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Divestment of state capital and stock price reaction: evidence from an emerging economy

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Abstract: This study assesses the short-run impact of divesting state capital on the stock price fluctuations of listed and privatised state-owned enterprises in Vietnam's emerging economy. Deploying event study and ordinary least squares regression models on a day-end database of listed state-owned enterprises' (SOEs) market prices during the period from 2017 to 2022, our research findings indicate that divestment of state capital significantly impacts businesses in the short run, which is reflected in abnormal and positive changes in the stock prices around the divestment announcement dates. Interestingly, our findings also reveal that this impact alters according to the characteristics of the business, including firm size, the size of the divestment deal, and the remaining portion of state capital at the business. These findings shape our recommendations for investors when making investment decisions based on the divestment plans of the state.

Keywords: divestment; emerging economy; state capital; price reaction; event study; short-run effect.

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1 Introduction

The government of Vietnam has been carrying out the restructuring of state-owned enterprises (SOEs), including privatisation, since the 1990s. Accordingly, the plan to privatise SOEs follows four main phases: 1992–1996 (pilot phase), 1996–1998 (expanding phase of the pilot program), 1998–2002 (acceleration Phase), and the process is continuing today. For over two decades, restructuring SOEs through privatisation has been an important part of Vietnam's economic reform process.

Privatisation of SOEs usually begins with the sale of a small portion of state-owned capital. After that, the state will sell their remaining shares to the private sector at a later time through an auction approach which allows private investors fairly compete for the share purchases based on their bid prices. Additionally, this auction also helps to attain issuing price which is expected to reasonably reflect the actual market demand of the firm shares (the state capital). Vietnam refers the capital sales following an initial public offering (IPO) as the divestment of state capital.

Privatising state capital in SOEs is proved to bring positive effects on the profitability of those firms (Gupta, 2005; Usman and Olorunmolu, 2015; Al Hinai, 2016). Particularly, decreasing presence of state ownership in enterprises will certainly reduce the concentration of state ownership and positively bring changes in the businesses' governance mechanisms. This eventually helps firms reduce agency costs and increase the firm value, which finally reflects into the stock price movements in secondary market, triggering an increase in stock prices in the future.

The impact of divesting the state capital in privatised state-owned firms is expected to present in both the short-run and long-run. The short-term impact is reflected in the abnormal change in the market price of the firm shares in response to the divestment announcement. Meanwhile, the long-run impact is perceived as positive structural changes in the firm's operating performance, governance practices, expense management, etc., generated from the proactive participation of the private shares in the firm and the decreasing control of the state.

Regarding the short-term impact of the divestment plan of the state, the reaction of the market price towards divestment related news significantly depends on investors' expectations on the sales of the state capital coupled with the potential growth of the firms after divestment deals (long-term effect). A positive view will drive the share price to rise accordingly.

Besides, large-scale and auction-based sales of state capital typically involve the participation of financially-sound institutional investors whose bid prices consistently surpass the reference price of auction deals. This encourages investors to cultivate the expectation that large investors often engage in profitable deals, implying a potential rise in the share price of listed SOE in future.

Reviewing a number of previous literature, we realise that a majority of the studies direct their focus on the impact of privatisation on the firm's performance after the deals, the long-run impact, rather than paying attention to the reaction in the market price of the

divested firm's shares – the short-run impact. Besides, the number of studies investigating its short-run impact is relatively limited, especially no empirical evidence is observed for the case of Vietnam. Meanwhile, studying how the market price responses to the disclosure of divestment information bring valuable insights for investors in the market for their investment decision, for the state in subsequent sales of their capital, for the reputation, attraction, and market value of the divested SOEs after the divestment.

This modest relevant empirical evidence in association with the importance of the short-run impact of the state divestment opens room for further discussion.

By tapping on addressing the short-run impact of divestment cases, the novel contributions of our research lie on following aspects. *First*, our research helps to bridge the aforementioned research gap by thoroughly examining the impact of divestment news on the short-run fluctuation of share prices. This research interest is implemented via event-study, which allows us to observe cumulative abnormal returns of the stock market prices surrounding the date of the divestment announcement. *Second*, our research findings will furnish investors with a more comprehensive understanding of the correlation between market price reactions and divestment information, thereby aiding them in their investment decision-making process. *Third*, as a pioneer in this narrow research field of state capital divestment, our study undoubtedly adds valuable insights to the field, particularly in the context of Vietnam. *Lastly*, the research findings lay a firm ground for proposing recommendations to policymakers in planning divestment strategies without leveraging the volatility in the price of listed SOE shares.

Based on previous studies on the impact of divestment on enterprises, particularly those focusing on state divestment in SOEs, we expect that state capital divestment in Vietnamese state-owned enterprises will generate a positive stock price reaction. This is attributed to the anticipated benefits of improved corporate governance, enhanced operational efficiency, and increased profitability.

Furthermore, the Vietnamese government has implemented various measures to accelerate equitisation and state divestment, considering these initiatives as key priorities in recent years. These efforts aim to enhance enterprise performance, promote economic growth, and increase state budget revenue. Therefore, we propose the following research hypothesis:

H1: State divestment announcements have a positive impact on stock prices at the time of disclosure.

Additionally, as Afshar et al. (1992) and MacKinlay (1997) proved the significant contributions of the event's characteristics on the market price's reaction, particularly for the case of divestment, that would be divestment size, the offering price (Afshar et al., 1992), this study has built additional hypothesis:

H2: The characteristics of the divestment process will influence stock price's reaction towards the divestment announcement.

The study is structured with five sections. Following the introduction section is Section 2 which provides a comprehensive discussion space of prior literature. Section 3 describes the data formation and research approach. Section 4 analyses the research results, which lays a firm foundation for the investment recommendations presented in Section 5.

2 Literature review

State divestment and equitisation are two terms that often go together to refer to the withdrawal of investment capital from SOEs by the government. Equitisation is also known as privatisation in some European countries.

The history of this activity began in the 1980s when British Prime Minister Thatcher privatised SOEs on a national scale (Truong et al., 2006). In Vietnam, privatisation, commonly known as equitisation, began in 1992 as part of a program to restructure SOEs. Regarding this, the equitisation of SOEs is the sale of the state capital in an enterprise to the private sector without losing the entire control power of the state over the enterprise. In detail, while the government still holds certain voting rights, the enterprise managers and employees will also become shareholders of enterprises after equitisation.

Accordingly, apart from that, the turning point in the performance of state-owned enterprises has been observed after the initial sale of capital under the privatisation process of that business. Following the first sale, the privatised SOEs, if meeting the listing conditions of specific stock exchanges, could decide to list their shares to facilitate investors' frequent tradings. Listing helps companies improve the firm performance, improve visibility of firms and improve the liquidity of stock (Le et al., 2021), which considerably leverages the chance of success of the SOEs' following divestment plans.

Continuing to sell state capital at subsequent times is said to still convey a certain impact on performance and productivity of the firm (Gupta, 2005). Therefore, besides equitisation, subsequent divestments of the state are expected to have a certain impact on business performance in the long-term and on the firm shares' market prices in the short-term.

There is a modest number of literature investigating the divestment of state ownership in enterprises. Most of the prior studies have put a significant focus on the divestment of major shareholders, not targeting particularly to the state ownership.

Particularly, the negative nexus between divestment news and stock prices' behaviour has been consistently recorded in many previous researches with the support of event-study (Wright and Ferris, 1997; Dordi and Weber, 2019; Xu et al., 2017; Bassen et al., 2021). The negative impacts are associated with an adverse market reaction.

The market will react negatively to a situation in which assets are transferred among major shareholders at a price below the fair value. Divestment often signals a future large supply of the stock, which can drive the price down and contribute to a spiral selling pressure. Wright and Ferris (1997) recorded negative cumulative abnormal returns of companies announcing divestment from South African enterprises after divestment announcements. This negative reaction was driven by the purpose of divestment. USA investors decided to divest their investment from South African businesses due to the agency conflicts and political pressure from the South African government. And this study also suggested that divestments were not beneficial to the black citizens of South Africa. Similarly, using an event study methodology in analysing stock prices of the top 200 global fossil fuel companies in 24 independent event announcements from 2012 to 2015, Dordi and Weber (2019) also found evidence that divestment information in oil and gas enterprises hurt stock prices. With the same conclusion, Bassen et al. (2021) showed that after a large asset management company announced its divestment from coal mining companies, the cumulative abnormal returns of large companies' stock industry all decreased. However, the author also believes that the stock prices of the remaining

companies are not affected; the asset management company's stock price increased after the divestment announcement. Xu et al. (2017) even detected different findings from the above studies. This study empirically observed negative impact of divestment on the stock price movement of SOEs while positive reactions in market prices of non-SOEs were recognised following the release of divestment news.

Contradict to studies on the divestment of ordinary shareholders, the strand of studies examining the state divestment have provided reliable evidence on the positive impact of relevant divestment news on the price reactions of listed SOEs (Hovey, 2005; Sehgal et al., 2014; Rai and Pandey, 2022).

From the agency theory perspective, SOEs inefficiency is a consequence of the separation between ownership and control within corporate operations (Boubakri et al., 2005). This separation often leads managers to prioritise their own objectives over the firm's overall value. Therefore, if the primary purpose of state divestment is to mitigate agency problems, its impact is expected to be positive.

Empirical studies have demonstrated that divestment activities contribute to improving corporate performance in various methods, such as enhancing return on assets (ROA) (Montgomery et al., 1984; Markides, 1995; John and Ofek, 1995), strengthening corporate governance, financial reporting, and transparency information (Boubakri et al., 2005; Borisova and Yadav, 2015), and increasing firm profitability (Shleifer, 1998; Claessens and Djankov, 1999). In the context of Vietnamese enterprises, O'Toole et al. (2016) identified the positive effects of state divestment on corporate performance. SOEs who have been equitised with a lower state – ownership display positive links between Tobin'Q and investment.

These findings suggest that investors anticipate firm growth following divestment, leading to increased trading activity and positively influencing stock prices at the time of the divestment announcement.

Hovey (2005) identified 211 significant changes in the ownership structure of listed Chinese firms in the years 1997 to 2000. The research, with the application of the event study, found that the market response to these changes is significant and positive. The results suggested that the market deems ownership change, which reduces state holding favourably and expects these changes to improve firm performance. Specifically, the author suggested that the state ownership changes led to the changes in investor's expectations and following the growth in a firm's performance. Considering that decreased state ownership reduces the influence of the state on businesses in positive. These results were consistent with the association between state ownership and firm value.

Sehgal et al. (2014) used event methodology for 18 state-owned public sector units of India that made further public offerings between 2002 and 2013. They examined the price reaction of stock when state-owned public sector units sold their stocks. The results reported positive abnormal returns of stock after the primary offering and first-stage further offerings while negative abnormal returns of stock after the second-stage further public offerings.

Rai and Pandey (2022) used a sample of 22 Indian banking sectors, including public and private sector banks. They applied an event study method with a market model to examine the stock price reaction to the privatisation announcements of sector banks. The results showed that private sector banks have positive average abnormal returns on the event day. Still, the cumulative effect of the announcement is negatively significant for both private and public sector banks. The announcement was significantly positive over a

5-day window for the private banks. It seems a positive short-term impact. Meanwhile, the announcement does not affect public sector bank stocks.

Afshar et al. (1992) demonstrated that firms experiencing financial distress prior to divestment tend to exhibit higher abnormal returns on the announcement date of divestment plans, reflecting investor expectations on the firm's positive changes following the divestment. Additionally, the study also indicated that the scale of divestment and the disclosure of the divestment price have a positive impact on abnormal returns on the divestment date.

A thorough examination on above studies also reveals that whether the price reaction towards divestment events is positive or negative depends on the purpose of divestment. If the shareholders' divestment purpose is consistent with 'bankruptcy avoidance' hypothesis due to agency problem and bad performance prior to divestment, then the reaction will be negative (Afshar et al., 1992, Wright and Ferris, 1998). On the other hand, if the divestment is to improve the agency problem (Chen and Feldman, 1998), governance efficiency (O'Toole et al., 2016), then the stock reaction will be positive.

In Vietnam, to the best of our research, most of the prior studies examined the impact of the SOEs' equitisation on the firm performance (Truong et al., 2006; Truong and Ngo, 2016; Nguyen, 2018; Kim and Tru, 2019; Nguyen and Turksen, 2020), leaving the area of short-term price reactions untapped. There is only one research testing the short-term impact of the state divestment (Vo, 2018). Although the study detected a positive change in the cumulative abnormal returns responding to the divestment announcement, results varied across the event windows.

In conclusion, it can be seen that the impact of the state divestment in the short term on the stock market price is still questionable and lacks empirical evidence globally, especially in the case of Vietnam. Meanwhile, the findings of the divestment-news-driven price reaction could provide the investors with reliable empirical evidence to make informed investment decision on divested firms. This calls for further discussion and additional appropriate empirical evidence.

Our study aims to close this research gap by detecting the reflection of state divestment information on the market prices of listed state-owned enterprises. The research further explores the potential consistency of the impact across the event window along with the contribution of state divestment's characteristics to the impact, which has not been covered in any previous research.

3 Data and methodology

3.1 Data

The study uses a high-frequency database (daily-end data) of listed firms with outstanding state ownership on all three existing stock exchanges in Vietnam, including Ho Chi Minh Stock Exchange (HOSE), Hanoi Stock Exchange (HNX), and Unlisted Public Company Market (UPCOM). HOSE, founded in 2000, is the oldest and most prestigious stock exchange in Vietnam with its market capitalisation (which is formed from large-cap and mid-cap firms) being the largest among three stock exchanges, holding a dominant share in the Vietnam's stock market. Meanwhile, UPCOM, founded in 2009, 4 years after HNX, is the smallest centralised secondary market with relaxed and

favourable listing and trading conditions, serving unlisted, smaller-sized, and newly privatised firms.

For this event study, the data used consists of information on divestment events (announcement dates of the divestment plans) and the market stock prices. In detail, the market price dataset is the collection of adjusted closing prices of firms with outstanding state ownership from the website Cafef.vn. The dataset of divestment announcements of firms with existing state capital and published divestment plans is collected from Fiinpro data platform.

For the research time frame, considering the data accessibility and availability of divestment announcements coupled with potential risks of other vital news related to SOE's operations which could noticeably alter the investors' trading decisions, drive market price fluctuations, we choose a time frame and event windows close to the divestment news and long enough, but not too far from the event windows. This time frame is from 2017 to 2022, the period when state divestment takes place more than other periods, which enables us to draw reliable and strong statements about the short-term impact of divestment events – the changing patterns in the market prices of SOEs' listed shares.

In total, we found 65 state-owned enterprises that announced their divestment from all three stock exchanges, HOSE, HNX, and UPCOM, within the period from 2017 to 2022. We then finalise the list of 27 businesses with the exclusion of firms listed on UPCOM since this stock exchange liquidity is relatively low, which certainly affects the reaction of the stock price towards the divestment news.

3.2 Research methodology

The event study is a common and appropriate method that has been used in many studies scrutinising changing behaviour in the share prices towards specific events (Kalimeris, 2010) including state divestment events (Bassen et al., 2021, Dordi and Weber, 2019; Hovey, 2005). Regarding this, to determine whether the stock price reacts abnormally to the announcement of divestments, we use the traditional event study methodology, which estimates abnormal returns (AR) (MacKinlay, 1997). The event study methodology compares stock prices on a specific event day to their expected return, assuming an efficient market in which prices reflect all available information. According to this method, AR is determined as the difference between the actual return (R_{it}) and the expected return $E(R_{it})$ in the event period.

$$AR_{it} = R_{it} - E(R_{it})$$

$$R_{it} = \frac{P_{it} - P_{it-1}}{P_{it-1}}$$

where P_{it} is the stock price of firm i on time t .

For the expected return $E(R_{it})$, we use the market model (MacKinlay, 1997) based on the regression model of stock return with market return (VN-index) in the period 90 trading days before the event window. $E(R_{it})$ is calculated according to the following formula:

$$E(R_{it}) = \alpha + \beta R_{mt} + \varepsilon_{it}$$

where the return $E(R_{it})$ of an individual stock (i) at the time (t) is a function of a specific risk-free rate (α), reference market return (R_{mt}) on day t with firm-specific regression coefficient β and uncorrelated over the term (ε_{it}).

After determining the abnormal return, we calculate the cumulative abnormal return (CAR) as follows:

$$CAR_i(t_1, t_2) = \sum_{t=t_1}^{t_2} AR_{it}$$

where t_1 and t_2 are accumulation periods. Based on the characteristics of state divestment information as well as some previous divestment event studies (Bassen et al., 2021; Huang and Chen, 2012; Restrepo-Ochoa and Pena, 2020), we choose the event window is $[0, 1]$, $[-1, 1]$, $[0.5]$, $[-5, 5]$, $[0, 10]$ and $[-10, 10]$.

We calculate the average of CAR (CAAR) and use the t-test to study the entire statistical sample. CAAR via t-test defined in:

$$CAAR(t_1, t_2) = \frac{1}{N} \sum_{i=1}^N CAR_i(t_1, t_2)$$

$$\theta = \frac{CAAR(t_1, t_2)}{\sqrt{Var(CAAR(t_1, t_2))}} \sim N(0, 1)$$

With t-test, the null hypothesis (H_0) is that the value of CAAR is not statistically significant ($CAAR = 0$). If that happens, the market will not react at all to the information on state capital divestment.

To analyse specifically the impact of state divestment information, we divide the data into subgroups based on different criteria: Stock Exchange, divestment time, price difference between the offering price and the market price of shares. We expect there will be a difference in these groups of businesses because investors' expectations will affect the company's stock price, which in turn affects the CAAR.

In order to perform robustness checks for the causes of differences in the cumulative abnormal return, we applied the ordinary least squares regression (OLS) model with cross-sectional data. The dependent variable of the model is the cumulative abnormal return (CAR) of each firm. The event window will be taken from the previous event study method calculation, including 1 day, 3 days, 5 days, 10 days and 20 days. Following previous studies (MacKinlay, 1997, Ngo and Duong, 2023), we use characteristics of firms as independent variables. The research model is presented as follows:

$$CAR[n]_i = \beta_0 + \beta_1 \times SIZE_i + \beta_2 \times STATEOWN_i + \beta_3 \times DIVEST_RATE_i + \beta_4 \times PRICE_RATE_i + \beta_5 \times SE_i + \varepsilon_i$$

In the independent variables include firm size (SIZE) measured through the logarithm of charter capital at the time of investment announcement; SOEs with sizable charter capital value (a corresponding high number of issued shares) are often industry leaders that play a crucial role not only within their respective sectors but also in influencing overall stock market fluctuations. Changes in the state ownership structure of these enterprises are expected to generate more positive effects on CAR.

The state ownership ratio before divestment (STATE_OWN); The divestment rate (DIVEST_RATE) is the ratio of the number of shares divested divided by the total number of shares owned by the state. For these two variables, if the state ownership ratio and the divestment share in enterprises are high, investors would expect a positive and strategic transformation following the divestment. O'Toole et al. (2016) discovered significant differences in business performance between two divested SOEs groups, one with their state's ownership ratio of above and another with rate of below 50%

The ratio between the reference price divided by the share market price at the time of information disclosure (PRICE_RATE). Along with announcing divestment plans and state-owned share auctions, the state sets and publishes a reference price as the minimum bid. This price, expected to reflect the firm's value, serves as a benchmark for investors to compare with the market price. If the reference price exceeds the current market price, implying the PRICE_RATE proxy to be larger than 1, investors may anticipate upward price adjustments to close the gap, and vice versa.

The stock exchange where the shares register for listing (SE) (SE is a dummy variable that takes a value of 1 if the listed companies on the Ho Chi Minh City Stock Exchange (HOSE) and zero otherwise). As discussed above, HOSE and other stock exchanges hold different trading rules, different listing and trading conditions, including price spread requirements, price tick size, liquidity, etc. which may affect investor expectations and responses towards divestment news as well as the limit for the price moves.

4 Result discussion

4.1 Descriptive statistics

The data description is presented in Table 1 including 27 listed state-owned enterprises divest the state ownership in the period 2017–2022. 20/27 enterprises have completed the announced target. On the contrary, there are some companies with major success rates of shares, such as TV4, LBP (approximately 0%), MBB, HVT (0.02%), and TSB (0.01%).

Table 1 The listed companies have divested in the period of 2017–2022

<i>Stock ID</i>	<i>Stock exchange</i>	<i>Chapter capital (million VND)</i>	<i>State ownership</i>	<i>Result of divestment</i>	<i>Reference price</i>
QBS	HOSE	6130	84.46%	100.00%	10100
DIG	HOSE	2316948	49.65%	100.00%	15000
HDC	HOSE	450789	12.00%	100.00%	11000
CMV	HOSE	121039	36.63%	100.00%	20000
VNM	HOSE	14514530	39.33%	100.00%	186000
SAB	HOSE	6412810	85.59%	100.00%	320000
MBB	HOSE	21604510	6.97%	0.02%	21900
L62	HNX	82980	44.96%	100.00%	13917
BMP	HOSE	818610	29.51%	100.00%	96500

Table 1 The listed companies have divested in the period of 2017–2022 (continued)

<i>Stock ID</i>	<i>Stock exchange</i>	<i>Chapter capital (million VND)</i>	<i>State ownership</i>	<i>Result of divestment</i>	<i>Reference price</i>
TSB	HNX	67455	51.00%	0.01%	32800
L10	HOSE	98900	51.05%	100.00%	41480
LM8	HOSE	93887	51.00%	100.00%	42350
L61	HNX	75762	51.00%	100.00%	31800
VGC	HOSE	4483500	53.97%	85.62%	23000
SRC	HOSE	280658	51.00%	100.00%	46454
TV4	HNX	158347	71.59%	0.00%	59633
NET	HNX	223984	51.00%	100.00%	30900
LDP	HNX	78300	31.88%	100.00%	31000
PHN	HNX	72539	21.00%	90.51%	29700
IDC	HNX	3000000	36.00%	100.00%	26936
BWE	HOSE	1500000	25.00%	100.00%	25714
PTI	HNX	803957	22.67%	100.00%	77341
AGM	HOSE	182000	28.20%	100.00%	36586
LPB	HOSE	12035904	10.15%	0.00%	29483
HU1	HOSE	100000	51.00%	100.00%	15020
SJS	HOSE	1148555	36.34%	100.00%	102000
HVT	HNX	109880	68.50%	0.02%	66046

Source: Authors' compilation and calculation from FiinPro

4.2 Short-term impact of divestment information on stock price

The estimated results from event-study models are summarised in Table 2 and Figure 1. These illustrations reveal that SOEs' published divestment news have triggered positive reactions on those firms' stock prices, which shares similar findings with former studies (Hovey, 2005; Sehgal et al., 2014; Xu et al., 2017; Rai and Pandey, 2022). This empirical evidence is also consistent with the context of Vietnam's recent equitisation and divestment policies. Normally, the Vietnamese government approves and announces lists of SOEs scheduled for the divestment of state capital. However, the number of enterprises successfully divested within the planned timeline is low. This situation leads to investors' expectation for the official announcement on the sell-off state equity. Therefore, once the official information of the divestment (sales of the state capital) is released, investors' sentiment on the upside trend of divested firms' shares are promptly reflected in stock prices. Notably, enterprises listed on major stock exchanges such as HOSE and HNX tend to attract greater investors' attention, causing stronger price responses to the divestment news.

Table 2 AAR and CAAR of divested firms from 2017 to 2022

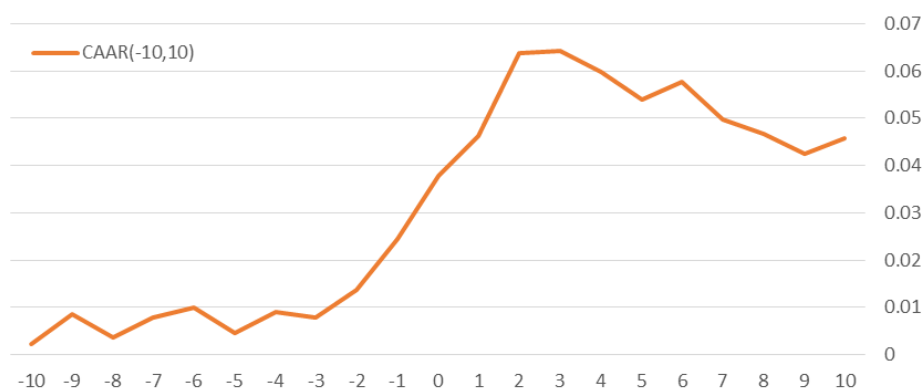
Event date	AAR	CAAR	CAAR	CAAR	CAAR	CARR	CAAR
		$[-10,10]$	$[-5,5]$	$[-1,1]$	$[0,1]$	$[0,5]$	$[0,10]$
10	0.004 (0.475)	0.046** (2.035)					0.027*** (2.960)
9	-0.005 (-0.635)	0.042** (1.891)					0.024** (2.568)
8	-0.004 (-0.502)	0.047** (2.075)					0.029*** (3.091)
7	-0.009 (-1.195)	0.050** (2.213)					0.032*** (2.504)
6	0.005 (0.623)	0.058** (2.569)					0.041*** (4.488)
5	-0.005 (-0.615)	0.054** (2.406)	0.044* (1.844)			0.037*** (3.358)	0.037*** (3.975)
4	-0.005 (-0.594)	0.060*** (2.667)	0.050** (2.089)			0.041*** (3.785)	0.041*** (4.481)
3	0.001 (0.079)	0.064*** (2.863)	0.054** (2.274)			0.046*** (4.198)	0.046*** (4.970)
2	0.018** (2.385)	0.064** (2.839)	0.054** (2.252)			0.045*** (4.143)	0.045*** (4.905)
1	0.009 (1.137)	0.046** (2.055)	0.036 (1.514)	0.032*** (2.971)	0.027*** (4.441)	0.027** (2.484)	0.027*** (2.941)
0	0.018** (2.435)	0.038* (1.685)	0.028 (1.166)	0.024** (2.208)	0.018*** (3.027)	0.018* (1.693)	0.018** (2.004)
-1	0.01 (1.318)	0.025 (1.093)	0.015 (0.609)	0.011 (0.988)			
-2	0.007 (0.929)	0.014 (0.613)	0.004 (0.158)				
-3	-0.002 (-0.218)	0.008 (0.351)	-0.002 (-0.089)				
-4	0.005 (0.651)	0.009 (0.401)	-0.001 (-0.042)				
-5	-0.007 (-0.898)	0.004 (0.200)	-0.005 (-0.230)				
-6	0.004 (0.499)	0.01 (0.445)					
-7	0.007 (0.966)	0.008 (0.346)					

Table 2 AAR and CAAR of divested firms from 2017 to 2022 (continued)

Event date	AAR	CAAR	CAAR	CAAR	CAAR	CARR	CAAR
		$[-10,10]$	$[-5,5]$	$[-1,1]$	$[0,1]$	$[0,5]$	$[0,10]$
-8	-0.005	0.004					
	(-0.630)	(0.158)					
-9	0.006	0.009					
	(0.817)	(0.381)					
-10	0.002	0.002					
	(0.312)	(0.104)					
Mean		0.031	0.025	0.022	0.023	0.036	0.033

*, **, *** significant at the 10%, 5% and 1% levels, t-statistics are reported in parentheses.

Source: Authors' event-study estimates

Figure 1 Effect of divestment events on share price (see online version for colours)

Source: Authors' event-study estimates

In particular, Table 2 reports the average abnormal returns (AAR) and the cumulative average abnormal returns (CAAR) for different periods. AAR tends to increase at the time of announcement of divestment of SOEs, increasing by 0.018 (equivalent to 1.8%) with a significance level of 1% at the date of divestment announcement. In addition, this increase only occurred 2 days after the announcement time.

CAAR for the $[0,1]$, $[0,5]$ and $[0,10]$ windows indicate significant positive returns around the event date. CAAR $[0,5]$ and $[0,10]$ increased from 0.018 to 0.046 then gradually decreased from the 4th day. The strong uptrend took place in the first 2 days after the information was published and showed the market's positive reaction to the news of the divestment of state capital in SOEs. CAAR changes in the 20-, 10-, and 2-day event windows are similar trends. A stock price reaction occurred after a divestment event, as confirmed by Figure 1. The stock price increased 2 days before the announcement, but the results were not statistically significant. This shares similar findings with Rai and Pandey (2022), implying that there may be a pre-disclosure of divestment information, and the market has reacted before the announcement date.

4.3 Price reaction across various event windows

We use a sub-sample of 17 listed companies on HOSE and 10 listed on HNX. Table 3 presents the CAAR across the event period. The CAAR of SOEs listed on HOSE and HNX is positive and statistically significant. Notably, the average CAAR of listed firms on HNX is positive and larger than that of listed firms on HOSE. This result shows that shares of SOEs listed on HNX have a better price increase than HOSE; the increase is more than 2 times larger.

This result is consistent with the characteristics of the transaction method on each stock exchange. With the price spread of HOSE and HNX at 7% and 10%, respectively, the price volatility of stocks listed on HNX may be larger.

Table 3 CAARs in the stock exchange subsample

<i>CAAR (average value)</i>	<i>HOSE</i>	<i>HNX</i>
CAAR[−10,10]	0.01 (0.612)	0.068* (1.757)
CAAR[−5,5]	0.021 (1.084)	0.032 (0.985)
CAAR[−1,1]	0.022*** (3.147)	0.023 (1.278)
CAAR[0,1]	0.012*** (8.008)	0.027** (2.010)
CAAR[0,5]	0.019** (2.475)	0.048*** (2.639)
CAAR[0,10]	0.015* (1.618)	0.047*** (3.569)
Number of firms	17	10

*, **, *** significant at the 10%, 5% and 1% levels, t-statistics are reported in parentheses.

Source: Authors' estimates

4.4 Price reaction towards divestment news released in different years

Vietnam's stock market has experienced relatively strong fluctuations in the period 2017–2022. In 2017–2018, the stock market grew strongly along with the government's divestment policy, the number of listed SOEs divested the highest. In 2020–2022, in the context of the COVID-19 epidemic, the economy faced many difficulties, the number of enterprises divesting capital is very low (4 enterprises in 2 years). This effect can be from investors' distrust in the market leading to indifference to the divestment plans of SOEs. According to the business, economic difficulties make businesses not interested in divestment plans. Thus, the volatility of the stock market in each period has a certain impact on the success of the sale of state capital, as well as on investors' expectations.

The results in Table 4 show that 2018 has the largest CAAR volatility (ranging from 0.042 to 0.065). In 2019 and 2021, CAAR received positive and statistically significant values at the event windows [0,1], [0,5] and [0,10]. The average CAAR of 2022 is 0.025 and 0.056, with a 1-day window around the announcement date. This result is consistent with our expectation that in the years when the stock market grows, investors will have more positive expectations on the state's divestment decisions.

Table 4 CAARs by year

<i>CAARs (average by year)</i>	<i>2017</i>	<i>2018</i>	<i>2019</i>	<i>2020</i>	<i>2021</i>	<i>2022</i>
CAAR[−10,10]	0.026** (2.190)	0.046 (1.149)	0.032 (0.751)	0.032** (1.782)	0.05 (1.440)	0.019 (0.803)
CAAR[−5,5]	−0.001 (−0.047)	0.042 (1.103)	0.036 (0.768)	−0.014 (−0.817)	0.032 (0.854)	0.038 (1.326)
CAAR[−1,1]	0.001 (0.936)	0.049** (1.703)	0.022 (1.600)	−0.023*** (−2.539)	0.028 (1.341)	0.056*** (3.654)
CAAR[0,1]	−0.001 (−0.825)	0.050*** (61.940)	0.019* (1.672)	−0.011 (−1.326)	0.028 (1.548)	0.025*** (3.178)
CAAR[0,5]	−0.012 (−0.887)	0.054*** (3.316)	0.057** (1.884)	−0.01 (−0.825)	0.053** (1.793)	0.015 (0.684)
CAAR[0,10]	−0.015 (−1.395)	0.065*** (3.553)	0.049** (1.993)	0.004 (0.221)	0.047** (2.124)	0.007 (0.374)
Number of firms	6	3	10	2	2	4

*, **, *** significant at the 10%, 5% and 1% levels, t-statistics are reported in parentheses.

Source: Authors' estimates

4.5 *Price reaction across divestment auctions with a disparity in the auction's reference price and the share's market price*

As discussed in the introduction, the state divestment plans are executed with the auction approach where the state, acting as the issuer, typically sets the auction's reference price as the minimum bid price. Regarding this, if the announced reference price exceeds the market price of the firm shares, investors would generally anticipate that the stock's market price will rise after the completion of the divestment, potentially reaching or even surpassing the reference price.

Therefore, we expect that a significant difference in the market price and the reference price will leverage the investors' sentiment on the expected positive moves of the share prices, leading to a greater volatility state of CAAR. We use a sub-sample that includes two business groups. Enterprises that set reference prices at least 50% higher than the market price will be classified as a high difference group, and vice versa. The reason for choosing a spread of 1.5 times comes from the investor's expected return of 50%, which is considered a profit enough for investors to make a trading decision. CAAR calculation results are presented in Table 5.

The results in Table 5 show that the CAAR value at the event windows is positive and statistically significant. This result shows that investors' expectations formulated from the difference between the reference price and the market price of the business encourage investors to buy shares. Considering the two groups with large and small price differences, the CAAR in the group of stocks with large price differences is relatively higher than that of stocks with small price gaps. Especially, the CAAR of the group with

a large difference with the event windows [0.5] and [0.10] received the largest value of 0.066 and 0.057, respectively, and had statistical significance at the 5% significance level. This value in the small spread group is 0.016 in both event windows. This result is in line with our expectations of investor behaviour. In recent times in Vietnam, investors who buy shares in divestments are usually institutional investors. When they accept to buy shares at a higher price than the market price, they will expect the value of the business to grow in the future and exceed the price they are willing to buy. Clinging to this feature, individual investors will buy stocks in the hope that the stock price will increase in the future.

Table 5 CAAR in the price difference subsample

<i>CAARs</i>	<i>Small difference</i>	<i>Larger difference</i>
CAAR[−10,10]	0.021** (1.818)	0.052 (1.091)
CAAR[−5,5]	0.015 (1.363)	0.046 (0.856)
CAAR[−1,1]	0.016*** (2.739)	0.041 (1.421)
CAAR[0,1]	0.011*** (12.888)	0.035 (1.597)
CAAR[0,5]	0.016** (2.457)	0.066** (2.536)
CAAR[0,10]	0.016*** (3.272)	0.057** (2.545)
Number of firms	17	10

*, **, *** significant at the 10%, 5% and 1% levels, t-statistics are reported in parentheses.

Source: Authors' estimates

4.6 Potential factors affecting CAR of divested listed companies

In order to examine the factors impacting the changing behaviour of stock prices (stock returns) surrounding the announcement of divestment, we apply the linear regression model with the ordinary least squares (OLS) method.

Table 6 describes the statistical data used to determine divestment announcements' effects on changes in CAR. State ownership in these enterprises before divestment ranges from 7% to 85.6%, with an average value of 42.6%, indicating that the state owns a large number of shares in many listed companies. The divestment rate reached a high level when the mean reached 74.5%.

Table 7 presents the results of 6 models corresponding to 6 CAR dependent variables for each event window. It can be seen that there exists a relationship between the CAR [−10,10] of the enterprise and the characteristics of the enterprise, such as the size of the enterprise, the state ownership rate, the rate of divestment, and the stock exchange where the enterprise is listed (model specification 06).

Table 6 Descriptive statistics

<i>Variable</i>	<i>Observations</i>	<i>Mean</i>	<i>Median</i>	<i>Standard deviation</i>	<i>Min</i>	<i>Max</i>
SIZE	27	26.787	26.135	2.031	22.536	30.704
STATE_OWN	27	0.426	0.450	0.204	0.070	0.856
DIVEST_RATE	27	0.745	1.000	0.347	0.085	1.000
PRICE_RATE	27	0.333	0.000	0.480	0.000	1.000
SE	27	0.630	1.000	0.492	0.000	1.000
CAR[−10,10]	27	0.031	0.016	0.088	−0.125	0.353
CAR[−5,5]	27	0.025	0.007	0.058	−0.053	0.208
CAR[−1,1]	27	0.022	0.008	0.044	−0.069	0.121
CAR[0,10]	27	0.027	0.008	0.068	−0.101	0.163
CAR[0,5]	27	0.030	0.008	0.061	−0.101	0.144
CAR[0,1]	27	0.017	0.003	0.044	−0.102	0.114

Source: Authors' compilation**Table 7** Impact of divestment's characteristic on CAR surrounding event

<i>Variables</i>	(1)	(2)	(3)	(4)	(5)	(6)
	<i>CAR[−10,10]</i>	<i>CAR[−5,5]</i>	<i>CAR[−1,1]</i>	<i>CAR[0,1]</i>	<i>CAR[0,5]</i>	<i>CAR[0,10]</i>
SIZE	0.0241** (2.50)	0.0085 (1.09)	−0.001 (−0.16)	0.0024 (0.41)	−0.0028 (−0.38)	−0.0032 (−0.38)
STATE_OWN	0.2074** (2.47)	0.0198 (0.29)	−0.0178 (−0.34)	−0.0006 (−0.01)	−0.109 (−1.70)	−0.1323* (−1.79)
DIVEST_RATE	0.1159** (2.48)	0.0271 (0.71)	−0.0136 (−0.46)	0.0048 (0.17)	−0.0351 (−0.98)	−0.039 (−0.95)
PRICE_RATE	0.0434 (1.15)	0.0466 (1.52)	0.0256 (1.07)	0.0298 (1.29)	0.0578* (2.00)	0.0493 (1.49)
SE	−0.0672** (−2.09)	−0.0093 (−0.36)	0.0055 (0.27)	−0.0102 (−0.52)	−0.0151 (−0.61)	−0.0213 (−0.75)
_cons	−0.7608** (−2.64)	−0.2415 (−1.03)	0.0547 (0.30)	−0.0538 (−0.30)	0.1682 (0.76)	0.1947 (0.77)
Observations	27	27	27	27	27	27
R ²	0.422	0.122	0.086	0.104	0.299	0.247

*, **, *** significant at the 10%, 5% and 1% levels, respectively.

t-statistics are reported in parentheses below the coefficient estimates.

Source: Authors' estimates

Accordingly, the size of charter capital has a positive and statistically significant impact on CAR volatility [−10,10] with a regression coefficient not too large (0.024). This shows that enterprises with large charter capital scale have a higher CAR [−10,10] than those with small charter capital. State ownership ratio before divestment significantly and

positively influences CAR $[-10,10]$. This result shows that the larger the state ownership in enterprises, the higher the share price after the divestment announcement. The reason may be because of investors' expectations of the change in business performance after divestment when the state's withdrawal is significant. Specifically, if ownership ratio increases by 1%, CAR $[-10,10]$ will increase by 0.207 units (20.7%). The divestment rate also recorded a positive and statistically significant impact at 5%, showing that the higher the divestment rate, the greater the stock price volatility and in a positive direction. The divestment rate will increase to 1%, and CAR $[-10,10]$ will increase by 0.116 units (11.6%). The stock exchange where the company divested shares also has an impact on the CAR $[-10,10]$ of the stock. Particularly if the enterprise is listed on the Ho Chi Minh Stock Exchange. Ho Chi Minh City, CAR $[-10,10]$ will fluctuate 0.067 units (6.7%) lower than companies listed on the Hanoi Stock Exchange at the time of divestment. The research findings are consistent with the proposed hypotheses formulated during the development of independent variables for the research model.

5 Conclusion

Using the event study method on the sample of list state-owned enterprises with completed divestment plans, our study has successfully assessed the short-term impact of state divestment on the share prices' reaction. Research results, aligning with prior studies (Hovey, 2005; Sehgal et al., 2014; Rai and Pandey, 2022), show that divestment affects businesses in the short term. Specifically, the news of state divestment positively impacts the volatility of the cumulative average abnormal daily return of stocks. However, this impact depends on the characteristics of divestment. Regression results of the model affecting the CAR of enterprises show that the size of charter capital, the rate of state ownership in the enterprise, the proportion of state capital announced for sale, and the stock exchange where the enterprise is listed will have an impact on the stock's CAR volatility.

Research findings have laid a firm foundation for our following recommendations tailored to investors holding potential asset allocation of listed SOEs: *First*, investors need to be cautious in making an investment decision based on the divestment news – as tested with an event study, this research statistically and significantly proves that the positive changes in the stock returns only occur within 2 to 3 days after the news release. And hence, inflexible trading during this period could put investors at risk when prices do not move as they expected or the impact rules out very quickly. *Second*, the sensitivity of the stock returns or the fluctuations in the stock returns towards the divestment news is unstable across firms, and it is subject to the firm size, the size of the divestment deals, and the state capital amount. This asks investors for in-depth analysis and research of the divestment deals before making investment decisions of the firm shares. Investors could pay higher attention to the characteristics of a specific divestment deal including the firm size, the size of the state capital's sell-offs, and the share of state capital in the listed SOEs.

The research findings also indicate a positive reaction from the stock market state divestment event in the listed enterprises on stock exchanges. Given the current situation, in which the number of listed enterprises undergoing state divestment remains relatively low, we propose several policy implications to enhance the divestment process in Vietnam's listed companies based on our research results.

First, the government should prioritise divestment from state-owned enterprises with large charter capital. These enterprises are typically industry leaders with significant influence on the listed stock market due to their substantial market capitalisation.

Second, the government should review and prioritise divestment from enterprises where the state currently holds a high ownership percentage, with the exception of businesses operating in critical sectors such as banking. Empirical evidence suggests that reducing state ownership below 50% tends to have a more pronounced positive impact on corporate performance.

Third, priority should be given to divestment from enterprises listed on HNX and HOSE over those listed on the UPCOM. Enterprises listed on HOSE and HNX tend to have larger scale, stronger business performance, and higher liquidity than those on UPCOM, making them more attractive to public investors.

Fourth, the government should disclose information regarding the valuation methods used as the basis for determining the sale price of state-owned capital. This transparency would enable the market to more accurately assess the intrinsic value of enterprises, thereby preventing excessive discrepancies between reference price (or divestment prices) and market price of divested SOE's shares, which could otherwise lead to speculative activities and stock price manipulation.

The limitation of the study is that the research sample is small in both size and chosen time frame. In fact, a majority number of SOEs after divestment are listed on UPCOM, but their liquidity is relatively low, as explained earlier. This requires us to merely focus on state-owned enterprises listed on HOSE and HNX to eliminate any potential impact of the trading illiquidity on the price sensitivity towards the divestment news. In addition, the research period from 2017 to 2022 has not covered the entire period of state divestment in enterprises (from 2011 to present). Expanding the scope of research will be our next research direction. Lastly, as explained in the data section, there could be potential presence of other important news of listed SOEs within the event windows of divestment news. Eventhough, the authors have chosen the reliable research period, a potentially weak efficient market could hold the existence of insider information circulating among a small privileged group of investors. This calls for better empirical techniques to control this concern in future studies.

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Conflict of interest

The authors declare no conflict of interest.

Data availability statement

The data will be provided upon request directly to the corresponding author.

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