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FINANCIAL ECONOMICS | RESEARCH ARTICLE

Signaling or insider opportunism: an investigation of repurchase activity in Vietnam

Ly Thi Hai Tran¹* and Thao Thi Phuong Hoang¹

Abstract: This paper examines whether share repurchase announcements are signals of undervaluation or insiders' opportunistic activities by investigating insider trading patterns surrounding buyback announcements in Vietnam. Consistent with the insider opportunism hypothesis, we show that insiders are net buyers before the announcements but they sell intensively after the event. We also find that repurchase announcements with subsequent net insider selling are not followed by an improvement in firms' operating performance but associated with underperformance in long-term stock returns. Overall, our findings suggest that a proportion of repurchase announcements in Vietnam are subject to insider opportunism; therefore, short-swing rules should be regulated to limit insider opportunistically trading around repurchase announcements.

Subjects: Corporate Finance; Investment & Securities; Corporate Governance

Keywords: share repurchase; insider trading; signaling hypothesis; insider opportunism; managerial opportunism; Vietnam

1. Introduction

Early corporate finance literature generally views open-market share buybacks as a signal of undervaluation. Specifically, when managers perceive that their firm shares are underpriced, they are more willing to make repurchase announcements (Comment & Jarrell, 1991; Ikenberry et al., 1995; Vermaelen, 1981). In a survey of the U.S corporate executives on firm payout policy,

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PUBLIC INTEREST STATEMENT

As the cost of purchasing security on an exchange, stock prices (SP) are affected but not restricted to exchange rate (ER), information asymmetry, and size of the company among others. Considering the fact that market volatility is mostly determined by the interplay of ERand stock price movement, the study explains the nature of the relationship existing between SP and ER in the long run, and as well identify how increase/decrease in ER or share prices can affect each other. Based on the monthly data generated from National Bureau of Statistics used to estimate the relationship and direction of causality between SP and ERs, we found a stable long-run and bidirectional relationship between SP and ER. This implies that future volatility in stock and exchange markets affects each other greatly by past movement in either of the markets. Thus, this affects the investor's confidence and the level of investment in the markets.

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Brav et al. (2005) document that undervaluation is one of the key reasons for repurchasing firms' shares.

While signaling undervaluation appears to be the most common motive (Akyol & Foo, 2013; Baker et al., 2003; Bhattacharya & Jacobsen, 2016), the extant literature has provided several other explanations for stock repurchases. Furthermore, those explanations are not mutually exclusive as a firm may have more than one motivation to conduct a repurchase. In particular, the free cash flow hypothesis predicts that firms may use repurchases to distribute excess cash in an attempt to minimize agency costs (Lee & Suh, 2011). Also, the financial flexibility hypothesis argues that firms can avoid long-term commitment and pay out temporary cash flows through repurchases (Guay & Harford, 2000; Jagannathan et al., 2000; Skinner, 2008). According to the substitution hypothesis, when distributing excess cash, firms may prefer repurchases over dividends due to tax concerns (Grullon & Michaely, 2002; Jacob & Jacob, 2013; Moser, 2007). The capital structure hypothesis argues that firms can adjust their capital structure through share repurchases (Bonaimé et al., 2014). The wealth transfer hypothesis posits that when a firm repurchases equity, it reduces the value of claims protecting bondholders' interests, thus transferring wealth from bondholders to equity holders (Jun et al., 2009; Maxwell & Stephens, 2003). The takeover deterrence hypothesis claims that repurchases are a measure for managers to avoid hostile takeovers (Bagnoli et al., 1989; Billett & Xue, 2007).

Open-market repurchase announcements, however, are not binding obligations and managers might make repurchase announcements but then not really repurchasing shares or they only buy a small fraction of the announced amount (Chan et al., 2010; Stephens & Weisbach, 1998). Therefore, recent studies question the credibility of the signal conveyed by repurchase announcements (Babenko, Tserlukevich and Vedrashko, 2012; Bhattacharya & Dittmar, 2004; Bhojraj et al., 2009; Chan et al., 2010). Fried (2005) asserts that open-market repurchase announcements could be used to send false signals to investors.

Recent studies find that managers could employ stock price manipulation strategies prior to important corporate events (Dimitrov & Jain, 2011; Teoh et al., 1998). Kay (2016) argues that "corporate managers, motivated by flawed executive incentive plans (stock options, bonus plans based on earnings, etc.) and supported by complacent boards, behave myopically and undertake value-destroying buybacks to mechanically increase their own reward." Some studies find evidence that firms might repurchase shares due to managerial short-termism or managerial self-interest. Jolls (1998) finds that firms employing stock-option-based compensation heavily are more likely to repurchase their stocks than firms who rely less heavily on stock-option-based compensation. Moore (2017) points out that CEO equity sales are positively correlated with the volume of share repurchases, consistent with managers strategically using share repurchases to personally benefit from the positive effects of announcements on the stock price.

Among various explanations for share repurchases, this paper focuses on two hypotheses that reflect the opposite motives of managers in announcing open-market share repurchases. The first hypothesis is the signaling hypothesis, which suggests that managers, acting in the best interest of shareholders, use repurchases to signal the undervaluation of firms' shares. This hypothesis implies that open-market repurchase announcements should be associated with an improvement in operating performance and long-term stock return. The alternative hypothesis, the insider opportunism hypothesis, conjectures that managers and other insiders, maximizing their own interest, use a repurchase opportunistically rather than use it as a signaling channel. For instance, managers and other insiders such as board members can opportunistically take advantage of a post-announcement temporary boost in stock prices by buying shares before and selling them heavily after the announcement.

In this paper, we investigate the insider opportunism hypothesis versus signaling hypothesis in the context of open-market repurchase programs in Vietnam, an emerging market with interesting institutional settings regarding buybacks and insider trading. Specifically, insiders in the developed markets, such as the US, are subject to "short-swing" trading rules, which limit their ability to buy

shares before the repurchase announcements and sell them shortly afterward to benefit from the short-term share price boost. By contrast, the rules have not been implemented in Vietnam, therefore, insiders are more likely to trade opportunistically.

Using open-market share repurchase announcements of Vietnamese firms between 2007 and 2015, we find that the market reacts positively around the event. On average, short-term abnormal return is approximately 1.66% and 2.46% in three-day and five-day windows, respectively. This seems consistent with the signaling hypothesis; however, it might also be in line with the insider opportunism hypothesis as the post-announcement favorable reactions provide opportunities for insiders to take advantage of a short-term increase in stock price.

To disentangle the two hypotheses, we subsequently conduct several analyses. First, we examine post-announcement operating performance. We find that repurchase announcements are not followed by significant improvements in long-term operating performance. This finding does not support the signaling hypothesis, but the insider opportunism hypothesis.

Second, we investigate the relation between net insider selling after announcements and longterm stock performance. We document that post-announcement net insider selling is negatively associated with the long-term stock performance, which is again consistent with the insider opportunism hypothesis while inconsistent with the signaling one.

Finally, we investigate whether there is a linkage between net insider buying before and net insider selling after the event. We find that insiders sell intensively after share repurchase announcements, and pre-announcement net insider buying are more likely to be associated with post-announcement net insider selling. These findings support the predictions of the insider opportunism hypothesis that insiders can purchase shares shortly before but sell them intensively after the announcements to maximize the benefit of short-term stock price boost.

Our findings enrich the literature related to the link between insider trading and share repurchase in the context of an emerging market where the rules for insider trading activities are different from matured markets. By examining the insiders' opportunistic behavior to exploit the temporary jump in stock prices after the repurchase announcement, we can figure out whether the repurchase announcements serve the signaling or the insider opportunism. We also provide more insights into the insiders' trading pattern around share repurchase announcements by investigating what drives post-announcement net insider selling. By doing this, we show a plausible underlying mechanism that influences insiders' trading around repurchase announcements. Finally, this seems to be the first paper investigating insider opportunism associated with buybacks in Vietnam, a young market, where investor protections are still weak and corporate governance is inefficient. Thus, the findings provide useful implications for investors in making investment decisions pertaining to corporate events. The findings also imply that regulators in emerging markets like Vietnam should impose stricter rules for insider trading surrounding corporate events in order to mitigate opportunistic activities at the expense of outside investors.

The paper is structured as follows: The next section reviews literature on share repurchases, particularly the signaling and insider opportunism hypotheses. We then present the institutional background of share repurchases and insider trading rules in Vietnam in Section 3. Section 4 describes the sample and research methodology. Section 5 presents the empirical results and discussions. Section 6 concludes the paper.

2. Literature review and Hypothesis development

2.1. Signaling hypothesis

Prior studies about signaling theory suggest that managers could use a repurchase announcement to reveal their private information about share undervaluation and firm future performance to the

capital market (Bhattacharya, 1979; Comment & Jarrell, 1991; Vermaelen, 1981). According to the signaling theory, through an open-market repurchase, managers commit to buy their pro-rata fraction of a firm's shares at the repurchase price. If the firm's stock is overpriced, buyback announcement with managers' commitment to repurchase must impose a cost on managers and shareholders who retain their own shares. Therefore, an open-market repurchase conveys a signal of undervaluation. Lie (2005) reports economically significant improvements in adjusted operating performance during the eight-quarter sequence following repurchases. The author concludes that repurchase announcements deliver information about better future operating performance. Chen and Liu (2021) claim that firms may repurchase shares to send true or false signals to the market. Using discretionary accruals as a proxy for earnings management, they find a negative relationship between earnings management and the probability and frequency of repurchase announcements. Also, they find that earnings management is also negatively related to post-announcement 2-year operating performance as well as stock returns, which signifies that earnings management can act as a reliable indicator to classify true and false signals conveyed in repurchase announcements. Wang et al. (2020) examine the long-term abnormal stock returns and operating performance following share repurchase announcements by listed firms in Vietnam. They report a higher buyand-hold abnormal return and an improvement in operating performance for repurchasing firms in the announcement year, but insignificant differences for the subsequent fiscal year. Repurchasing firms with better post-event performance have higher post-event abnormal returns, especially for firms with higher completion rates, meaning that the credibility of the signal sent to the market partly depends on whether a company actually repurchases its shares.

Babenko et al. (2012) suggest that the signal of the repurchase is credible when insiders buy more stocks for their own accounts before releasing the announcement. Moreover, a firm's repurchase plan is more likely to be completed when its insiders trade in the same direction implied by the firm's signal. Actual repurchases thus lend the credibility to a signal of stock undervaluation. More importantly, under the signaling theory, a repurchase announcement is associated with a positive long-term return. The authors document that one-year post-announcement buy-and-hold returns are positively associated with pre-announcement insider purchases. They conclude that insider purchases reveal the creditability of the undervaluation signal contended in buyback announcements, and outside investors would gain the benefit if they understand the information from insider trading behavior. Cziraki et al. (2021) find that insiders' net buying increases before open-market share repurchase announcements and that higher insider net buying is associated with better post-event operating performance, a reduction in undervaluation, and lower post-event cost of capital.

In short, under the signaling hypothesis, we should expect an improvement in long-term operating and stock return performance after the open-market share repurchase. This leads to our first hypothesis:

H1: Managers use share repurchases as a signal for share undervaluation and firm future performance, therefore, there is an improvement in long-term operating performance and stock return after the repurchase announcements.

2.2. Insider opportunism hypothesis

Insider opportunism hypothesis suggests that managers take advantage of corporate events to gain benefits for themselves. In the context of repurchase programs, this hypothesis predicts that managers may employ buybacks in two cases (Fried, 2001). The first one is when shares are underpriced. In this case, managers announce a buyback to benefit themselves and other shareholders who remain their shares by withholding the true value of shares price to keep the repurchase price low and maximize the transfer of value from selling shareholders. In the second case, due to managerial opportunistic activities, share repurchase announcements might not convey the

information of undervaluation. One of the main reasons for buyback announcements under such condition is to boost stock prices when the managers desire to sell their shares.

Based on these theoretical arguments, Fried (2001) suggests some implications to test managerial opportunism hypothesis. Accordingly, repurchasing firms are divided into at least two groups: buying group and selling group. The buying group consists of firms whose managers try to buy shares at a low price. For this group, the managerial opportunism hypothesis predicts that managers buy shares for their own accounts before releasing repurchase announcements and perhaps afterward. They also conduct actual buyback and do not sell their shares in the short time horizon subsequently, and there are positive long-term stock returns following the announcements. On the other hand, the selling group includes firms whose managers intend to sell a large number of their shares. For this group, the hypothesis predicts that managers do not buy shares for their own accounts before or after announcements while they sell their shares shortly after announcements. Moreover, few firms actually buy shares back and on average, there is postannouncement long-run underperformance.

Several empirical studies document evidence consistent with the managerial opportunism hypothesis associated with repurchase announcements. Chan et al. (2010) find that some managers use repurchase announcements to send a false signal to the market. Suspected announcing firms usually buy shares less than announced quantities and there is no improvement in long-run operating performance. Bonaimé and Ryngaert (2013) suspect the credibility of repurchase announcements in signaling share undervaluation. They show evidence that repurchases associated with insider net selling mainly happen due to the incentive of supporting share prices or avoiding stock dilution rather than share undervaluation. Hence, abnormal returns from repurchases accompanied by net insider selling are more likely to disappear after only one year. Jategaonkar (2013) analyzes insiders' trades over a three-month period before open-market repurchase announcements and shows that higher abnormal short-term stock returns are associated with announcements accompanied by higher net insider buying. The authors also find a strong positive relationship between pre-announcement net insider buying and the post-announcement operating performance as well as long-run stock returns.

A recent paper by Chen et al. (2014) suggests that insider trading following announcements is an appropriate proxy for private information about future performance. They report a result showing that net buying (selling) forecasts a better (worse) operating performance, which in turn leads to an increase (decrease) in long-run stock return. In Vietnam, insiders are not restricted by the "shortswing" rules; thus, it is more likely that they have a greater opportunity to maximize the benefit from short-term share price boost after repurchase announcements. Provided that the stock price usually rises immediately when firm release repurchase announcements, insiders might even buy shares at the lower price before releasing the announcement and subsequently sell their stocks shortly after the announcement date, taking advantage of the market's positive reaction. Therefore, it is plausible that repurchase announcements associated with post-announcement net insider selling might be ones associated with insider opportunism. In this case, one should expect no improvement in the long-term operating performance and stock return performance. Therefore, we conjecture that:

H2:_Insiders are net buyers before the repurchase announcements, but net sellers after the announcement.

H3: For share repurchase announcements associated with post-announcement net insider selling, there is no improvement in long-term operating performance.

H4: For share repurchase announcement associated with post-announcement net insider selling, there is no improvement in long-term stock return performance.

3. Share repurchase disclosure in Vietnam

Vietnamese stock market was formally established in July 2000; however, the regulations for share repurchase were initiated in 2006, when the Business Law 60/2005/QH11 was enacted. According to the law, there is an upper bound on the percentage of shares (30 percent of issued common stocks) that a firm could repurchase if its plan is approved by shareholders at the general meeting. For smaller repurchase programs, 10 percent of common stocks or lower, the board of directors has the authority to make buyback decisions. These regulations remain unchanged in the new Business Law 2014.

The regulations regarding share repurchases are also stated in the Law of Securities 70/2006/ QH11. The details are specified in the Circulars 18/2007 and in the Circulars 130/2012 by Financial Ministry, which require firms not to repurchase their shares and issue new shares simultaneously. In addition, the time horizon between two consecutive programs of a particular firm must be over six months. Firms are also not allowed to purchase and sell treasury stocks at the same time. Under the Circulars 18/2007, a firm must complete its announced repurchase program within 90 days from the first day of repurchase, however, under the Circulars 130/2012, the time length is reduced to within 30 days which has remained unchanged to date.

According to repurchase information disclosure, a firm is required to announce its repurchasing program at least seven working days before the date it starts purchasing. The published information includes the number of repurchased shares, timeline, financing source, the purpose of repurchase, and purchasing method. When a firm completes its repurchase program, it must send the result report to the State Securities Commission (SSC) and disclose the report to the public within 10 working days from the final repurchasing day. The information in the result report consists of the target and the actual number of repurchased shares, the timeline, and other related information. SSC requires firms to provide the reasons if they do not complete their announced programs.

Under current regulations, insiders in Vietnam are not prohibited from selling their own shares shortly after buying their shares during the period of repurchase announcements as long as they disclose their transactions. Insiders are required to report their trading transactions at least three days prior to the date they start trading. This feature is different from the regulations in the U.S. market. Section 16(b) of Securities and Exchange Act contains "short-swing" rules in which insiders are required to hold purchased shares for at least 6 months. This prevents insiders in the U.S. from selling their shares shortly after buying them.

In summary, it seems that the regulations for stock repurchase in Vietnam are somewhat strict for firms, but regulations for insider trading are still lenient.

4. Data source, sample selection, and research methodology

4.1. Data and sample selection

Our sample period spans from 2007 to 2015. We collect data on share repurchase announcements from the section of capital change and treasury buyback on CafeF, a popular financial information website.¹ Each announcement is also double-checked against information on the State Securities Commission (SSC) website.

In total, Vietnamese listed firms made 637 repurchase announcements between 2007 and 2015. We exclude 129 announcements that are not related to the private information about the firm value that managers possess. The excluded announcements include repurchases from redundant staff or staff leaving their companies earlier than a pre-specified period of time², and small repurchases for Employee Stock Ownership Plan. The final sample consists of 508 announcements by 375 firms. Following Grullon and Michaely (2004) and Babenko et al. (2012), we keep announcements of financial firms; however, our results are even stronger when announcements of financial firms are excluded.³

We obtain insider trading data over the corresponding period from the section of "block holders and insider trading" on the same website. We extract information about share transactions of the board members, managers, and their affiliated persons such as spouses and children. Most of the repurchase programs made by Vietnamese firms are less than ten percent of outstanding shares. Under the regulations, these programs are approved by the board of directors. Therefore, we treat not only managers but also the board members and their affiliated persons as insiders who could have advantages to benefits themselves surrounding repurchase announcements.

Table 1 presents the sample distribution from 2007 to 2015. Some Vietnamese firms started repurchasing their stocks in late 2007, with only three announcements. The peak of repurchase activities was in 2011 with 177 announcements. There are over 381 million stocks repurchased over the sample period. The completion ratio (*COMPLETION*), defined as the number of shares repurchased divided by the number of shares announced to be repurchased, is only around 59%. On average, the target ratio (*TARGET*), defined as the number of shares planned to repurchase divided by the number of outstanding shares, is approximately 4.27%; however, the actual buyback ratio (*ACTUAL*), defined as the number of shares actually repurchased divided by the number of firm's outstanding shares, is much smaller with just 2.17%.

4.2. Methodology

Insider opportunism hypothesis predicts that insiders will buy shares before and sell a large number of their shares shortly after announcements to take advantage of short-term stock price boost. In addition, the insider opportunism hypothesis also predicts that in the case of postannouncement net insider selling, there is no improvement in long-term performance (both operating and stock return performance). Therefore, we need to isolate post-event insider trading from the noise of pre-event insider trading to examine how long-run performance behaves following post-announcement net insider selling.

4.2.1. Main variables

4.2.1.1. Insider trading measures. First, we calculate insider buying and selling in each of three following months: the month before the announcement, the announcement month, and the month after the announcement. Then, we measure net insider trading by taking insider buying minus insider selling. Because the levels of net insider trading and the number of outstanding shares vary across repurchasing firms, we need to control for the number of outstanding shares of each firm. That means we divide the insider trading measures by the number of outstanding shares to obtain insider trading ratio. We classify insider trading as net selling (*NS*) if the ratio is negative and net buying (*NB*) if the ratio is positive and Neutral if the ratio is zero.

To facilitate the analysis of insider trading pre- and post-announcement, we calculate net insider selling and net insider buying one month *before* announcement (*NSB* and *NBB*), and net insider selling and net insider buying for two months (the event month and the following month *after* announcement date) (*NSA* and *NBA*).

4.2.1.2. Share repurchase measures. In the past (2004 backward), U.S. firms normally did not disclose the number of shares they actually repurchased, and a buyback program might last up to three years. It was challenging for the previous studies to measure open-market share repurchases in an intuitive way. Therefore, previous studies conducted under the U.S. setting usually followed an indirect way to calculate the actual number of shares repurchased (Jagannathan et al., 2000; Jiang et al., 2013; Stephens & Weisbach, 1998). U.S. repurchasing firms now disclose their buyback result on a monthly basis. However, a majority of repurchasing firms report the dollar value of the shares repurchased and several firms do not disclose the percentage or number of outstanding shares repurchased; thus, the studies on the U.S repurchase data often use the value dollar as their measures of repurchase activity.⁴

The setting of Vietnam allows us to obtain cleaner measures of share repurchase activities. In Vietnam, firms are required to disclose the number of shares intended to repurchase in the

Table 1. Summary statistics of the sample. This table reports the summary statistics of our sample across years. TARGETNO is the number of shares a company plans to repurchase; ACTUALNO is the number of shares actually repurchased. TARGET is the target ratio, calculated as the ratio of the number of shares planned to purchase and the number of firm's outstanding shares. ACTUAL is the actual buyback ratio, measured by the number of shares actually repurchased divided by the number of outstanding shares. COMPLETE is the completion ratio, calculated as the number of shares actually repurchased divided by the number of shares of shares planned to repurchased divided by the number of outstanding shares. Complete is the completion ratio, calculated as the number of shares actually repurchased divided by the number of shares planned to repurchase. No.ANNOUNCE is the number of shares

Year	TARGETNO	ACTUALNO	TARGET	ACTUAL	COMPLETE	No. ANNOUNCE	No. Firms
2007	1,302,280	1,223,800	1.02%	0.78%	91.28%	3	3
2008	45,142,322	30,254,515	3.29%	1.81%	62.75%	84	58
2009	26,278,371	6,081,970	3.59%	1.40%	45.83%	44	35
2010	80,677,614	37,546,468	3.92%	1.71%	56.52%	87	70
2011	214,465,944	109,917,531	4.42%	2.25%	66.29%	177	116
2012	33,464,710	11,935,965	4.19%	1.83%	50.49%	46	30
2013	80,411,820	60,361,220	5.22%	2.73%	50.25%	20	19
2014	108,859,200	65,368,060	7.61%	5.03%	61.33%	20	19
2015	113,340,006	58,387,095	5.91%	3.68%	46.85%	27	25
Total	703,942,268	381,076,625	4.27%	2.17%	59.12%	508	375

announcements and the actual number of shares bought in the result report. With these explicit disclosures, we can obtain the direct calculation for target buyback ratio and actual buyback ratio as measures of the program size.

4.2.2. Measuring stock return, operating performance, and control variables

4.2.2.1. Short-term abnormal return. Short-term abnormal returns surrounding repurchase announcements are calculated based on standard event-study methodology (Brown & Warner, 1985; Ikenberry et al., 1995; Stephens & Weisbach, 1998). Abnormal return for a given day in a particular event window is the difference between the actual return and expected return from the market model.⁵

Cumulative abnormal returns (CARM) are then calculated for several event windows to examine how the market reacts to repurchase announcements conditional on insider trading activities.

$\mathsf{CARM}_i = \sum (\mathsf{R}_i - \alpha_i - \beta_i \times \mathsf{R}_M)$

The parameters of the market model (α and β) are estimated over the period from -165 to -65 days prior to the announcement. In Vietnam, since stocks listed on HSX, HNX, and UPCOM exchanges have different daily trading price bands,⁶ we use the corresponding index of each exchange to calculate market return (R_M) in the market model.

5.2.2.2. Long-run stock performance. We calculate buy-and-hold abnormal returns up to 12 months, 24 months, and 36 months following the announcement using two types of benchmark portfolios: equal-weighted market portfolio and matching size/book-to-market portfolio.

When we use the market portfolio as the benchmark portfolio, buy-and-hold abnormal return (market-adjusted return in this study) is calculated as:

$$BHARM_{i} = \left[\prod_{t=1}^{T} \left(1 + R_{i,t}\right)\right] - \left[\prod_{t=1}^{T} \left(1 + R_{M,t}\right)\right]$$

where $R_{M,t}$ is the equal-weighted average return of the market at month t.

Regarding the Size/book-to-market portfolio, we first rank stocks on three exchanges into 5 portfolios by size, from the smallest size to largest size portfolios. *Size* is market capitalization in June of year *t*. We then sort all stocks into 5 book-to-market (BE/ME) portfolios based on their fiscal year-end book-to-market ratio. Combining 5 size portfolios and 5 BE/ME portfolios produces 25 size/book-to-market portfolios. Equal-weighted average monthly return of each portfolio is calculated from July of year *t* to June of year *t* + 1, then this procedure is repeated in June each year. We estimate an individual stock's abnormal return as the difference between its buy-and-hold return and its corresponding size/book-to-market portfolio to another from year to year, benchmark portfolio's buy-and-hold returns must be adjusted accordingly to match with size and book-to-market ratio of each firm. Buy-and-hold abnormal return of an announcement is defined as:

$$BHARC_{i} = \left[\prod_{t=1}^{T} (1 + R_{i,t})\right] - \left[\prod_{t=1}^{T} (1 + R_{rpi,t})\right]$$

where $R_{rpi,t}$ is the equal-weighted average return of benchmark portfolio *i* at month *t*. Benchmark portfolio for an individual stock *i* is the size/book-to-market portfolio corresponding to the size/ book-to-market group the stock belongs to.

4.2.2.3. Operating performance. The operating performance of a buyback firm should be compared to that of a control firm that does not announce a repurchase program but has comparable characteristics to the repurchasing firm. Firm characteristics that are found as determinants of operating performance include industry and previous operating performance (Barber & Lyon, 1996; Fama & French, 2000; Lie, 2005), and market-to-book value (M/B; Dittmar, 2000; Jagannathan et al., 2000).

Following Lie (2005) and Grullon and Michaely (2004), we first calculate unadjusted operating performance (*UOP*) as the ratio of EBITDA divided by net total assets which are measured by total assets minus cash and cash equivalent. The reason for using net total assets instead of total assets is that the use of total assets might distort operating performance. In particular, post-announcement operating performance can be improved just because of cash reduction stemming from payments for share buyback while, in fact, there is no actual improvement in operating performance.

Adjusted operating performance (AOP) of repurchasing firms in a particular quarter is then calculated by subtracting the operating performance of the control firms from that of repurchasing firm in the quarter.

We identify the control firms using the Thomson Reuters Business Classifications (TRBC). A control firm in the same industry (same 2-digit TRBC) for a given repurchasing firm should meet three following criteria. First, the market-to-book value ratio prior to the announcement of the control firm should fall in a range of [80% to 120%] of that of the repurchasing firm. Second, the control firm's operating performance in the pre-announcement quarter is in the range of [80% to 120%] of that of the repurchasing firm. Lastly, the control firm's operating performance during four quarters ending at the repurchase announcement quarter must be in the range of [80% to 120%] of that of the repurchasing firm.

For a given repurchasing firm, if there is no control firm that satisfies these three criteria, we relax the requirement of industry code, then market-to-book ratio, and then operating performance of four quarters ending at the announcement quarter. If no matching firm is found, we relax these requirements and choose the firm that has the smallest difference in operating performance compared to the purchasing firm. In other words, we choose the matching firm to minimize the following value:

EBITDA Adjusted Total Assets_{0,sample firm} – EBITDA Adjusted Total Assets_{0,control firm}

The change of adjusted operating performance (*DAOP*) of the quarter *t* is calculated by taking the adjusted operating performance of quarter *t* and subtracting adjusted operating performance of quarter 0. We report *UOP*, *AOP*, and *DAOP* over one to twelve quarters after the announcement.

4.2.3. Empirical approach

First, we utilize event study to measure insider activities and abnormal returns around the announcements, allowing us to not only examine how Vietnamese market reacts to repurchases but also test the hypothesis *H2*. In the investigation of the long-term performance, we employ two approaches: univariate and multivariate analysis. For the former, we conduct t-test for the average operating and stock performance unconditional and conditional on insider trading behavior.

Univariate analysis ignores the role of firm characteristics and the features of repurchase that may impact on post-announcement performance. Therefore, in addition to univariate analysis, we also conduct multivariate regressions for post-announcement operating and post-announcement stock performance, controlling for firm characteristics and repurchase characteristics. In particular, we run the two following models:

 $DAOP_{i} = \beta_{0} + \beta_{1}NSA_{i} \text{ (or/and } NBA_{i}) + \beta_{2}BM_{i} + \beta_{3}SIZE_{i} + \beta_{4}FCF_{i} + \beta_{5}LEV_{i} + \beta_{6}ACTUAL_{i} + \beta_{7}EFFBUY_{i} + \varepsilon_{i,t}(1)$

 $BHARM_{i} = \beta_{0} + \beta_{1}NSA_{i} \text{ (or/and NBS_{i})} + \beta_{2}BM_{i} + \beta_{3}SIZE_{i} + \beta_{4}FCF_{i} + \beta_{5}LEV_{i} + \beta_{6}ACTUAL_{i} + \beta_{7}EFFBUY_{i} + \beta_{8}DAOP_{i} + \epsilon_{i,t}(2)$

Where the dependent variable, *DAOP*_i, is change in adjusted operating performance, and *BHARM*_i is market-adjusted buy-and-hold return. The main independent variables are *NSA* (net insider selling in the event month and following month) and NBA (net insider buying in the event month and following month). The control variables are selected based on Chan et al. (2010), Bonaimé and Ryngaert (2013), and Chen et al. (2014). Specifically, we include BM (book-to-market decile) to control for undervaluation, FCF (Free cash flow) to control for free cash flow problem, SIZE (market capitalization decile), and LEV (leverage decile) to control for optimal capital structure. Repurchase program characteristics, *ACTUAL* and *EFFBUY*, are also controlled. These variables are defined in Appendix 1.

We will conduct a test on whether the net buying before the announcement (*NBB*) increases the probability of net insider selling after the repurchase announcements (*NSA*) using the following model:

 $Pr(NSA_{i} = 1) = \beta_{0} + \beta_{1}NBB_{i} + \beta_{2}BM_{i} + \beta_{3}SIZE_{i} + \beta_{4}LEV_{i} + \beta_{5}COMPLETE_{i} + \beta_{6}EFFBUYi + \beta_{7}CARM05_{i} + \beta_{8}DAOP_{i} + \epsilon_{i,t}(3)$

Where *NBB* is Net insider buying before the repurchase announcements. *COMPLETE* is complete ratio defined as the number of shares actually repurchased divided by the number of shares announced to repurchase. The control variables are defined in Appendix 1.

5. Empirical results and discussion

5.1. Insider trading surrounding the event

Table 2 presents insider trading surrounding open-market repurchase announcements. The results show that, on average, insiders are net buyers in the month before the announcement, but they are net sellers in the announcement month and the following month. In Panel A, insiders buy

18,193 shares in the month prior to the announcement, but they intensively sell in the event month with 26,770 shares and even sell strongly in the post-announcement month with 42,652 shares. Looking closely at two groups of insider trading, it can be clearly seen that the number of shares sold by insiders in the event month and the following month are approximately two and three times as many as the number of shares bought in the pre-event month, respectively. The number of shares bought (sold) is statistically significant at 5% (10%), except for the corresponding amount in the event month.

To control for number of outstanding shares as stated before, we report insider trading activity as a percentage of the number of outstanding shares at the end of previous month in the Panel B. The pattern of percentage numbers is similar to that of the absolute numbers in Panel A. Insiders purchase 0.044% number of outstanding shares in the month before announcements, but sell 0.055% and 0.037%, respectively, in the next two months. Net buying group dominates the net selling group in pre-announcement month (0.6% versus -0.48%); however, in the announcement month and the following month, the net selling group sells significantly more than the net buying group. All of the means and differences are statistically different from zero. This preliminary empirical evidence seems to be inconsistent with the signaling argument, while supporting the insider opportunism hypothesis, *H2*.

5.2. Short-term abnormal return

The results in Table 3 show short-term cumulative abnormal returns for several event windows before and after the repurchase announcements. Panel A shows that, on average, the abnormal return of the period of [-40,-3] is significantly negative. This suggests that stock prices of repurchasing firms generally decline before companies announce their buyback plans. This result is consistent with that reported by previous empirical evidence. For example, Firth et al. (2010) report a negative abnormal return -3.64% over 60 days before the announcement date. Babenko et al. (2012) report abnormal return -5.3% over the period from 4 to 43 days prior to the event. For the other windows, [-1,1], [0,1], and [0,5], abnormal returns are positive and statistically significant. For two further windows ([6,10] and [11,20]), abnormal returns are still positive but statistically insignificant.

Panel B compares abnormal returns between two groups of firms: firms that actually buyback (buyback group) and firms that previously announce a repurchase program but subsequently do not buy back shares (Non-Buyback). Interestingly, non-buyback announcements experience a more positive market reaction than the buyback group. It seems that the market fails to predict whether an announced buyback plan is eventually implemented or not.

To have a clear picture about market reaction surrounding the events conditional on insider trading, we report abnormal returns during event windows for each of three insider trading categories in the pre-announcement month: net selling group (NSB) that consists of announcements with more insider selling than buying; Neutral group including announcements in which insider's selling equals to buying or there are no insider trades; and net buying group (NBB) with more insider buying than selling. The result in Table 4 indicates that market favors announcements in the NBB group most, then those in Neutral group. The abnormal returns over [-1,1], [0,1], and [0,5] window of the NSB category are negative, which suggests that outsiders may reflect insider trading activity prior to the event into market stock prices.

The positive short-term abnormal return after the repurchase announcement, however, could be reconciled with both the signaling hypothesis and the insider opportunism hypothesis. On the one hand, it could be consistent with the signaling hypothesis that managers use repurchases to signal undervaluation, thus, investors correct mispricing. On the other hand, positive short-term stock price boosts after the announcement might also provide opportunities for insiders to make profits by selling shares they just buy shortly before the repurchase announcements. Fried (2001) states that positive short-term abnormal returns do not contradict managerial opportunism around repurchase

Table 2. Insider trading surrounding announcement. This table reports the insider trading before the repurchase announcement month (month (month −1), in the announcement month (month 0), and the month after the repurchase announcement (month +1). NS indicates net insider selling and NB indicates net insider buying

Panel A: Insider trading surrounding announcements (number of shares)

									NB	-NS
Month	Obs	All	NS	t	р	NB	t	р	t	р
-1	508	18,193	-74,625	-2.7840	0.0075	168,236	1.9743	0.0519	2.2748	0.0246
0	508	-26,770	-331,977	-1.3632	0.1788	91,580	1.8427	0.0730	1.5052	0.1358
1	508	-42,652	-612,346	-1.9818	0.0522	258,240	2.6206	0.0113	2.6268	0.0098
-1	508	0.044%	-0.48%	-2.5386	0.0142	0.60%	3.8096	0.0003	4.3680	0.0000
0	508	-0.055%	-0.90%	-2.1000	0.0407	0.47%	2.922	0.0058	2.6928	0.0084
1	508	-0.037%	-1.38%	-2.7993	0.0069	1.12%	4.0914	0.0001	4.3695	0.0000

Table 3. Short-term market reaction. The table presents short-term cumulative abnormal returns for different event windows around repurchase announcements: [-40, -3], [1, -1], [0, 5], [6, 10], and [11, 20] days. Panel A reports results for the entire sample while Panel B shows the performance for non-buyback versus buyback announcements. *, **, and *** indicate significance at the 10%, 5%, and 1% level, respectively

Panel A: Market reaction to announcements

	Index model		
	Obs	CARM	t
[-40 to -3]	459	-3.88%***	-4.5425
[-1 to 1]	459	1.66%***	7.2835
[0 to 1]	459	1.44%***	7.9635
[0 to 5]	459	2.46%***	7.9977
[6 to 10]	459	0.16%	0.5484
[11 to 20]	459	0.13%	0.3617

announcements. Therefore, we need to examine the long-term performance after the announcement to conclude which hypothesis is supported.

5.3. Long-term performance

5.3.1. Operating performance

The operating performance (both unadjusted—*UOP* and adjusted—*AOP*) over the twelve quarters after repurchase announcements is presented in Table 5. The unadjusted operating performance of repurchasing firms is significantly different from zero in any quarter, from the announcement quarter to twelve quarters afterward. Unadjusted performance of repurchasing sample firms reaches its high levels in quarter +1 and +2; adjusted performance, however, exhibits a very different pattern. Specifically, it is only positive in quarter +1, +2, and +12 (0.00497, 0.00174, and 0.00082, respectively), but none of them is statistically significant. For other quarters, *AOPs* are negative and some of them (quarter +6, quarter +8, and quarter +10) are even significant. When it comes to the changes in adjusted operating performance (*DAOP*), the bottom part of Table 5 indicates no improvement in the change of performance.

These results are not aligned with empirical evidence reported by Lie (2005) which shows an economically significant improvement in adjusted operating performance during an eight-quarter sequence following repurchase events. However, our findings are partly consistent with the result in Grullon and Michaely (2004) who do not find any improvement in operating performance of buyback

Table 4. Cumulative abn ment month.	ormal retur	ns co	ondit	iona	l on i	nside	er trading	g prior to the announce-
	NSB		Neu	utral	N	3B		NBB vs NSB
	[n=48]		[n=	335]	[n=	76]		Difference
CARM [-1 to 1]		-0.8	4%	1.63	%***	3.	38%***	4.22%***
t-statistic		-1.1	484	6.4	424	5	6.6506	4.4353
CARM [0 to 1]		-0.8	4%	1.43	%***	2.	88%***	3.71%***
t-statistic		-1.4	469	7.1	127	6	6.4767	5.1336
CARM [0 to 5]		-1.0	2%	2.33	%***	5.	19%***	6.21%***
t-statistic		-1.1	478	6.8	559	6	5.2527	4.9244

firms compared to matching firms over three years following the announcements except an increase in the event year. Because the prediction of the signaling hypothesis is that a firm announces a buyback program when its managers believe the market underestimates firm operating performance prospect, leading to an expectation that long-term operating performance will be improved, our findings regarding long-term operating performance are inconsistent with this prediction and *H*1.

The analyses in Lie (2005) and Grullon and Michaely (2004) do not take into account insider trading activity which may contain valuable information about the forward-looking operating performance of repurchasing firms. We now incorporate insider trading to provide an in-depth understanding about operating performance after the repurchase announcements with the presence of the insider trading.

Table 6 shows the changes in adjusted operating performance (*DAOP*) conditional on insider trading (*NSA, NBA*, Neutral). In general, there is no evidence on the improvement in postannouncement long-term operating performance. In particular, *DAOP120* is positive but insignificant while *DAOP40* and *DAOP80* are both negative and one of them (*DAOP80*) is significant at 10 percent. *DAOPs* of the announcements with the net insider selling are always lower than that of the announcements with net insider buying, though the difference is statistically insignificant. The findings support hypothesis *H3* that for repurchase announcements associated with post-announcement net insider selling, there is no improvement in a firm's operating performance. Our results are also consistent with reduction in long-run operating performance and gradually lower insider ownership after repurchases legalization documented by Wang et al. (2021).

As a robustness check, we run multivariable regressions for the change in adjusted operating performance (*DAOP40, DAOP80*, and *DAOP120*) on two independent variables of interest, *NBA* and *NSA*. Note that *NBA* and *NSA* are dummy variables where *NBA* takes unit if the average of net insider buying ratios in the announcement month and the following month is positive, and 0 otherwise. *NSA* takes unit if the average of net insider selling ratios in the announcement month and the following month is positive, and 0 otherwise. The regression results are shown in Table 7. *NSA* predicts a lower subsequent year performance (*DAOP40*) and no improvement in operating performance of two and three years from announcement, while *NBA* has no effect on operating performance. This result combining with the result of the univariate analysis above supports hypothesis *H*3.

5.3.2. Stock return performance

As indicated in the hypothesis H4, the insider opportunism hypothesis predicts that repurchase announcements with post-announcement insider selling should not be associated with significant improvement in long-run abnormal return. To test this prediction, we focus on long-run stock return performance conditional on insider trading.

Table 5. Post-a repurchase an	nnouncement op nouncements	oerating performa	ınce. This table r	eports the unad	ijusted and adjus	sted operating p	erformance for (one to twelve qu	iarters after the
Unadjusted op	erating perform	ance (UOP)				Adjusted o	perating perform	iance (AOP)	
Quarter	obs	Mean	t-statistic	p-value	Quarter	sqo	Mean	t-statistic	p-value
0	488	0.02670	10.7382	0.0000	0	487	-0.00041	0.8036	0.4220
1	481	0.03020	11.2246	0.0000	1	472	0.00497	1.5301	0.1267
2	482	0.03043	10.5227	0.0000	2	470	0.00174	0.5433	0.5871
£	473	0.02534	18.4513	0.0000	m	460	-0.00202	0.8213	0.4119
4	472	0.02314	9.0327	0.0000	4	461	-0.00208	0.5790	0.5629
5	455	0.02354	14.8202	0.0000	5	977	-0.00288	1.2901	0.1977
6	455	0.02257	14.9659	0.0000	9	437	-0.00368	1.7547	0.0800
7	644	0.02249	15.6349	0.0000	7	431	-0.00326	1.4558	0.1462
8	443	0.02220	14.8515	0.0000	∞	429	-0.00315	1.7276	0.0848
6	435	0.02050	12.2168	0.0000	б	419	-0.00091	0.3017	0.7631
10	432	0.02072	15.9712	0.0000	10	407	-0.00682	3.4243	0.0007
11	429	0.02169	15.3045	0.0000	11	402	-0.00231	1.2747	1.2747
12	414	0.02297	16.9371	0.0000	12	382	0.00083	0.4292	0.6680
0 to +1	481	0.00344	1.0183	0.3090	0 to +1	472	0.00541	1.6582	0.0979
0 to +2	482	0.00370	1.0307	0.3032	0 to +2	470	0.00177	0.5517	0.5814
0 to +4	473	-0.00331	-2.1203	0.0345	0 to +4	460	-0.00187	0.5187	0.6042
0 to +8	472	-0.00572	-2.1645	0.0309	0 to +8	428	-0.00292	1.6211	0.1057
0 to +12	414	-0.00611	-3.9201	0.0001	0 to +12	381	0.00085	077770	0.6573

Table 6. Changes in adjusted operating performance and insider trading. This table shows the changes in adjusted operating performance (DAOP) for each group of repurchase classified by post-announcement insider trading. NSA (NBA) is net insider selling (buying) in the event month and the following month; Neutral is the neutral insider trading in the same period. DAOP40, DAOP80, and DAOP120 are changes in adjusted operating performance from quarter 0 to 4, 8, and 12, respectively

	Obs	Mean	t	р
DAOP40 NSA	96	-0.01781	-1.6425	0.1038
Neutral	291	0.00223	0.5196	0.6038
NBA	73	0.00277	0.7448	0.4588
NBA vs NSA		0.02058	1.6005	0.1114
DAOP80 NSA	90	-0.00476	-1.6946	0.0936
Neutral	270	-0.00345	-1.4436	0.1500
NBA	68	0.00164	0.3308	0.7418
NBA vs NSA		0.00640	1.1888	0.2363
DAOP120 NSA	78	0.00068	0.2139	0.8312
Neutral	247	-0.00017	-0.0693	0.9448
NBA	56	0.00561	0.9448	0.3489
NBA vs NSA		0.00493	0.7884	0.4319

Table 7. Multivariate regression of change in adjusted operating performance. The table reports the regression results for change in adjusted operating performance up to one, two, and three years (DAOP40, DAOP80, and DAOP120) from the event month on NSA and NBA. The variables are defined in Appendix 1. Year dummies are included in all regressions. The numbers in [] are z-statistics. *, **, and *** indicates significance at the 10%, 5%, and 1% level, respectively

	DAOP40	DAOP40	DAOP40	DAOP80	DAOP80	DAOP80	DAOP120	DAOP120	DAOP120
NSA	-0.021*		-0.022*	-0.001		-0.000	0.000		0.001
	(-1.917)		(-1.891)	(-0.385)		(-0.072)	(0.093)		(0.255)
NBA		-0.000	-0.006		0.006	0.006		0.004	0.004
		(-0.050)	(-0.843)		(1.016)	(0.952)		(0.513)	(0.537)
BM	0.001	0.001	0.001	-0.001	-0.001	-0.001	-0.000	-0.000	-0.000
	(0.474)	(0.532)	(0.460)	(-0.460)	(-0.422)	(-0.422)	(-0.115)	(-0.098)	(-0.098)
FCF	0.086	0.090	0.083	0.225**	0.228***	0.228***	0.151*	0.153*	0.154*
	(0.643)	(0.674)	(0.619)	(2.571)	(2.607)	(2.602)	(1.660)	(1.685)	(1.691)
SIZE	-0.002	-0.002	-0.002	-0.000	-0.000	-0.000	-0.001	-0.001	-0.001
	(-1.330)	(-1.448)	(-1.332)	(-0.469)	(-0.452)	(-0.445)	(-0.775)	(-0.737)	(-0.741)
LEV	0.001	0.001	0.001	-0.001	-0.001	-0.001	0.001	0.001	0.001
	(0.503)	(0.453)	(0.554)	(-0.638)	(-0.703)	(-0.694)	(0.434)	(0.399)	(0.387)
ACTUAL	0.041	0.015	0.053	0.013	0.004	0.004	-0.055	-0.059	-0.060
	(0.190)	(0.065)	(0.243)	(0.128)	(0.041)	(0.043)	(-0.662)	(-0.711)	(-0.715)
EFFBUY	-0.003	-0.002	-0.005	-0.009	-0.008	-0.008	-0.007	-0.007	-0.006
	(-0.498)	(-0.324)	(-0.675)	(-1.088)	(-0.959)	(-0.957)	(-0.829)	(-0.741)	(-0.721)
CONSTANT	0.028	0.030	0.028	-0.002	-0.003	-0.003	-0.020	-0.021	-0.021
	(1.140)	(1.261)	(1.173)	(-0.090)	(-0.127)	(-0.129)	(-1.340)	(-1.416)	(-1.410)
Obs	432	432	432	405	405	405	358	358	358
Year Controlled	Yes								

Table 8. Long-term stock return performance and insider trading. This table reports market adjusted and benchmark's portfolio adjusted buy-and-hold returns for three different groups of insider trading after the repurchase announcements: net insider selling (NSA), net insider buying (NBA), and Neutral. In Panel A, we report results using the market-adjusted buy-and-hold return while in Panel B, we report results with abnormal returns against the benchmark portfolio. *, **, and *** indicate significance at the 10%, 5%, and 1% level, respectively

Panel A. Market-a				
	Obs	BHARM12	BHARM24	BHARM36
NSA	103	-3.27%	-11.86%	-25.50%**
t-statistic		-0.6756	-1.6486	-2.5646
Neutral	325	9.28%***	14.71%***	16.12%
t-statistic		2.9377	3.3362	2.5763**
NBA	80	19.01%**	18.07%*	26.01%*
t-statistic		2.5451	1.9299	1.7484
NBA vs NSA		22.28%**	29.92%**	51.51%***
t-statistic		2.6001	2.5789	2.9785
Panel B. Abnormal b	ouy and hold return			
	Obs	BHARC12	BHARC24	BHARC36
NSA	103	-6.85%*	-16.47%**	-27.35%***
t-statistic		-1.7771	-2.3348	-2.6656
Neutral	325	2.15%	2.09%	9.74%
t-statistic		0.7078	0.4576	1.4999
NBA	80	13.24%**	11.28%	13.72%
t-statistic		2.0582	1.2544	0.9464
NBA vs NSA		20.10%***	27.75%**	41.07%**
t-statistic		2.8065	2.4638	2.3763

Abnormal buy-and-hold returns for three different groups of insider trading activity (*NSA*, *NBA*, and *Neutral*) are reported in Table 8. Panel A shows the results using market-adjusted return while Panel B presents the results for abnormal return against the benchmark portfolio. In Panel A, the announcements with net insider selling are associated with negative abnormal returns (-3.27%, -11.86%, and -25.50% for 12 months, 24 months, and 36 months horizon, respectively) while the announcements with net insider buying earn a significantly positive abnormal return. The difference in post-announcement abnormal returns between net insider buying group and net insider selling group varies from 22.28% to 51.51%, meaning that firms with insiders who are net sellers after the event experience significant lower returns after 3 years. The pattern for abnormal return in Panel B is similar to that of Panel A. These findings provide further support for the insider opportunism hypothesis and implies that repurchases that are more likely to be associated with insider opportunism could destroy shareholders' value.

In multivariate analysis, we regress market-adjusted buy-and-hold returns for 12, 24, 36-month periods on two independent variables of interest, *NBA* and *NSA*. The result in Table 9 shows that the net selling dummy variable (*NSA*) has a negative impact on long-term performance over one, two, and three years after the event. Coefficients on *NSA* are statistically significant in all regressions, implying that announcements with insiders' selling are associated with a decline in the long-term performance. Coefficients on *NSB*, by contrast, are positive in all regressions but insignificant in most of the cases. These results confirm those of the univariate analysis. Our findings can be reconciled with those documented by Wang et al. (2021). They find a positive return for repurchassing firms after legalization, while we document a negative long-run return after a firm repurchases

Table 9. Multiv three years fro t-statistics. *, *	ariate regression m the event mo *, and *** indica	of long-term per) nth on NSA and I tes significance	ormance. The ta VBA. The variabl at the 10%, 5%	ble reports the sare defined in , and 1% level, I	regression resul Appendix 1. Yev respectively	ts for market ad ar dummies are	ljusted buy-and- included in all re	hold return up t •gressions. The n	o one, two, and umbers in [] are
	BHARM12	BHARM12	BHARM12	BHARM24	BHARM24	BHARM24	BHARM36	BHARM36	BHARM36
NSA	-0.132**		-0.104^{*}	-0.221**		-0.205**	-0.388***		-0.356***
	(-2.415)		(-1.814)	(-2.585)		(-2.312)	(-3.133)		(-2.799)
NBA		0.155*	0.127		0.131	0.075		0.241	
		(1.879)	(1.471)		(1.220)	(0.673)		(1.361)	
BM	0.036	0.037	0.036	0.038	0.041	0.039	090.0	0.065	0.061
	(1.549)	(1.625)	(1.577)	(1.316)	(1.400)	(1.333)	(1.340)	(1.424)	(1.362)
SIZE	-0.027***	-0.029***	-0.027***	-0.053***	-0.057***	-0.053***	-0.088***	-0.094	-0.088***
	(-2.899)	(-2.996)	(-2.833)	(-3.591)	(-3.868)	(-3.574)	(-3.899)	(-4.170)	(-3.878)
FCF	2.473***	2.541***	2.516***	6.163***	6.237***	6.188***	9.644***	9.778***	9.692***
	(2.620)	(2.719)	(2.681)	(3.879)	(3.941)	(3.905)	(4.255)	(4.286)	(4.285)
LEV	0.002	-0.002	-0.001	0.010	0.006	0.008	-0.010	-0.018	-0.014
	(0.105)	(-0.098)	(-0.034)	(0.324)	(0.182)	(0.266)	(-0.240)	(-0.419)	(-0.314)
ACTUAL	0.527	0.106	0.288	2.621*	2.124	2.481*	1.556	0.666	1.285
	(0.468)	(0.096)	(0.261)	(1.857)	(1.447)	(1.689)	(0.659)	(0.270)	(0.528)
EFFBUY	0.190*	0.227**	0.216**	0.236	0.272*	0.251	0.148	0.214	0.176
	(1.734)	(2.083)	(1.981)	(1.529)	(1.773)	(1.647)	(0.599)	(0.876)	(0.733)
DAOP40	-0.117	-0.045	-0.101	0.293	0.412	0.303	0.378	0.587	0.396
	(-0.308)	(-0.117)	(-0.266)	(0.638)	(006.0)	(0.662)	(0.626)	(0.971)	(0.663)
CONSTANT	-0.350*	-0.359*	-0.367*	-0.532*	-0.527*	-0.542**	-0.330	-0.323	-0.349
	(-1.816)	(-1.840)	(-1.901)	(-1.937)	(-1.913)	(-1.997)	(-0.776)	(-0.759)	(-0.834)
Obs	432	432	432	432	432	432	432	432	432
Year Controlled	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table 10. Determinants of net insider selling after repurchase announcement. The table reports the results of logistic regressions for the probability of net insider selling after repurchase announcements (NSA). NBB is the net insider buying before the repurchase announcements. The variables are defined in Appendix 1. Year dummies are included in all regressions. The coefficients are odds ratios. The numbers in [] are z-statistics. *, **, and *** indicate significance at the 10%, 5%, and 1% level, respectively

	NSA	NSA	NSA
NBB	3.894***	4.821***	4.575***
	(4.660)	(5.180)	(4.700)
BM	0.946	0.961	1.015
	(-0.600)	(-0.410)	(0.140)
SIZE	1.124**	1.130**	1.106*
	(2.310)	(2.370)	(1.790)
FCF	24.786	15.434	4.057
	(0.600)	(0.490)	(0.230)
LEV	1.033	1.106	1.106
	(0.370)	(1.110)	(1.020)
COMPLETE	1.089	1.040	1.049
	(1.070)	(0.560)	(0.610)
EFFBUY	1.258	1.330	1.066
	(0.470)	(0.530)	(0.110)
CARM05	6.323	2.317	6.135
	(0.900)	(0.400)	(0.860)
DAOP40	0.0210**		
	(-2.430)		
DAOP80		0.438	
		(-0.250)	
DAOP120			5.409
			(0.450)
CONSTANT	0.090**	0.063	0.245
	(-2.270)	(-2.560)	(-1.160)
Obs	406	371	333
Year controlled	Yes	Yes	Yes

its shares. Their finding of positive returns after repurchases legalization corresponds to our finding of positive short-term reaction after repurchase announcements. They also suggest that firms can use share repurchases to boost stock prices, although this strategy undermines long-run value. Therefore, their finding of a decline in long-term performance (Tobin's Q and ROA) corresponds to our finding of operating and stock return underperformance in the long run.

5.3.3. Does net insider buying before the event drive the propensity of post-announcement net insider selling?

In this section, we focus on the effect of net buying before the announcement (*NBB*) on the probability of net insider selling after the repurchase announcements (*NSA*). The results are shown in Table 10. The odds ratio on *NBB* is greater than 1, indicating that insiders are likely to sell shares if they are net insider buying before the announcement. This finding is consistent with the argument that repurchase announcements provide a mechanism for insiders to take advantage of the lower price of share before and higher price after the announcements to make a profit

rather than provide signals for undervaluation. If managers and other insiders believe that shares are undervalued as indicated by the signaling hypothesis, they should not sell shares after the repurchase announcements.

6. Conclusion

This paper examines the insider opportunism hypothesis versus the signaling hypothesis in the context of open-market repurchase programs of Vietnamese listed firms. We analyze the trading of managers and other insiders before and after share repurchase announcements as an attempt to disentangle these hypotheses.

Using 508 open-market share repurchase announcements between 2007 and 2015, we find that the repurchase announcements are less likely to be associated with significant improvements in long-term operating performance. This finding does not support the argument of the signaling hypothesis.

We also find that insiders are net buyers before but sell intensively after the announcements. These findings are consistent with the predictions of the insider opportunism hypothesis that insiders can purchase shares shortly before and sell them shortly after the announcement to take advantage of short-term stock price boost. Finally, we document that repurchases with postannouncement net insider selling are not associated with any improvement in long-term operating performance and negatively associated with long-term stock return performance.

Overall, our findings suggest that a proportion of repurchase announcements in Vietnam are subject to insider opportunism problem. We conjecture that insider opportunism in Vietnam could be partly encouraged by the absence of "short-swing" rules which enjoin insiders from profitably trading their firm's shares in the short-term. Therefore, "short-swing" rules should be imposed in this market to prevent insiders from opportunistically trading at the cost of outside shareholders.

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Notes

- 1. http://www.cafef.vn
- 2. In Vietnam, companies can reward stocks for employees who work for them in a certain number of years as a remuneration and incentive for long-term commitments. If an employee is made redundant or leaves the company earlier than a certain period, he or she is forced to sell their rewarded shares back to the company.
- 3. Results for the sample that only includes non-financial firms are available upon request.
- Babenko, I., Tserlukevich, Y. and Vedrashko, A. (2012). "The Credibility of Open Market Share Repurchase Signaling". The Journal of Financial and Quantitative Analysis, Vol. 47 No. 5, pp. 1059–1088. report that 98%

of repurchasing firms in the U.S disclose the dollar value of shares repurchased and more than 20% do not report the number of shares repurchased.

- 5. We also report market-adjusted returns as robustness checks that are available upon request. Market adjusted returns are calculated by subtracting market returns from individual stock returns
- 6. There are currently three stock exchanges in Vietnam (Ho Chi Minh Stock Exchange—HSX; Hanoi Stock Exchange—HNX; and Unlisted Public Company Market —UPCOM). Daily trading band of stocks listed on HSX is (1 \pm 7%) x reference prices whereas daily trading band of stocks listed on Hanoi Exchange is (1 \pm 10%) x reference prices, and trading band of UPCOM stocks is (1 \pm 15%) x reference prices. These price trading bands are defined by the exchanges.

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Appendix 1: Key variables' definitions

Variable name	Definations
CARM	Cummulative Abnormal Return <i>CARM</i> _i = $\sum (R_i - \alpha_i - \theta_i \times R_M)$
BHARM	Market-adjusted buy and hold return $BHARM_{i} = \left[\prod_{t=1}^{T} (1 + R_{i,t})\right] - \left[\prod_{t=1}^{T} (1 + R_{M,t})\right]$
BHARC	Buy-and-hold return, adjusted for Size/book-to- market portfolio return $BHARC_{i} = \left[\prod_{t=1}^{T} (1 + R_{i,t})\right] - \left[\prod_{t=1}^{T} (1 + R_{rpi,t})\right]$
UOP	Unadjusted operating performance(or operating performance) EBITDA divided by net total assets
AOP	Adjusted operating performance Operating performance of repurchase firm minus Operating performance of the controlling firm
DAOP	Change of Adjusted operating performance Adjusted operating performance of quarter <i>t</i> and subtracting Adjusted operating performance of quarter 0
NSA	Net insider selling in two months (the event month and the following month) Taking value of 1 insider's net trading ratio is negative. Otherwise 0.
NBA	Net insider buying in two months (the event month and the following month) Taking value of 1 if insider's net trading ratio is positive. Otherwise 0.
NBB	Net insider buying before the repurchase announcements Taking value 1 if pre-announcement month insider's net trading ratio is positive. Otherwise 0.
ВМ	Book-to-Market Taking the values of 1 to 10 for the lowest to the highest deciles Book to market ratio.
SIZE	Firm size Taking the value of 1 to 10 for the lowest to the highest deciles of the market capitalization
FCF	Free cash flows EBITDA minus current taxes scaled to total assets at the end of the pre-announcement quarter.
LEV	Leverage Taking a value of 1 to 10 for the lowest to the highest deciles of the the leverage gap. The leverage gap is the difference between a sample firm leverage and industry's median leverage at the end of the pre- announcement quarter.
ACTUAL	Actual buyback ratio The number of shares actually repurchased divided by the number of firm's outstanding shares.

(Continued)

Variable name	Definations
EFFBUY	Implementation Taking a value of 1 if a repurchase program is subsequently implemented (either completion or non- completion). Otherwise 0.
COMPLETE	Completion ratio Number of shares actually repurchased divided by the number is of shares announced to repurchase



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