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Author(s)	Xu, Kaili; Sakurada, Yuzuru; Tsukabe, Hiroataka
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Event Study on Large-Scale Share Disposals by Major Shareholders

by

Hokkaido University Master of Economics and Business Kaili Xu

Hokkaido University Economics and Business School

Prof. Yuzuru Sakurada

Japan Healthcare University Hiroataka Tsukabe

1. Introduction

This study seeks to elucidate the impact of significant share selloffs in capital markets using event study methodology. The relevance of this research lies in addressing the issue raised by Teshima (2023), which highlights a common belief that the positive effects of activist shareholders on corporate management often dissipate following their exit. Contrary to this view, there is an argument that the beneficial effects for investors may persist even after activists have divested their holdings. Therefore, this study seeks to uncover how investors truly evaluate such exits. Although not all cases involving activists lead to conflicts with management, the eventual impact on corporate performance, whether positive or negative, remains uncertain until after the fact. Thus, this research focuses on large-scale share disposals by major shareholders and employs event study analysis to clarify the expectations investors hold at the time of these significant selloffs.

While supply and demand suggest that large acquisitions increase stock prices and large selloffs lead to declines, this generalization overlooks firm-specific factors that may influence stock prices. The main objective is to assess variations in stock returns after large selloffs, providing fundamental data for future research.

The paper is structured as follows: Section 2 reviews regulatory frameworks on large acquisitions and disposals in Japan, the US, and China. Section 3 reviews the literature, focusing on large disposals to provide a concentrated basis for future research. Section 4 details the methodology and results, analyzing stock returns on the mandatory disclosure date and the amended report submission date. Section 5 summarizes the findings and suggests future

research directions.

Mandatory reporting of significant selloffs requires filing within five business days, leaving other investors unaware until then, which can delay market reactions. To protect uninformed investors and mitigate sharp price declines, legal measures could limit shares sold prior to reporting, allowing for market adjustments post-disclosure.

However, the findings of this study reveal that, despite the general requirement to report large-scale selloffs within five business days, there is a statistically significant decline in stock prices observed as early as five days prior to the reporting deadline. Additionally, the study found that large-scale selloffs occurred three business days before the report submission, leading to a statistically significant negative reaction from investors. This is consistent with the 10% level of significant negative reaction observed on the mandatory reporting date of the sell-off and the 5% level of similar reactions the following business day. Interestingly, on the report submission date, investors responded positively with a 10% level of statistical significance. The primary objective of this paper is to obtain foundational data for further research aimed at deepening the understanding of these phenomena.

2. Regulatory Frameworks for Large Shareholdings Across Countries

2-1. Japan's substantial shareholding reporting system

2-1-1. Introduction Process of Japan's substantial shareholding reporting system

The Financial Instruments and Exchange Act is aimed at promoting the healthy development of the capital market economy and protecting investors. Its core provisions concern the public issuance and continuous public disclosure of information. Continuous disclosure refers to the regular provision of information to investors in the circulating market. However, what has attracted attention recently is the substantial shareholding reporting system. In the Financial Review Committee of the Financial Services Agency (FSA) starting from May 5(2023), the Working group on the "Take Over Bid and Substantial shareholding reporting system", (hereinafter referred to as the WG) was organized to discuss the existence of the substantial shareholding reporting system. The system requires those holding over 5% of a listed company's shares to submit a "Large Volume Holding Report", disclosing the shareholding ratio, purpose, details of holdings, and funding sources, known as the "5% rule".

From a corporate operations perspective, large shareholdings are crucial for investment

decisions. Introduced in 1990 under the Securities and Exchange Act, with reference to the U.S. model, the system was established to align Japan's capital market with international standards. In 1994, Japan amended its Commercial Law to facilitate stock buybacks, prompting corresponding changes to the Securities and Exchange Law. Consequently, "new stock subscription rights" were included in the scope of large volume holding reports, as their exercise could impact company control. In 2006, the Securities and Exchange Law was renamed the Financial Instruments and Exchange Act, which also influenced the substantial shareholding reporting system. This system is divided into regular and special reporting. The special reporting system, aimed at institutional investors such as securities companies and banks that frequently trade large stock volumes, allows simplified reporting due to their minimal impact on company control.

However, in 2005, as a trend of using the special reporting system to gain control over funds, Murakami Fund launched an offensive and defensive battle around the control of Japan broadcasting. However, the fund was only notified as a special reporting target for institutional investors, and the shareholding ratio was not disclosed in a timely manner. Therefore, drawbacks have emerged. Murakami Fund acquired 15.5% of TBS's shares and proposed a business plan, acquiring approximately 40% of Hanshin Electric Railway's shares and advocating for the listing of Hanshin Tigers.¹ It is not only the stock market, but also caused a social topic. Politicians and the economic community have also made statements on these topics. In this way, under the background of gaining dominance, the behavior of non-pure investment purpose institutional investors such as active funds proposing various proposals for the target company has begun to attract attention. This situation prompted significant revisions to the substantial shareholding reporting system.

In 2006, the special reporting system for institutional investors in the substantial shareholding reporting system was modified. The reporting period was shortened to "approximately five working days every two weeks", and electronic submission via EDINET was required for public browsing. While no major revisions followed, active funds advocating

¹ Okuda, who was the chairman of Keidanren at the time, stated that the purchase of shares in publicly listed companies is a natural aspect of a capitalist economy. In relation to the debate over whether the Hanshin Tigers baseball team should be listed on the stock exchange, he suggested that existing baseball agreements should be reviewed if they are not in line with contemporary circumstances (Keidanren Times No. 2787, October 13, 2005).

shareholder activism, known as "shareholders with something to say", became more prominent in Japan. An active fund operates based on shareholder activism, which is characterized by actions taken by investors (shareholders) who are dissatisfied with the management of a target company. Rather than seeking to gain control of the company, these investors aim to bring about changes in its management to address their concerns.² Not only domestically, but also overseas active funds activities are increasing, and investors who exploit technical loopholes in the substantial shareholding reporting system are also emerging.

In response to market changes, the FSA established the WG to address issues in the substantial shareholding reporting system. A report was released in December 2023, and amendments to the Financial Instruments and Exchange Act were passed in 2024³, aiming to enhance investor protection. The substantial shareholding reporting system, which influences stock prices by affecting supply and demand, remains central to investor protection.

2-1-2. Substantial shareholding reporting system and Public Acquisition System

The substantial shareholding reporting system, revised multiple times since its introduction, mandates public disclosure by individuals holding over 5% of a listed company's shares, including their name, the number of shares held, and the purpose, within five working days. Changes of more than 1% in holdings must also be reported within the same timeframe. This promotes market transparency and fairness. Similarly, the public Takeover Bid (TOB) system governs off-market acquisitions of significant shares, requiring prior disclosure of acquisition details to ensure fair transactions and protect shareholders.

TOB procedures include issuing a public tender offer when acquiring more than 5% of shares off-market or when rapid acquisitions exceed one-third of a company's shares. Strict protocols, like delivering a prospectus to shareholders, ensure fair selling opportunities. The Financial Review Committee's December 2023 report proposed TOB revisions, lowering the

² Activism, in a broader sense, is also referred to as proactive behavior and involves deliberate actions rooted in specific ideologies to effect social or political change. However, within the context of capital markets, the term is often defined according to the framework provided by Gillan and Starks (2007).

³ The proposed amendment to the Financial Instruments and Exchange Act and the Act on Investment Trusts aims to enhance asset management sophistication and market transparency. Key elements include regulating transactions via exchange auctions under public tender offers, clarifying entities required to aggregate shareholdings under the large shareholding reporting system, and establishing a voluntary registration system for certain investment management activities (Cabinet Legislation Bureau, 213th Diet Session).

acquisition threshold from one-third to 30%, aligning with global standards. Acquisitions exceeding 30%, in or out of the market, would require open bidding. The reporting system will also remove exemptions for institutional investors, enhancing transparency in response to evolving corporate laws.

2-2. Substantial shareholding reporting system in the US.

Japan's substantial shareholding reporting system refers to the system of the US, with the core provision being Section 13 (D) of the Securities and Exchange Law of 1934. Under this system, individuals acquiring more than 5% of a listed company's shares must report to the issuing company, relevant stock exchanges, and the SEC within five working days. The required filings use SEC's Schedule 13 (D), with disclosures published via EDGAR⁴, the SEC's electronic reporting system, which became mandatory in 1996. Like Japan's EDINET, EDGAR handles company filings such as annual and quarterly reports. For institutional investors acquiring shares without seeking control, simplified reporting is permitted, paralleling Japan's system. Once an investor holds 5% or more of shares, further disclosures are required for any 1% increase or decrease in holdings. This also applies when companies buy back their own shares. Reports must include detailed plans regarding the acquired company, ensuring transparency.

In the US, it is sufficient to submit a large volume holding report within 10 working days after obtaining it. But after the revision in 2023, it was changed to within 5 working days, which shortened the time for submission of reports. On the other hand, there are instances where most shares were acquired before submitting a large volume holding report prior to revision. ⁵Some people criticize that the substantial shareholding reporting system is not suitable for the rapidly developing market environment. "In a rapidly developing market, it should not take 10 days for a public company's attempts to reform its operations and exercise influence to gain acceptance". said SEC Chairman Paul Gensler⁶. He explained the reasons for the modifications. Due to the shortened reporting deadline, it is also necessary to respond

⁴ The impact of the introduction of EDGAR and EDINET is thoroughly examined by Uchino (2014).

⁵ According to Giglia (2015), numerous instances were observed where purchases were made up to the threshold that triggers reporting obligations within nine days.

⁶ Reuters reports that the SEC approved an amendment to the large shareholding reporting system, shortening the disclosure deadline to five business days (Reuters, October 11, 2023).

quickly in practical work.

2-3. Reporting System for Substantial Shareholdings in China.

In 2005, the China Securities Regulatory Commission (CSRC) introduced the "Regulations on the Management of the Shareholding Structure Reform of Listed Companies", requiring shareholders holding 5% or more of a company's shares to disclose any sale reaching 1% of the company's total shares within two days. Further sales are permitted following disclosure. In May 2008, the "Guiding Opinions on the Transfer of Shares with Lifting Restrictions on Sales in Listed Companies" reinforced these disclosure requirements. During the 2015 market downturn, CSRC Announcement [2015] No. 18⁷ prohibited shareholders with 5% or more from selling shares for six months to stabilize the market.

In January 2016, the CSRC introduced the "Several Provisions on Shareholding Reduction by Principal Shareholders, Directors, Supervisors, and Senior Executives of Listed Companies"⁸, allowing these stakeholders to sell shares but limiting sales to less than 1% of the company's total issued shares within three months. The May 2017 "Shareholding Reduction Provisions" further restricted pre-IPO and new public offering shareholders, limiting sales to 1% within three months. Large block trades are capped at 2% of total shares in three months, and buyers must hold for six months. Major shareholders must notify the company and disclose information two days before pledging shares. Resigning directors can sell under 25% of shares and are barred from selling within six months of resignation. Shareholders or directors selling over 50% must disclose their intentions, leading to shortened sale periods or reduced amounts.

⁷ The key points of "Announcement No. 18" are: (i) For six months from the announcement date, controlling shareholders and those holding 5% or more, along with directors, auditors, and senior management, are prohibited from selling company shares on the open market. (ii) Violations will be strictly penalized by the CSRC.

⁸ The "Several Provisions on Shareholding Reduction by Principal Shareholders, Directors, Supervisors, and Senior Executives of Listed Companies" include the following: (i) Scope: Applicable to concentrated transactions over a short period, excluding market transactions, which must adhere to Company Law. (ii) Sale Method: Large-scale sales are encouraged via negotiated deals instead of competitive bidding. (iii) Disclosure: Major shareholders must disclose sale plans at least 15 days in advance through the stock exchange. (iv) Penalties: Stricter restrictions apply to shareholders with prior violations. (v) Monitoring: Limits are imposed on indirect sales and splitting large transactions, with penalties for non-compliance.

3.Previous Research

Major shareholders, considered insiders with access to non-public information, can exploit this advantage to secure abnormal profits. The trading activities of major shareholders convey information about a company's value and future profitability to the market. Numerous studies on market reactions to large trades indicate that insider buy orders send a positive signal to the market, resulting in favorable responses, whereas large sell orders send a negative signal, adversely affecting the market (Lakonishok [2001], Jategaonkar [2013]). Penman [1985] examined the link between insider trading by major shareholders and earnings forecasts. Managers, using privileged information, may signal company value through forecasts or dividend announcements, impacting stock prices. Penman found insider trading closely mirrored managerial forecasts, with managers buying shares before favorable forecasts and selling before unfavorable ones. This indicates that insider trading is strategically timed to capture abnormal profits, sending strong signals to the market.

Lee [2001] conducted an event study on NASDAQ, NYSE, and AMEX-listed companies from 1975 to 1995, using a five-day window following the disclosure of large selloffs by major investors. The findings revealed no significant impact on stock prices, with the market showing a muted response. Lee attributed this to the potential leakage of insider information before the announcements, suggesting that investors were already aware of the sell-off, leading to market reactions prior to disclosure and thus diminishing the observable stock price reaction during the post-announcement period.

Friederich [2002] reported that when major shareholders sell their shares, the stock price declines, resulting in a decrease in the company's value. Typically, shareholders sell their shares when prices are high to realize excess returns. Consequently, small, and medium investors interpret large selloffs by major shareholders as signals to secure profits, prompting them to sell their holdings as well, which contributes to a sustained decline in stock prices. Moreover, a reduction in major shareholders' ownership might signal to the market that the company is experiencing performance-related issues, leading to further selloffs.

Kyriacou [2008] examined the relationship between the proportion of shares sold by UK executives during option exercises and future stock returns. Unlike US executives, who typically sell nearly all their shares post-exercise, UK executives sell less than half. The study found a significant link between selling over 50% of shares and negative abnormal returns.

Some executives may retain shares for dividend purposes, but the decision to sell or hold does not predict future stock return volatility. UK executives, with more diversified compensation, face less pressure to sell for diversification and may exercise options early to acquire more but retain shares to avoid immediate tax on gains. These behaviors suggest insider knowledge of future negative returns.

Fidrmuc [2008] compared the information disclosure systems for large trades by major shareholders in the UK and the US. The study found that information disclosure is timelier in the UK, and the market response to significant selloffs by major shareholders is considerably stronger. Additionally, for companies with high ownership concentration, major shareholder sell-offs serve as favorable news, leading to stock price increases. When the ownership stake of major shareholders decreases, it not only reduces agency costs but also optimizes the corporate governance structure, thereby enhancing the company's value.

Following China's 2005 stock split reform, major shareholders gained the right to freely sell shares, providing substantial market information. Li [2011] studied major shareholders' large-scale purchases post-2008 CSRC reforms using an event study methodology. The analysis showed that disclosures of large purchases led to sustained positive abnormal returns, interpreted as positive signals about company prospects rather than market timing. Sun and Liang [2017] examined managerial stock selloffs in Chinese listed companies (2007–2013), finding a positive correlation between selloff amounts and stock price crash risk. This suggests that larger selloffs increase the risk of future price crashes due to information asymmetry.

4. Research Design

4.1 Hypotheses, Sample, and Data

Assuming the absence of fraud in capital market transactions, the stock price is expected to decline following significant selloffs by major shareholders. Major shareholders, including institutional investors, possess advanced analytical capabilities regarding a company's management and prospects. However, there remains an information asymmetry between these shareholders and company managers. During instances of significant selloffs, the motives behind the actions of major shareholders are not known to minority shareholders, leading to a substantial information gap regarding the reasons for the sell-off. Consequently, minority shareholders cannot acquire and analyze primary information from the company effectively.

They are likely to mimic the investment behavior of major shareholders without independent analysis. Given their informational advantage, major shareholders' actions are well-informed and significantly influence market behavior.

Building on previous research, this study focuses on the market reaction to major shareholder sell-offs. The event date is defined as the submission date of the "Large Volume Holding Report (Change Report)" when the stock market first receives information about the sell-off. Stock price reactions are also examined on the filing obligation date. In Japan, shareholders acquiring more than 5% of a company's shares or experiencing a 1% or greater change must submit this report within five business days. As a result, minority shareholders may not immediately be aware of significant selloffs. As Lee [2001] notes, the market may react to the sell-off before public disclosure, leading to statistically insignificant price changes post-announcement. Thus, this study also considers the filing obligation date. The following hypothesis are tested using event study methodology:

hypothesis 1: In cases of significant selloffs by major shareholders, a stock price decline is observed before the submission date of the report.

hypothesis 2: In cases of significant selloffs by major shareholders, a stock price decline is observed on the report's filing obligation date.

The sample consists of companies listed in the "Large Volume Holding Report (Change Report)" as of December 2020, where ownership dropped by more than 1%. The top 300 companies by market capitalization are analyzed, with adjusted closing prices from Yahoo! Finance and TOPIX data from the Tokyo Stock Exchange.

4.2 Analytical Model

This study uses an event study methodology to observe stock return fluctuations before and after significant selloffs by institutional investors. The abnormal returns (AR) are calculated using the Five Factors Model (5FM). According to Fama and Macbeth (1973), the sole risk indicator in the Capital Asset Pricing Model (CAPM) is the beta (β). However, anomalies that CAPM could not explain have been observed, highlighting the need for model improvement. For instance, Fama and French (1992) demonstrated that models considering size and value effects have superior explanatory power compared to CAPM. Consequently, additional risk factors were introduced. Fama and French (1993) proposed the Three Factors Model (3FM)

by adding firm size (SMB) and book-to-market ratio (HML) to β . Subsequently, Carhart (1997) added a momentum factor (WML) to the 3FM, further enriching the model. Fama and French (2015) later expanded the model to the Five Factors Model (5FM) by including profitability (RMW) and investment (CMA) factors. This study adopts the 5FM as the analytical model for the event study on significant selloffs by major shareholders.

In the event study, we estimate expected returns for AR calculation using the market model. Daily returns (R_{it}) for each stock are calculated, where P_{it} represents stock i 's adjusted closing price on day t . The event date ($t=0$) corresponds to the Large Volume Holding Report submission or filing obligation date. Alongside R_{it} , the daily returns of the market index (R_{Mt}) are calculated using TOPIX as the market index, with P_{Mt} representing the closing price of the index on day t .

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

If the AR for each stock is estimated based on the excess returns of the market index and the other four factors, the relationship between R_{it} and R_{Mt} is expressed by the following equation proposed by Fama and French (2015, p.3).

$$R_{it} - R_{Ft} = a_i + b_i(R_{Mt} - R_{Ft}) + s_iSMB_t + h_iHML_t + r_iRMW_t + c_iCMA_t + R_{Mt} + e_{it} \quad (1)$$

The Five Factors Model (5FM) includes: a) the risk-free rate (R_{Ft}), b) the SMB factor, reflecting the return difference between small-cap and large-cap stocks, c) the HML factor, capturing the return difference between high and low book-to-market ratio stocks, d) the RMW factor, related to profitability, and e) the CMA factor, related to investment size. As a multi-factor model, the 5FM provides a more accurate estimation of returns (R_{it}) than CAPM. This study uses the 5FM to calculate abnormal returns (AR).

To determine the AR for each stock i on day t , we input the variables $R_{it}-R_{Ft}$, $R_{Mt}-R_{Ft}$, SMB_t , HML_t , RMW_t , and CMA_t from Equation (1) into the regression model. These variables represent the daily returns relative to the risk-free rate, the market return relative to the risk-free rate, the size factor, the value factor, the profitability factor, and the investment factor, respectively. The coefficients a_i , b_i , s_i , h_i , r_i , c_i are estimated individually for each firm and

denoted as $\hat{a}_i, \hat{b}_i, \hat{s}_i, \hat{h}_i, \hat{r}_i, \hat{c}_i$.

$$AR_{it} = R_{it} - R_{Ft} - \hat{a}_i - \hat{b}_i(R_{Mt} - R_{Ft}) - \hat{s}_iSMB_t \\ - \hat{h}_iHML_t - \hat{r}_iRMW_t - \hat{c}_iCMA_t$$

Using the estimated coefficients from regression analysis, the AR for each company is calculated. To assess whether the AR represents a statistically significant abnormal return, we standardize it to obtain SAR. The standard deviation of the error term ($\hat{\sigma}$) over the 240-day estimation period is used for standardization. These standardized abnormal returns enable a more precise evaluation of whether observed returns significantly deviate from expected returns, providing a robust framework for analyzing the impact of large shareholder selloffs on stock prices.

$$SAR_{it} = \frac{AR_{it}}{\hat{\sigma}_i} \quad \hat{\sigma}_i = \sqrt{\sum_{-250}^{-11} \frac{AR_{it}^2}{240-2}}$$

The test statistic θ , derived from Yamasaki and Inoue (2005, p.13), assesses whether daily stock returns significantly deviate from the norm. In this study, θ is used, and its behavior over the event window is shown in Figure 1. In Equation (2), N represents the number of analyzed companies, which is 80 in this study.

$$\theta = \sqrt{\frac{N(L-4)}{L-2}} \left(\frac{1}{N} \sum_{i=1}^N SAR_{it} \right) \overset{a}{\sim} N(0,1) \quad (2)$$

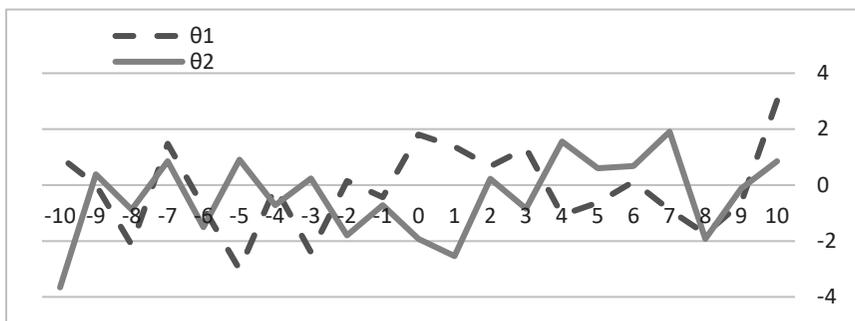
These 80 companies are top market capitalization firms listed on the Tokyo Stock Exchange, experiencing significant selloffs in 2020. For the event study, stock prices during the estimation period and event window are required. The estimation period (L) is set to 240 days from t=-11 to t=-250, approximating one year of trading days. θ asymptotically follows a standard normal distribution, with L needing to exceed 30 days (Campbell et al., 1997, p.161).

4.3. Analysis Results and Interpretation

This study focuses on the actions of large shareholders and the impact of their significant selloffs on stock prices. We conducted an event study using the submission date of the "Large Volume Holding Report (Change Report)" as the event date. Additionally, we examined the

stock price reactions on the report filing obligation date. The results are illustrated in Figure 1, where the vertical axis represents the test statistic θ , and the horizontal axis covers the 10 trading days before and after the two event dates. The dashed and solid lines indicate the event dates as the report submission date and the report filing obligation date, respectively.

(Figure 1) Verification Results Using Report Submission Date and Filing Obligation Date as Event Dates



First, the analysis results capturing AR with the report submission date as the event are depicted by the dashed line, θ_1 , in the figure. Statistically significant negative reactions appear on the 5th and 3rd trading days before the event. This indicates that stock price declines caused by significant selloffs by large shareholders were observed on these days. The presence of statistically significant negative reactions on both days suggests that the downward pressure on stock prices due to the selloffs was not random but statistically abnormal. This abnormal drop in AR may have been perceived as a signal by minority shareholders, who are at an informational disadvantage. If the goal is to minimize the market impact of such selloffs, the regulatory framework may require revision.

Next, the analysis results using the report filing obligation date as the event, depicted by the solid line, θ_2 , also show statistically significant negative reactions on the 5th and 3rd trading days before the event. This indicates that stock price declines caused by significant selloffs by large shareholders were observed on the filing obligation date and the following trading day. The statistically significant negative reactions on both days suggest that the downward pressure on stock prices due to the selloffs was statistically abnormal. As an implication for the current system, if large selloffs should occur without showing statistical significance, the threshold for the filing obligation, currently set at a 1% decrease in holdings, may need to be lowered to below 1%. These findings highlight the importance of considering both the timing and the regulatory thresholds associated with large shareholder sell-offs. Adjusting these

parameters could potentially mitigate the negative market impact and improve the overall transparency and fairness in the capital markets.

5. Conclusion

This study examined whether significant selloffs by major shareholders lead to statistically significant stock price declines using an event study methodology. The regulatory intent of mandatory large-shareholding reporting is to prevent market disruption. Our analysis focused on the impact of significant selloffs, revealing statistically significant negative abnormal returns (ARs). Based on these findings, we recommend lowering the 1% selloff threshold to mitigate potential market disturbances.

However, even if selloffs below 1% do not cause abnormal declines, speculative selling by minority shareholders, influenced by major shareholders, may occur before large selloffs are reported, as noted by Friederich (2002). If this behavior leads to significant abnormal ARs, lowering the 1% threshold may be unnecessary.

Two primary issues remain for future research. First, there is a need to conduct an event study on large acquisitions by major shareholders. While this paper has focused on significant selloffs, it is crucial to understand whether significant acquisitions lead to statistically significant positive abnormal returns. The hypothesis to be tested is whether large acquisitions, under the regulatory framework of mandatory reporting, result in stock price increases that remain within the bounds of a random walk.

Second, although this study found statistically significant abnormal declines in stock prices due to significant selloffs, it is important to identify the characteristics of companies that exhibit resistance to such declines. Future research should examine the hypothesis that the quality of corporate governance affects the impact of major shareholders' sell-offs on stock prices. For instance, it would be valuable to test whether companies with a higher proportion of independent directors or a younger average age of board members experience less significant negative AR adjustments following major shareholders' sell-offs. Due to space constraints, these two investigations are proposed as future research topics.

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