	-0.001	-0.001	-0.077***	-0.021***	-0.010*	-1.196***	-0.678***	-0.630***
	(0.003)	(0.003)	(0.007)	(0.008)	(0.010)	(0.010)	(0.013)	(0.004)	(0.005)	(0.283)	(0.171)	(0.163)
Dependent var$_{(t-20)}$		0.002***	0.001		0.059***	0.066***		0.749***	0.693***		0.375***	0.423***
		(0.000)	(0.001)		(0.001)	(0.002)		(0.004)	(0.007)		(0.012)	(0.013)
Constant	-0.023***	-0.019***	-0.006	0.962***	0.915***	1.185***	0.114***	0.030***	0.035***	0.226**	-0.302***	-2.002***
	(0.001)	(0.001)	(0.010)	(0.002)	(0.003)	(0.028)	(0.007)	(0.002)	(0.003)	(0.110)	(0.057)	(0.341)
Observations	22,644,763	22,547,785	5,858,375	6,853,903	5,143,303	5,000,749	9,789,455	9,673,786	3,237,668	1,958,171	1,355,646	1,355,646
Adj. R^2	0.288	0.289	0.205	0.020	0.024	0.024	0.568	0.807	0.784	0.736	0.774	0.775
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Calendar Day FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm & Day Cluster	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes