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Investor Repricing of Chronic Undervaluation: Evidence from the Tokyo Stock Exchange Capital Efficiency Initiative

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Francesco D'Ercole
LUM University
Alexander F. Wagner
University of Zurich, Harvard University, Swiss Finance Institute, CEPR, and ECGI
Kazuo Yamada
Kyoto University

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Abstract

Following the 2023-2024 Tokyo Stock Exchange (TSE) capital-efficiency initiative, investors favored low price-to-book (PBR) firms, particularly those with high return on equity (ROE). These effects are concentrated among persistently undervalued firms, increase smoothly with the degree of undervaluation rather than jumping at the regulatory threshold, and are robust to endogenous treatment assignment. Although firms' value-enhancing plans were already publicly available in corporate governance reports, the TSE's consolidated compliance list triggered strong market reactions, consistent with a salient informational event. We find no short-run improvements in realized profitability or upward revisions in analyst earnings forecasts, but significant declines in illiquidity and increases in valuation ratios among low-PBR firms. We also find little evidence of a persistent "price-of-shame" mechanism or strong industry-level spillovers, although spillovers through non-industry links cannot be fully ruled out. Overall, the evidence suggests that the reform primarily triggered investor-side repricing of chronic undervaluation rather than immediate changes in firm behavior.

Keywords: Corporate governance, capital efficiency, investor attention, undervaluation, Japanese stock market

JEL Classification: G12, G30, G41, N25

Francesco D'Ercole
LUM University

Alexander F. Wagner
University of Zurich, CEPR, and ECGI

Kazuo Yamada
Kyoto University

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Francesco D'Ercole
LUM "Giuseppe Degennaro" University

Alexander Wagner
University of Zurich, Harvard University, Swiss Finance Institute, CEPR, and ECGI

Kazuo Yamada
Kyoto University

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Francesco D'Ercole* Alexander F. Wagner† Kazuo Yamada‡

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Abstract

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*LUM "Giuseppe Degennaro" University - *dercole@lum.it*

†University of Zurich, CEPR, ECGI, Harvard University, and Swiss Finance Institute - *alexander.wagner@df.uzh.ch*

‡Kyoto University, Graduate School of Management - *yamada.kazuo.7z@kyoto-u.ac.jp*

1 Introduction

How do capital markets respond when a stock exchange intervenes to push listed firms toward higher capital efficiency and corporate value? More specifically, do such interventions affect firm values by changing expectations about future operating performance, or by changing how investors price firms that had long traded at depressed valuations? We study this question in the context of Japan's recent corporate-governance reforms. In 2023–2024, the Tokyo Stock Exchange (TSE) introduced a policy requiring listed firms to disclose plans for improving capital efficiency, with the stated objective of addressing the long-standing "value trap" in a market where roughly half of listed firms traded below book value. The setting is attractive because it combines regulatory guidance, firm-level disclosure, and a later consolidated publication of compliance status, allowing us to study how investors react when previously dispersed information is made more salient and easier to process.

The reform proceeded in two related steps (TSE, 2023a; Bridge, 2024). First, in March 2023, the TSE explicitly highlighted firms with a price-to-book ratio (PBR) below one and a return on equity (ROE) below 8%, thereby signaling that low valuation and weak capital efficiency were central concerns of the initiative. Second, in October 2023, the TSE announced that it would publish, in mid-January 2024, a consolidated list of firms that had disclosed plans to implement value-enhancing actions in the corporate governance reports released by December 31, 2023. This institutional design is useful because the January list did not create fundamentally new firm-level information. Rather, it repackaged already public disclosure into a prominent and standardized signal. The setting therefore allows us to examine

whether markets react mainly to the prospect of improved firm behavior, to public scrutiny and reputational pressure, or to a salient repackaging of already available information.

This question is important for at least two reasons. First, it speaks directly to how governance interventions affect capital-market pricing in environments with persistent valuation discounts and weak market discipline. Second, it helps distinguish between different mechanisms through which such interventions may operate. One possibility is a reputational or shaming-based channel, especially in the Japanese institutional context, where public scrutiny may matter for corporate behavior.[1] Another is that the reform primarily served as an informational trigger that led investors to reprice firms suffering from chronic undervaluation. Distinguishing between these interpretations matters for how we understand both the pricing consequences of governance reforms and the informational role of stock exchanges.

We examine stock-price reactions for all affected Japanese listed firms on five dates that mark significant stages of the TSE reform: March 31, August 29, October 11, and October 26, 2023, as well as January 16, 2024, the first trading day after the release of the TSE's consolidated compliance list. We begin with a standard event-study design around these key dates and then augment it with tests that exploit regulatory thresholds, dynamic selection into undervalued status, disclosure content, monthly updates of the TSE list, and industry-level exposure. This empirical design allows us to compare several competing interpretations of the stock-price response: a mechanical threshold effect, a pure disclosure-content effect, a

[1] Chattopadhyay et al. (2020) demonstrate that after the introduction of the JPX-Nikkei400 index in 2014, Japanese firms significantly improved corporate profitability to make their company eligible for inclusion in the index.

persistent "price-of-shame" effect, and a broader repricing of persistently undervalued firms.

Our main findings point to the last interpretation. First, investors respond positively to firms with PBR below one around the reform dates. Using higher-order PBR terms, we show that the response increases smoothly with the degree of undervaluation: firms with the lowest PBR benefit the most, while the effect weakens as PBR approaches one and reverses for firms with PBR above one. Consistent with this pattern, a regression discontinuity design reveals no discrete jump in returns at the PBR $= 1$ cutoff, and density tests show no evidence that firms manipulated their PBRs to avoid falling below the threshold.[2] These results are difficult to reconcile with a purely categorical stigma or threshold-based story and instead indicate that investors reassessed the extent of undervaluation.

Second, operating performance shapes this repricing. Firms with high ROE outperform at the initial announcement and, to a lesser extent, around later reform dates, with the strongest reactions concentrated among firms that combine low valuations with relatively strong operating performance. Thus, investors do not simply reward "cheap" firms. Rather, they respond most favorably when low valuations coincide with stronger fundamentals, suggesting that the TSE initiative led investors to revisit whether some firms were undervalued relative to their underlying profitability.

Third, strong evidence comes from the January 2024 publication of the TSE's consolidated list. Firms that failed to disclose any plan before December 31, 2023, underperform after the list release, whereas firms that had disclosed future plans perform better. This

[2]Media reports, by contrast, tend to highlight the effects of shame; see, for example, Hanzawa (2024).

reaction is notable because the underlying information was already available in the firms' corporate governance reports, and the TSE had pre-announced how it would collate that information. The January release therefore appears to have functioned primarily as a salient informational event rather than as the arrival of new fundamentals. Consistent with this interpretation, we find no short-run improvements in realized profitability and no upward revisions in analysts' earnings forecasts, but we do find significant declines in illiquidity among low-PBR firms and subsequent increases in their valuation ratios. The overall pattern is therefore more consistent with investor-side repricing of chronic undervaluation than with immediate firm-side improvements in cash-flow prospects.

Fourth, several additional tests help narrow the mechanism. Market reactions are strongest among firms that were persistently undervalued prior to the reform and remain robust when we account for dynamic treatment assignment and endogenous switching into the low-PBR category. We also find that the positive stock-price reactions for low-PBR firms are strongest among companies with high foreign ownership, suggesting that the repricing is particularly pronounced among investors less tied to traditional domestic ownership structures. At the same time, when we examine the monthly updates of the TSE list, we find little evidence of an ongoing reward-for-compliance or persistent "price-of-shame" mechanism. Thus, while reputational considerations may form part of the broader institutional backdrop, the evidence does not support a sharply identified shaming channel as the paper's main economic mechanism.

An important limitation concerns spillovers. We examine industry-level spillovers and

find that the main treatment effect for low-PBR firms remains positive, while spillovers to control firms are limited and economically small. This reduces the concern that our results are driven primarily by industry-level externalities. However, we cannot fully rule out spillovers through other economically meaningful links, such as customer-supplier relationships or other non-industry inter-firm connections. Our evidence should therefore be interpreted as showing that the results are not primarily driven by industry-level spillovers, rather than as establishing a fully spillover-free causal effect.

Our paper contributes to two related strands of literature. First, we contribute to the literature on reputation and capital markets (Roberts and Dowling, 2002; Dyck et al., 2008; Ota et al., 2019; Raff and Siming, 2019; Manabe and Nakagawa, 2022), and more specifically to work on reputational losses and corporate financial behavior in Japan (Numata and Takeda, 2010; Hu et al., 2014; Chattopadhyay et al., 2020; Hussain and Su, 2024). Our evidence adds an important qualification to a simple reputational-shock interpretation: stock-price responses are not concentrated at the regulatory threshold, do not persist through ongoing list updates, and are not accompanied by short-run improvements in operating performance. Second, we contribute to the literature on investor attention and market efficiency. Du (2021) shows that Japanese markets react less strongly to aggregate news when the information is already expected and incorporated into prices. Our evidence highlights a complementary friction: even when relevant firm-level information is already public, investors still respond strongly when an exchange packages already public information in a salient, consolidated form.

Taken together, our results suggest that the TSE reform primarily operated as a catalyst for investor-side repricing of persistently undervalued firms. The paper therefore contributes by showing how an exchange-level capital-efficiency initiative, combined with a salient consolidated disclosure event, can trigger a reassessment of chronic undervaluation even without immediate changes in firm fundamentals. This improves our understanding of how governance interventions affect market pricing in environments where undervaluation is persistent, information is dispersed, and investor attention is limited.

The rest of the paper is organized as follows: Section 2 describes the institutional setting, historical background, and related literature. Section 3 presents the sample and empirical methods. Section 4 reports the main stock-price reactions. Section 5 examines the mechanisms underlying these effects. Section 6 concludes.

2 Institutional Setting and Key Events

2.1 Historical Backgrounds

Japan's equity market has traditionally been defined by a bank-centered corporate governance system. In this setup, commercial banks have historically overseen their client firms, often placing bankers on corporate boards (Aoki and Patrick, 1995). Beginning in the 1960s and 1970s, Japan's equity market increasingly embraced cross-shareholding arrangements among firms with close business relationships or within the same business groups. These practices, in which companies hold shares in one another within a conglomerate, were in-

tended to protect firms from hostile takeovers and activist investors, thereby minimizing external pressure on corporate managers. Shareholders in cross-shareholding structures typically serve as stable owners and generally do not oppose managerial proposals at shareholder meetings (Isagawa, 2007).[3]

Following Japan's banking crisis in the late 1990s, the equilibrium began to shift as banks' monitoring capabilities weakened. From the 2010s onward, the Japanese government launched initiatives to gradually move from a bank-centered to a market-oriented governance system. In 2014, the Financial Services Agency (FSA) introduced the Stewardship Code (FSA, 2014), encouraging institutional investors to actively engage with investee companies, exercise voting rights at shareholder meetings, and disclose their voting practices. In the following year, the collaboration between the FSA and the TSE led to the adoption of the Corporate Governance Code (FSA, 2015), which mandated that listed companies enhance governance transparency and appoint at least two outside directors. Empirical evidence shows that these reforms increased engagement among institutional investors (Hidaka et al., 2023) and altered voting behavior, particularly among local institutional investors (Tsukioka, 2020), thereby transforming the corporate governance landscape of Japanese listed firms (Sai et al., 2025). Recently, the FSA launched the "Action Program for Corporate Governance Reform 2025" on June 30, 2025. This initiative aims to update Japan's Stewardship and Corporate Governance Codes (FSA, 2025). It addresses the issue of some companies merely meeting compliance standards without genuine commitment, resulting in greater variation

[3]As shown in Table B.1 in the Supplementary Appendix B, we find that both the level of cross-shareholding and bank ownership have a negative impact on firm valuation.

in how Japanese firms respond to regulatory demands. On October 21, 2025, the first meeting of the "Council of Experts Concerning the Follow-up of Japan's Stewardship Code and Corporate Governance Code" was held, established by the FSA and TSE. The reform's main goals are to boost company value creation over the medium to long term, support sustainable growth, improve the quality of disclosures, and facilitate trustworthy investor dialogue through transparent, high-level communication. Ultimately, the objective is to enhance corporate valuation.[4]

Simultaneously, the TSE has also taken steps to strengthen market discipline in Japan's equity market. In 2014, it launched the JPX–Nikkei 400 Index to motivate both local and international investors to target Japanese firms that meet global investment standards, demonstrate efficient capital allocation, and prioritize investor interests.[5] In April 2022, the TSE initiated a market restructuring to encourage companies to boost their corporate value by creating three new segments: "Prime", "Standard", and "Growth". The Prime segment is designed to attract foreign investors to Japan's most capitalized companies. The Growth segment targets small companies with high growth potential, while the Standard segment requires a basic level of corporate governance and a commitment to mid- to long-term growth.[6] On May 26, 2023, the TSE announced the constituents of the JPX Prime 150 Index, which officially debuted on July 3, 2023. This index aims to highlight "Japanese companies that are estimated to create value" among the top stocks by market capitalization

[4]See https://www.jpx.co.jp/english/equities/listing/cg/ for more details.
[5]See https://www.jpx.co.jp/english/markets/indices/jpx-nikkei400/ for more details.
[6]See https://www.jpx.co.jp/english/equities/improvements/market-structure/01.html for more details.

on the TSE Prime Market.[7]

Despite these efforts, Japanese listed companies continued to face low valuations. Agency problems and weak corporate governance can lead to managerial inertia, a less effective disciplinary role of the equity markets, and a sustained lack of incentives to implement significant measures to enhance asset efficiency, capital allocation, and corporate value.[8] For example, data from annual surveys by the Life Insurance Association of Japan indicate that, in 2023, only 3% of listed companies considered the cost of capital a key performance metric, whereas most still primarily focused on sales and profit growth.[9]

In this context, the TSE's 2023 reform explicitly targets undervalued companies and requires them to disclose specific plans to improve capital efficiency and stock value. By standardizing disclosure and increasing the visibility of firms' responses, the reform aims to align stock valuation with greater transparency regarding corporate strategies on capital efficiency and allocation, particularly to satisfy foreign investors' expectations.

2.2 TSE's Key Reform Dates

Figure 1 provides a timeline of events. First, the report released by the TSE on March 31, 2023, TSE (2023a) pointed out that the general purpose of the reform was to *"achieve sustainable growth and increase corporate value over the mid-to-long-term"* (page 1). TSE

[7]See https://www.jpx.co.jp/english/markets/indices/jpx-prime150/ for more details.

[8]Data from the Bank of Japan's extensive equity ETF purchase program indicates that central bank–driven rises in stock prices did not lead to more effective capital allocation or increased investment. Instead, the additional investment was mainly observed in firms with weaker corporate governance and limited growth opportunities, where such investment may be less efficient (Charoenwong et al., 2021).

[9]See https://www.seiho.or.jp/info/news/2023/pdf/20230421_3-5.pdf for more details.

required that companies listed on Prime and Standard Markets disclose their strategy for better capital efficiency in a specific section of their corporate governance reports. In particular, companies should implement three actions: current situation assessment, planning and disclosure, and implementation of new activities. As part of the current situation assessment, companies should evaluate whether their profitability exceeds their cost of capital and whether this performance is reflected in their market valuation. TSE also recommended that companies increase R&D expenses and invest in intangible assets and intellectual property.

On page 1 of the report, TSE explicitly refers to ROE below 8% and PBR ratio below 1x as both potential *"issues in terms of profitability and growth potential"*. TSE also expected companies to disclose their assessment, identified policies and targets, and the timing of their implementation in an easy-to-understand manner for investors. At this stage, TSE has not yet identified a specific type or document format for the disclosure.

Second, the TSE released a follow-up on August 29. The report documented that 31% of the companies in the Prime Market and 14% in the Standard Market (page 1) implemented actions to improve capital efficiency and stock prices (TSE, 2023c). Based on data available for firms with a fiscal year ending on March 31, the report showed that the disclosure rate was higher for companies with a PBR below 1x than for those with a high PBR. In addition, TSE observed high heterogeneity for low PBR companies, with those with large market capitalization and without controlling shareholders disclosing the most. The ROE level was not a determinant of this disclosure heterogeneity (page 6). Although TSE did not specify keywords to include in information disclosures, the market authority announced that it would

assist companies in complying with investor requests by providing examples of good practices and approaches.

Third, in the report released on October 11, the market authority declared that they would in the future *"publish a list of companies that have disclosed"* to make disclosure status more visible to market participants (TSE, 2023b, page 3). Although companies could disclose information about capital efficiency in either format, TSE required companies to use an explicit key phrase (*"actions to implement management that is conscious of the cost of capital and stock price"*, page 4) in their corporate governance reports, as well as a clear statement on how to access that information.

Fourth, on October 26, TSE announced the release of a list on January 15, 2024, including companies that took action to improve their capital efficiency (page 2) or were planning to do so. TSE informed that it would compile the list based on the disclosure status of the corporate governance reports released before December 31, 2023 (TSE, 2023d). In doing so, TSE employed two keywords in the list, namely *"disclosed"* and *"under consideration"* (page 3), to distinguish companies based on their disclosure progress.

Fifth, the TSE's consolidated disclosure list was released on January 15 at 3 p.m., after regular trading hours. Since then, TSE updated the list monthly. The list initially included 815 companies on the Prime Market (49%) and 300 companies on the Standard Market (19%). Also, 47% of Prime Market-listed companies disclosed their initiatives in English. In line with the preliminary results of August 29 (TSE, 2023c), TSE (2024) reported relevant heterogeneity in the disclosure status of companies with a PBR below 1x. 68% of companies

with a PBR lower than 0.5 disclosed capital efficiency strategies. The percentage was lower for companies with a PBR oscillating between 0.5 and 1 (62%) and for those with a PBR above 1x (41%).

- Figure 1 here -

2.3 Related Literature

This study links two related areas of research: the effects of disclosure and public scrutiny on corporate actions, and the role of investor information processing and attention allocation in shaping stock market reactions. Together, these frameworks help clarify how the TSE reform might affect both corporate behavior and investor responses to policy announcements and corporate governance disclosures.

First, reputation reduces asymmetric information by allowing economic agents to credibly signal their type or commitment, thereby disciplining corporate action and mitigating adverse selection (Kreps and Wilson, 1982; Diamond, 1989). Empirically, reputational considerations materially affect financial markets. For example, Stickel (1992) provides early evidence that an increase in corporate reputation, proxied by upward forecast revisions, positively affects stock returns, thereby underscoring the material relevance of reputation signals on markets. Reputation also influences how board members behave, affecting corporate dynamics and decisions. For example, Focke et al. (2017) notes that newly appointed directors in prestigious firms tend to accept lower compensation in exchange for non-pecuniary benefits, such as personal prestige or recognition. Similarly, Masulis and Mobbs (2014) find that directors,

especially those holding multiple board positions, asymmetrically value their roles based on the reputation incentives provided by the associated firm. At the firm level, Cao et al. (2015) documents a significant impact of corporate reputation on the cost of capital.

In contrast, shaming mechanisms constitute a particular form of reputational harm that can significantly influence decision-making. For example, Butera et al. (2022) demonstrate that while public recognition strongly influences human behavior, its effects vary among individuals and may be less socially efficient than financial incentives. Dwenger and Treber (2022) find that the threat of shame, more than the actual shaming, led companies to lower their tax debts, especially in more exposed industries. Yadin (2023) shows that regulatory shaming in climate change policy can serve as an effective tool to increase public scrutiny, thereby incentivizing firms to comply.

While TSE policy intervention primarily targets companies, investor responses largely depend on how market participants interpret and process the information. A growing body of research on investor information processing indicates that attention is limited, varies across investors, and is affected by macroeconomic announcements. Hirshleifer and Sheng (2022) document that macro-news announcements accelerate the integration of firm-specific earnings news into stock prices. Building on this, we argue that TSE policy announcements may enhance investors' responsiveness to subsequent corporate disclosures regarding capital and stock-price efficiency.

Institutional investors are key players in this process (Liu et al., 2023; Da et al., 2025). Among others, Ben-Rephael et al. (2017) and Ben-Rephael et al. (2021) find that institutional

investors' attention facilitates more efficient price adjustments, reducing post-announcement price drift, with more pronounced effects during market-wide or peer-related announcement spillovers. Other studies identify frictions in processing corporate information. Cohen et al. (2020) show that investors do not immediately assimilate information in corporate releases, leading to delayed price adjustments. Fedyk and Hodson (2023) find that even sophisticated investors fail to clearly identify "old news" embedded within recombined information. Mengoli et al. (2025) further emphasize that investors' perceived proximity affects their decisions, suggesting that attention asymmetries may be more pronounced in contexts with a higher share of foreign investors.

We build on these strands of research to investigate whether TSE's reform policy and subsequent corporate actions elicit stronger market reactions. For instance, within the Japanese institutional context characterized by public scrutiny on corporate behavior, the TSE announcements and compliance disclosures may serve as salient signals that investors interpret under attention constraints. Overall, the interplay between TSE's policy intervention, firm-level disclosure, and investor sophistication provides the conceptual basis for our empirical analysis of short-term stock market reactions to the TSE reform.

3 Data and Methods

3.1 Sample

We retrieve financial and daily stock data from NEEDS-FinancialQuest. In addition, we use corporate governance reports from companies to gather information on corporate disclosure. We also gather data on firms' disclosure status and list updates from the TSE official website.[10] Finally, we retrieve data on earnings analysts' forecasts from the IBES Detail History Database. We exclude stocks with missing returns from March 30, 2023, onward. Also, companies listed in the TSE Growth or regional markets are excluded from the initial sample, as the TSE reform does not apply to them. Finally, we remove companies operating in industries with fewer than two firm-industry observations.

The main sample, for which we have all control variables, comprises 3,169 observations. This number shrinks somewhat whenever we include information on corporate ownership composition.

3.2 Methods

3.2.1 Cumulative Stock Returns

Our empirical method involves running multiple cross-sectional regressions of cumulative returns against various firm characteristics. Since markets may need time to fully integrate information and information leaks may occur around the key event, we define three different

[10] See https://www.jpx.co.jp/english/equities/follow-up/02.html for more details.

sets of cumulative returns to better understand how quickly the market responded to these events. First, $CR(-1;+1)$ measures the drift from one day before to one day after the event; $CR(-1,+3)$ captures the cumulative stock returns from one day before to three trading days after the event, including one day of information leakage; and $CR(-1,+5)$ measures the total seven-day cumulative return, covering one day of leakage and five days post-event.

For our analysis, we primarily use raw cumulative stock returns. To verify the robustness of our findings, we also calculate various alternative cumulative abnormal returns: one set based on the Capital Asset Pricing Model (CAPM), and a second set employing the Fama-French three-factor model (Fama and French, 1993).

We obtain data on market returns, the risk-free rate, and the size and value factor returns from the Kenneth R. French Data Library.[11] For each stock, beta and factor loadings are estimated by regressing daily excess returns on market excess returns, size, and value factor returns from February 17, 2022, to February 28, 2023. To improve the reliability of these estimates, betas and other factor loadings are calculated only for firms with at least 126 daily return observations. Firms with fewer observations are excluded from the analysis.

To estimate the CAPM-adjusted cumulative abnormal returns, we first calculate a stock's market beta by regressing its daily excess returns on the market's daily excess returns over the same period. The one-month T-bill rate is obtained from the Kenneth R. French Data Library and is used as the risk-free rate in computing excess returns. Subsequently, abnormal returns are defined as the difference between a stock's daily excess return and its beta times

[11] https://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html

the market excess return, defined as the return on Japan's value-weighted market portfolio minus the U.S. one-month T-bill rate. The cumulative abnormal returns are then determined as the sum of daily abnormal returns over specified event windows around the principal dates: (-1;+1), (-1;+3), and (-1;+5). When using CAPM-adjusted cumulative abnormal returns (CARs), market beta is excluded from the set of control variables.

To compute Fama-French-adjusted abnormal returns, we estimate each stock's beta and factor loadings by regressing daily excess returns on daily market excess returns, size, and value factor returns. Afterward, each stock's abnormal returns are determined as the difference between the excess returns and the sum of each stock's factor exposure multiplied by the factor returns. Finally, the Fama-French CAR is calculated using the same approach as for CAPM-adjusted CARs, applied around the key dates. Furthermore, when using Fama-French-adjusted CARs, factor loadings are excluded from the list of covariates, as they are inherently included in the calculation of abnormal returns.

3.2.2 Empirical Strategy

We run cross-sectional regressions for different time windows around the key dates after the TSE requested all companies listed in the Prime and Standard Markets to take more consideration of their cost of capital and profitability. We consider two key explanatory variables in the analysis.

First, we define a binary indicator ($1\{PBR < 1\}$) that is equal to one for firms with a price–to–book value lower than 1x before the TSE reform announcement on March 31,

2023, and zero otherwise. Second, we employ a binary indicator ($1\{ROE \geq 8\%\}$) that equals one for firms with an ROE equal to or greater than 8% as of the latest available financial data before March 31, 2023. The composition of these firm buckets remains constant across all cross-sectional regressions tested in the analysis. We also control for *Size*, *Cash*, *Leverage*, *Sales Growth*, market beta (β_{MKT}), and factor loadings for size and value. In the previous section, we outlined the computational details for calculating beta and factor loadings. Concerning the firms' characteristics used as control variables in our cross-sectional regressions, their definitions are standard and are described in detail in Table 1. We also include industry-fixed effects (ι) in the main model specifications. We use a four-digit code from the Securities Identification Code Conference, corresponding to sector sub-classification, to incorporate industry fixed effects.[12] Overall, the main model adopted for each date can be summarized by the following equation:

$$CR_i^{(-1;+1)} = \beta_0 + \beta_1 1\{PBR < 1\}_i + \beta_2 1\{ROE \geq 8\%\}_i + \beta_3 Size_i + \beta_4 Cash_i + \beta_5 Leverage_i + \beta_6 SalesGrowth_i + \beta_7 \beta_{MKT_i} + \beta_8 Loading^{Size} + \beta_9 Loading^{Value} + \iota_i + \epsilon_i, \quad (1)$$

We also repeat the cross-sectional regressions over longer time windows, (–1;+3) and (–1;+5), respectively. Continuous exogenous variables are winsorized at the 1st and 99th percentiles.

[12]The TSE industry four-digit code roughly reflects a three-digit SIC code.

Following the approach of Wagner et al. (2018), prior to conducting the cross-sectional regressions, we assess the potential advantages of utilizing raw returns, CAPM-adjusted returns, or Fama-French-adjusted returns as the primary dependent variables in our analysis. Conceptually, the use of adjusted returns facilitates the investigation and removal of potential factor returns' influence on the effects under examination in our study.

Hence, we perform separate regressions of PBR and ROE on market beta, size, and value factors. Figure 2 illustrates the results of this analysis. Notably, we observe that firms with high loadings on the value factor generally display lower PBR and profitability. Similarly, firms with high loadings on the size factor tend to have lower ROE. Therefore, we conclude that the size and value factors are associated with the effects of PBR and ROE under investigation. This finding indicates that the influence of our key variables may be understated in cross-sectional regressions that utilize Fama-French-adjusted returns as the dependent variable.

Similarly, a positive and statistically significant correlation is observed between market returns and both ROE and PBR ($p < 0.01$). Specifically, firms with higher market betas tend to exhibit higher profitability on average. Although the impact is somewhat diminished, a similar effect is also observed for PBR. Consequently, relying solely on CAPM-adjusted returns may also understate the influence of PBR and ROE on cumulative returns in our setting. Therefore, we use each stock's raw cumulative returns as the primary dependent variable, despite including market return, size, and value factors as additional covariates in the analysis. We then use CAPM- and Fama-French-adjusted cumulative abnormal returns

as robustness checks for the key cross-sectional analyses. Finally, we also adopt an alternative approach, using CAPM-adjusted CARs as the dependent variables and incorporating size and value factor loadings as supplementary covariates in the cross-sectional regressions. In this way, we mitigate the previously mentioned underestimation effect in Fama-French-adjusted cumulative abnormal returns, despite controlling for the related factor loadings as outlined by Ramelli et al. (2021).

- Figure 2 here -

3.3 Descriptive Statistics

Table 1 presents the descriptive statistics for the variables of cumulative returns for each event dates. Three–day cumulative returns generally exhibit positive mean values, except for January 16, 2024, when Japanese stocks observed a slightly negative average performance. Particularly substantial dispersions in stock returns are observed for the events on March 31, 2023, and January 16, 2024, suggesting that investors perceived the TSE announcements as having heterogeneous effects on firm value. The average PBR ratio is 1.54, but approximately 52% of our sample have a PBR ratio lower than 1. Similarly, ROE shows an average value of 6.1%, with a standard deviation of approximately 14%. Firms with ROE above 8% constitute 42.7% of the whole sample.

- Table 1 here -

In the Supplementary Appendix A, Table A.1 displays the descriptive statistics for the

cumulative abnormal returns, which serve as alternative dependent variables in our analysis. On average, the mean and standard deviation of CARs are lower than those of the cumulative raw returns for the key event dates, except on January 16, 2024, when a partial reversal occurs, possibly indicating more significant market adjustments following the TSE list release. In the relevant tables, we further complement our analysis on cumulative raw returns by estimating cross-sectional regressions of cumulative abnormal returns.

4 Main Findings

4.1 Cumulative Stock-Price Reactions

Table 2 presents the main results. The coefficient for firms with a PBR lower than 1x is positive and statistically significant for all event dates, except on August 29. On March 31, low-PBR firms experienced 0.852 percentage points higher cumulative returns on average than firms with a PBR above 1x. The effect still holds in January 2024, with firms with a PBR below 1x exhibiting cumulative stock returns 0.432 percentage points higher than firms with a PBR above 1x.

Next, we examine whether operating performance, as captured by ROE, shapes the cross-sectional response to the TSE announcements. We find that high-ROE firms outperformed their peers around March 31, 2023.

- Table 2 here -

The regressions reported in Table 2 use simple cumulative returns as the dependent

variable, controlling for factor loadings that may affect stock returns. To assess robustness, we present in the Supplementary Appendix B cross-sectional regressions using alternative measures of cumulative abnormal returns in Table B.2. Panel (a) shows CAPM-adjusted abnormal returns, while Panel (b) covers CAPM-adjusted abnormal returns that also control for factor loadings. Panel (c) presents results from the cross-sectional regressions of Fama-French-adjusted CARs. Overall, the findings closely resemble those in the main table. As a further placebo test available on request, we conduct the same tests for firms listed on the TSE Growth Market, to which the new regulation does not apply. As expected, we find that the PBR and ROE do not explain stock returns in any of the event windows. This lends additional validity to interpreting the stock price reactions for the main segment as being due to the regulatory intervention.

Table 3 shows the results for additional event windows (–1;+3) and (–1;+5). The coefficient for firms with a PBR below 1x is always positive and statistically significant. Furthermore, the coefficient for high-ROE firms is positive and statistically significant on March 31, October 11, and January 16, 2024 dates. This suggests that operating performance plays a role in how investors reassessed firms around key reform dates.

- Table 3 here -

Next, we simultaneously examine companies' PBR and ROE levels to test whether investors considered these variables jointly when reacting to TSE announcements. We are interested in firms with PBR below 1x and ROE at or above 8% for our analysis. Table 4 shows the results. Broadly speaking, companies with low PBR and high ROE experienced

higher cumulative stock returns than the best-performing companies (PBR above 1x and ROE above 8%) on March 31, 2023. These findings suggest that, following the TSE reform, the market responded most strongly to firms combining low market valuations with solid operating performance. Notably, the results in Table 4 underscore that investors critically eyed the prospects of firms with high stock market multiples but low ROE, discounting their lower operational efficiency or the risk of overvaluation.

- Table 4 and Figure 3 here -

The findings of Table 4 are confirmed graphically in Figure 3, which shows the distributions of the daily cumulative returns for the three different groups of firms based on the interaction between the PBR and ROE ratios. In particular, following the announcement of the TSE reform on March 31, 2023, companies with a PBR ratio below 1x and an ROE of at least 8% experienced sustained growth, outperforming their peers in the same period.[13]

[13]We probe these findings by controlling for the impact of the potential cross-sectional correlation of stock returns on the conventional t-statistics (Fama and French, 2000). Specifically, following Cohn et al. (2016), Ramelli et al. (2021), and D'Ercole and Wagner (2023), we run the cross-sectional regression using cumulative returns over a non-event period of 252 days to adjust conventional t-statistics for the empirical distribution of coefficient estimates over the non-event window. To do so, we consider a non-event window from February 17, 2022, to February 28, 2023. First, we combine stock returns in the non-event period to replicate the three-day cumulative returns used for the cross-sectional regressions in Table 2. Second, we run 84 cross-sectional regressions during the non-event period and record the mean and standard deviation of all coefficients. Third, we subtract the mean from the estimated coefficient in the main model and divide the difference by the standard deviation of the time-series coefficients estimated over the non-event period. We replicate the same approach for all the variables included in the main model. Fourth, we follow the same approach for the seven-day cumulative returns (-1;+5) in Table 3. We also conduct an alternative robustness test to compute p-values for the regression coefficients using a bootstrapping approach (Cai and Walkling, 2011). Using the same non-event period, we first test the results of Table 2 by randomly selecting three-day cumulative returns, repeating the cross-sectional regression, and replacing the dependent variable with the randomly selected three-day cumulative returns from the non-event window. Then, we repeat the same procedure 1,000 times. Finally, we compare the cross-sectional regression coefficients of Table 2 with the empirical distribution of the coefficients from the non-event window. We also repeat the same test on the coefficients of Table 3. If the estimated event coefficient is negative (positive), the bootstrap p-values indicate the percentage of the 1,000 coefficients that are lower (higher) than the event coefficient. Using the same

Finally, we question the linearity of the relationship between low-PBR firms with high-ROE and investors' reactions around the event dates observed in Table 2. In particular, we control up to the third-order polynomial terms of PBR and ROE in Table 5. In addition, we use the entire set of control variables and demonstrate that the companies with the lowest PBR benefited the most from the TSE reform. In particular, the negative sign of PBR as a continuous variable indicates that high-PBR companies experienced a significant decline in cumulative returns around the event dates.

In contrast, firms with PBR below 1x outperformed in the same event windows. The coefficients for PBR^2 and PBR^3 suggest the presence of a non-linear investor reaction to the TSE reform, particularly for March and January event dates.[14] Companies with the lowest PBR experienced a strong cumulative return increase. However, the effect weakens once the PBR is close to 1x and reverses for PBR greater than 1x. The response thus increases smoothly with the degree of undervaluation rather than exhibiting a discrete jump at the regulatory threshold.

- Table 5 here -

We also present the cross-sectional regressions of alternative cumulative returns on high-order terms of PBR and ROE in Table B.4 of the Supplementary Appendix. Panel (a)

event windows, we also perform these robustness tests on the coefficients of the cross-sectional regressions in Table 4. Table B.3 of the Supplementary Appendix B confirm our evidence that the market reacted immediately to PBR information and gradually incorporated ROE insights into stock prices, penalizing underperforming and overvalued companies more severely.

[14] Figure B.1 in the Supplementary Appendix B plots the cross-sectional regressions of cumulative stock returns for the event window (–1;+1) on third-order polynomial terms of PBR. The figure provides evidence of different investors' sensitivity to marginal increases in the stock multiple for companies below the 1x threshold around the key dates. The effect is more pronounced on March 31, 2023, and January 16, 2024.

displays CAPM-adjusted abnormal returns, while Panel (b) includes CAPM-adjusted returns that also account for factor loadings. Panel (c) shows results from cross-sectional regressions of Fama-French-adjusted CARs. Notably, although the coefficient magnitudes somewhat diminish compared to the raw cumulative returns on March 31, 2023, the coefficients increase in January, especially for Panels (b) and (c). Overall, the results remain consistent across different sets of cumulative abnormal returns and suggest that investors reassessed the extent of undervaluation rather than responding mechanically to the $PBR < 1$ cutoff. This is interesting as it casts some doubt on the conventional story that the "shame" of falling into the low-PBR category is the essential driver of stock price reactions.[15]

In the next section, we examine the mechanisms underlying the outperformance of firms with a PBR below 1x.

5 Channel Analysis

5.1 Threshold Effects and Mechanical Classification

To assess whether market reactions reflect a mechanical "shame" effect at the regulatory cutoffs, we implement a regression discontinuity design (RDD) around the PBR and ROE thresholds emphasized by the TSE. Figure 4 shows the fitted local second-order polynomial regressions on both sides of the thresholds, utilizing different windows of cumulative returns

[15] We further probe our findings through cross-sectional regressions of the cumulative stock returns restricting the sample to companies exhibiting a PBR within the range of 0.9–1.1. Table B.5 in the Supplementary Appendix supports the assumption of a different degree of investor sensitivity to a marginal increase in the stock multiple for companies with a PBR below 1x. In particular, we observe that companies with a PBR around 1x do not experience robust and significant increases in stock returns around the key dates.

on March 31, 2023. The graphical evidence on PBR indicates a nonlinear relationship between PBR and cumulative stock returns when PBR is below 1x, suggesting that investors are more sensitive to changes in PBR when it is substantially below 1x.[16] Overall, we find no discontinuous jump in returns at the $PBR = 1$ cutoff. Instead, returns vary smoothly with the depth of undervaluation, indicating that investors reassess valuation levels rather than react to a categorical threshold. Conversely, the effect of ROE on cumulative stock returns is more gradual above the threshold, consistent with a less pronounced investor response to reported profitability.

- Figure 4 here -

Additionally, we analyze whether firms intentionally manipulated their financial indicators prior to the TSE reform to remain above the regulatory threshold, thereby avoiding regulatory scrutiny or adverse market attention associated with the reform. We complement the RDD analysis with standard density tests around the $PBR = 1$ and $ROE = 8\%$ cutoffs (McCrary, 2008; Cattaneo et al., 2020). These tests assess whether firms strategically bunch just above the regulatory thresholds.[17] Conceptually, if firms could manipulate their PBR

[16] Additionally, we empirically test whether the market reaction on March 31, 2023 differed substantially around the regulatory threshold of $PBR = 1$. As shown in Table B.6 of the Supplementary Appendix B, the local average treatment effect (RD effect) near the PBR threshold is not statistically significant. Thus, there is no statistically significant discontinuity in the effect around the TSE $PBR = 1$ threshold. These findings remain consistent across various bandwidth choices and polynomial specifications (Grembi et al., 2016; Calonico et al., 2014).

[17] For the McCrary density test (McCrary, 2008) conducted for both the PBR and ROE variables, we adopt the methodology outlined by Grembi et al. (2016) to ascertain the optimal data-driven bandwidths h with the minimum bias value and use the bias corrected estimator of Calonico et al. (2014). Additionally, as a validation measure, we employ a second density test derived from Cattaneo et al. (2020, 2024), which allows for different optimal, data-driven bandwidths on either side of the cutoff and varying polynomial orders to address potential first-order biases in the distributional approximation. Specifically, a third-order

and ROE values to bunch just above these cut-offs, they might strategically evade scrutiny by the TSE authority, which could introduce bias into the analysis of potential discontinuity effects. As illustrated in Figure 5, we find no evidence of manipulation around the PBR threshold. While there is some bunching in ROE near 8%, our main valuation results center on PBR, for which the identifying assumptions appear satisfied.

Taken together, these findings reinforce our earlier evidence on PBR, suggesting that not only do investors not react mechanically to threshold-based classifications, but firms also do not strategically manipulate their stock valuations to avoid scrutiny following March 31, 2023.

- Figure 5 here -

Next, we examine whether firms may have temporarily crossed the PBR threshold subsequent key event dates due to strategic or opportunistic motives, given their prior exposure to the TSE policy. To do this, Table 6 presents two complementary methods. Using monthly PBR data, we distinguish persistently undervalued firms from "switchers" that cross the $PBR = 1$ threshold only shortly before an event.[18]

As shown in Panel (a) of Table 6, Market reactions are concentrated among persistently undervalued firms. In contrast, firms that enter the low-PBR category only shortly before the list release experience weak or negative returns. Overall, the results indicate that market reactions are not caused by dynamic or endogenous reclassification into the low-PBR group.

polynomial is used for PBR and a second-order polynomial for ROE to precisely model the distribution of estimates within the confidence intervals.

[18]For the March 31, 2023 event, $Cohort^{PBR<1}$ is not yet defined, as we simply distinguish firms with PBR below 1x in the month immediately before the event through the indicator $1\{PBR < 1\}^{March}$.

Second, we further assess the robustness of our results in Panel (b) of Table 6 by estimating an endogenous treatment effects model in which treatment status ($PBR < 1$) is allowed to vary over time as it is determined using firms' price-to-book ratios measured in the month preceding each event. This approach addresses potential correlation between valuation classification and contemporaneous return shocks.

As shown in Panel (b) of Table 6, our results remain robust after controlling for dynamic treatment assignment. Only for the January 16, 2024, event, we reject the null hypothesis of exogeneity, implying that treatment assignment becomes endogenous in the later, more dynamic phase of policy implementation. Importantly, the treatment effect remains positive and significant after accounting for dynamic selection, reinforcing that our results are not driven by opportunistic reclassification.

- Table 6 here -

5.2 Ownership Structure

One of the improvement margins for low PBR companies was the reduction of the percentage of cross-shareholdings ((TSE, 2023c), page 4).[19]

Lately, the relevance of traditional business groups has declined in favor of a higher share of foreign investors (Takahashi and Yamada, 2021), thereby enhancing corporate

[19] We empirically investigate whether Japan's equity market features, particularly the bank-centered governance system and widespread cross-shareholdings, negatively affect stock valuation before the TSE initiative. As shown in Table B.1 of the Supplementary Appendix B, firms with higher levels of cross-shareholdings and bank ownership generally have lower PBR before the TSE reform, suggesting that stock valuations were systematically discounted prior to the TSE initiative.

transparency and investment (Desender et al., 2016; Bena et al., 2017). We investigate whether ownership traits affected market expectations for firms with low PBRs following TSE announcements. Table 7 indicates that low-PBR firms with significant bank ownership, cross-shareholdings, and stable ownership either did not experience higher returns or faced penalties around key event dates. Thus, although traditional ownership structures are associated with lower PBR prior to the reform, they do not systematically explain cross-sectional variation in announcement returns among low-PBR firms.[20]

- Table 7 here -

In contrast, low-PBR firms with high foreign ownership experience significantly stronger returns (Table 8). This pattern is consistent with foreign investors being more responsive to valuation signals and more willing to reassess chronic undervaluation following the TSE reform. The result suggests that the repricing is not purely driven by domestic social norms, but reflects a broader valuation reassessment.

- Table 8 here -

5.3 Industry Spillovers

We next examine whether the effect of the TSE reform operates at the firm level or whether part of the response reflects cross-firm externalities. Spillovers may operate through industry

[20] We also examined additional governance proxies (e.g., CEO and board ownership, outside directors, stock option plans, and anti-takeover provisions). These variables do not materially affect our estimates, and we find no robust evidence that they systematically moderate cumulative returns for low-PBR firms across the different time windows around key TSE events.

competitive dynamics and other economic networks among firms, such as aggregate demand shocks, input-output linkages, shared creditors, and shared blockholders (Dou et al., 2025). Our data do not allow us to study all such channels directly. However, some appear less central in our setting. As shown in Section 5.2, traditional ownership structures do not systematically explain cross-sectional variation in announcement returns among low-PBR firms, which reduces the likelihood that shared blockholders are the main source of the effects we document. In addition, because the TSE reform is primarily an informational intervention that encourages firms to disclose plans to improve capital efficiency, rather than a direct shock to firms' operating environment, channels linked to aggregate demand or input-output disruptions are less likely to be first-order in the short-run announcement window that we study. Nevertheless, firms operating in similar products and capital markets could still affect one another, so we investigate whether the valuation effects of the TSE reform spill over within industries. To account for such treatment-related externalities, we follow Berg et al. (2021) and estimate cross-sectional regressions that allow spillovers to vary with industry-level treatment intensity:

$$\begin{aligned} CR = \beta_0 + \beta_1\{PBR<1\}_i + \beta_T\overline{\{PBR<1\}_{ic}} * \{PBR<1\}_i + \\ \beta_C\overline{\{PBR<1\}_{ic}} * (1-\{PBR<1\}_i) + \gamma' Controls_i + \epsilon_i \end{aligned} \tag{2}$$

where $\{PBR<1\}$ identifies low-PBR firms and $\overline{\{PBR<1\}_{ic}}$ measures the fraction of treated firms within the same industry (excluding firm i). The coefficient β_1 captures the

treatment effect at the average level of industry exposure, while β_T and β_C capture spillovers on treated and control firms, respectively.

Table 9 shows that the treatment effect for low-PBR firms remains positive and statistically significant across specifications, although somewhat attenuated once spillovers are included. Spillovers are asymmetric: the coefficient on β_T is generally positive and larger than β_C, indicating that low-PBR firms benefit more when a larger share of industry peers is also undervalued. This effect is strongest around the initial reform announcement (March 31, 2023) and the October 26, 2023 communication, and weaker at the January 16, 2024 list release.

Spillovers to control firms are limited and economically small, with only a transient negative effect around January 16, 2024 that does not persist across alternative event windows. Overall, the evidence suggests that the reform operates primarily through repricing of undervalued firms rather than through strong industry-level competitive externalities. At the same time, because our analysis is confined to industry-level exposure, we cannot fully rule out spillovers operating through non-industry relationships such as customer–supplier links or other inter-firm networks.[21]

- Table 9 here -

[21] We complement these findings with a graphical analysis (Figure B.2 in the Supplementary Appendix B), which illustrates how the marginal effects of industry composition vary continuously across the exposure distribution. Specifically, the figure shows that the gap between treated and control firms widens as industry-level treatment intensity increases, reflecting the limited effect on control firms.

5.4 TSE Disclosure List Release: Valuation, Profitability, and Risk

Next, we examine in greater detail the economic consequences of the TSE list release on January 16, 2024. A central question is whether the stock price reaction reflects improvements in operating performance or primarily investor-side repricing. Recall that the TSE composed this list based on corporate governance reports released by December 31, 2023, and had pre-announced how it would use the disclosed information.

In particular, Table 10 employs three dummies based on the TSE classification of companies based on their disclosure status. We examine the interaction of $\{PBR < 1\}$ dummy with each of the three disclosure dummies individually, using alternative sets of cumulative returns.

Interestingly, the negative coefficient for the *No_Disclosure* dummy indicates that investors penalized companies that did not disclose their plan for better capital efficiency, particularly those with high PBR. These results indicate that investors penalized companies that did not disclose their plans once this information was made salient and easy to process through the TSE's consolidated release. Thus, although the underlying information was publicly available in corporate governance reports, investors appear not to have fully incorporated it prior to the official list release. The publication of the consolidated list, therefore, acted as a salient informational trigger. The coefficient of low-PBR firms is still positive and statistically significant in each specification of Table 10.[22]

[22]We present the results of a cross-sectional regression on different sets of cumulative returns, controlling

Also, the interactions with the price-to-book ratio are not statistically significant, suggesting that the market's lack of attention to the governance report was not confined to high-PBR firms.[23]

- Table 10 here -

We next examine whether the valuation response to the list release translates into measurable changes in operating performance and risk over the subsequent year.[24] First, we extend our analysis to encompass the year following the first list release, examining variations in PBR (ΔPBR) and ROE (ΔROE). Changes are computed as the difference between current values and their one-year lag for each firm, with current values corresponding to the most recent firm-level financial data available through May 2025.

for disclosure dummies, in Table B.7 in the Supplementary Appendix B. Our findings for low-PBR firms still hold, and the *UnderCons* coefficient shows that investors responded positively to companies that announced their intention to disclose their improvement plans in the near future.

[23]We perform an additional robustness test to examine how the market considers the quality of companies' disclosures in corporate governance reports. Essentially, if the market had fully incorporated all information from reports issued before December 31, 2023, no relationship should have emerged with the official release of the list on January 15, 2024. Specifically, we analyze the content of the corporate governance report released by December 31, 2023, using the Phi-4 model, an open-source large language model. Specifically, the model assesses disclosures along three dimensions: (i) proactiveness, (ii) originality, and (iii) the level of detail. We then categorize companies into three groups based on the level of detail in their plans to respond to the TSE policy reform: Limited Disclosure, Moderate Disclosure, and Extensive Disclosure. Each category is assigned a numerical score, with companies that do not disclose their plans receiving a score of 0. As shown in Table B.8 in the Supplementary Appendix, the results are consistent across these different disclosure classifications. Firms with a price-to-book ratio (PBR) below 1x outperformed their peers, whereas investors do not strongly differentiate among disclosure qualities in corporate governance reports. Conversely, the negative and statistically significant intercept indicates that the market penalizes high-PBR firms that did not voluntarily disclose their planned responses to TSE requirements.

[24]In Supplementary Appendix B we also examine whether the monthly publication of the TSE list additional pricing effects after the initial release. We also control for the potential pressure on unlisted firms arising from the increasing number of peers explicitly named on the list. Nevertheless, Table B.9 provides no evidence of a systematic price-of-shame or reward-for-compliance mechanism after the monthly updates of the TSE disclosure list. Neither newly listed firms nor already listed firms achieved significantly positive cumulative returns, whereas spillover effects are negligible.

Second, motivated by a standard valuation framework in which firm value can change either through revisions in expected future cash flows or through changes in discount rates (Campbell and Shiller, 1988; Liu et al., 2017), we investigate which of these channels is more consistent with the observed market reactions. To proxy for revisions in expected future cash flows, we examine changes in analysts' earnings forecasts. If investors become more optimistic about the future cash flows of low-PBR firms following the TSE initiative, we would expect to observe upward revisions in analysts' earnings expectations. For each firm, we analyze forecasts for the subsequent two fiscal years (FY1 and FY2). We use the last forecast issued between October 26 and December 31, 2023, and the last forecast issued between January 16 and February 15, 2024. Forecast revisions are measured as the difference between post- and pre-event average forecasts, scaled by the stock price on March 31, 2023, and multiplied by 100, following Ramelli et al. (2021).[25]

To capture potential changes in discount rates or uncertainty, we examine stock illiquidity using the Amihud (2002) measure multiplied by 10^6. Our baseline illiquidity measure, ΔIlliquidity(%), compares daily illiquidity over a post-list-release window (January 17, 2024, to February 15, 2024) with a pre-list-release window (October 27, 2023, to December 29, 2023). This design allows us to test whether the resolution of reputational uncertainty associated with the TSE disclosure list is followed by reductions in trading frictions or perceived risk. As a robustness check, we construct an alternative measure using a longer pre-event

[25] As robustness checks, we also consider percentage changes in forecasts excluding negative pre-event values (Landier and Thesmar, 2020), alternative denominators, and revisions based on median forecasts (Liu et al., 2017). Results are qualitatively unchanged across specifications.

window (July 1, 2022, to March 30, 2023) to mitigate potential contamination from earlier TSE-related announcements. All illiquidity measures are winsorized at the 1% level (Brennan and Subrahmanyam, 1996).[26]

We report the results in Table 11. Column (1) shows that high-ROE firms do not experience improvements in realized profitability following the list release. If anything, ROE declines over the subsequent year. Thus, we find no evidence that the TSE disclosure list generated short-run gains in accounting profitability.

Columns (2) - (3) present results for earnings forecast revisions. We find no statistically significant revisions for either FY1 or FY2 earnings forecasts. The null result for FY1 may partly reflect the short horizon between the forecast window and fiscal year-end. Even for FY2 forecasts, we detect no systematic upward revisions, suggesting that the stock-price response is unlikely to reflect near-term cash-flow upgrades.

Column (4) reports changes in valuation ratios. The estimates indicate that low-PBR firms experience a statistically significant increase in PBR in the year following the TSE disclosure list release. Columns (5)–(6) report results for stock illiquidity. Low-PBR firms exhibit a significant decline in illiquidity, both in the short event window following the list release and under the alternative longer pre-event specification. The decline in illiquidity is consistent with reduced trading frictions or lower perceived risk following the list release. By contrast, high-ROE firms do not experience comparable changes in liquidity or uncertainty.

Taken together, the evidence indicates that the TSE reform triggered a repricing of

[26] Table A.2 in the Supplementary Appendix A reports the descriptive statistics for the variables used in the analysis.

persistently undervalued firms. We observe increases in valuation ratios and reductions in illiquidity, but no corresponding improvements in realized profitability or analyst cash-flow expectations. The pattern is therefore more consistent with investor-side reassessment of chronic undervaluation than with immediate changes in firms' operating performance.

- Table 11 here -

Finally, to determine whether the investor reward for low-PBR firms related to the TSE initiative persists across subsequent updates of the TSE disclosure list, we implement a multi-period Difference-in-Differences framework using the doubly robust estimator of Callaway and Sant'Anna (2021). We examine the monthly changes in PBR following their inclusion on the TSE disclosure list, tracking list updates from the initial release in January 2024 through January 2025. Firms are assigned to treatment groups based on the month in which they first appear on the TSE disclosure list. Treatment effects are estimated by comparing these firms to those not yet listed at time t.[27]

As illustrated in Figure 6, there is heterogeneity in the effect of being explicitly named on the list across companies. Firms with low PBR that initially respond to TSE requirements experience a marginal increase in market valuation. In contrast, companies that comply later with TSE voluntary disclosure requirements do not show statistically significant effects. The longer-term valuation gains are concentrated among persistently undervalued firms and early

[27]The analysis uses a sample of firms with available monthly PBR data from November 2023 to March 2025, requiring at least two data points before and after treatment. Once a firm is included in the treatment group, it remains in that group. Additionally, a one-month anticipation period is included to account for potential information leakage prior to official list updates.

responders. The results are robust to restricting the control group to never-treated firms and to excluding the anticipation period.

- Figure 6 here -

6 Conclusion

In March 2023, the TSE launched a reform to address the long-standing valuation discount of Japanese listed firms by increasing pressure on capital efficiency and corporate value. We show that investors responded by rewarding low price-to-book (PBR) firms, especially when low valuations were paired with high return on equity (ROE).

These valuation effects are concentrated among firms that were persistently undervalued prior to the reform, rather than among firms that only recently slipped below the $PBR = 1$ threshold. By defining treatment status based on pre-reform information and estimating endogenous treatment-effect models with time-varying treatment, we document that our main results are robust to dynamic selection into the low-PBR group.

Although firms' value-enhancing plans were already publicly available in corporate governance reports, the release of the TSE's consolidated compliance list in January 2024 triggered strong stock-price reactions. However, changes in disclosure quality and subsequent monthly list updates do not generate additional returns. Conditional on disclosing, the richness of firms' plans is only weakly priced, whereas non-disclosure is strongly penalized, and we find little evidence of a persistent "price-of-shame" mechanism.

Taken together, several pieces of evidence point away from a purely categorical price-of-shame or disclosure-content story. Returns vary smoothly with the degree of undervaluation rather than jumping at the $PBR = 1$ cutoff, density tests and regression discontinuity analysis reveal neither manipulation nor discrete return effects at the threshold, and within-industry spillovers are limited. At the same time, we find no short-run improvements in realized profitability or upward revisions in analyst earnings forecasts following the list release, but some evidence of reduced illiquidity for low-PBR firms. While our spillover analysis is necessarily confined to industry-level exposure, and we therefore cannot fully rule out economically meaningful spillovers through customer–supplier relationships or other non-industry links, the evidence suggests that such spillovers do not primarily drive our main results.

Overall, the TSE reform appears to function primarily as a catalyst for investor-side repricing of chronic undervaluation, particularly for firms that were persistently undervalued and early to comply with the new requirements, rather than as a direct driver of short-run changes in firm behavior or cash-flow prospects. More broadly, our findings show how an exchange-level capital-efficiency initiative can affect market pricing by making already public information more salient, even when it does not immediately change firms' underlying fundamentals.

Declaration of generative AI and AI-assisted technologies in the manuscript preparation process: During the preparation of this work the author(s) used ChatGPT (OpenAI) and Claude (Anthropic) to assist with language editing and proofreading of the manuscript. After using these tools, the authors reviewed and edited the content as needed and take full responsibility for the content of the published article.

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Figure 1: Timeline of Events

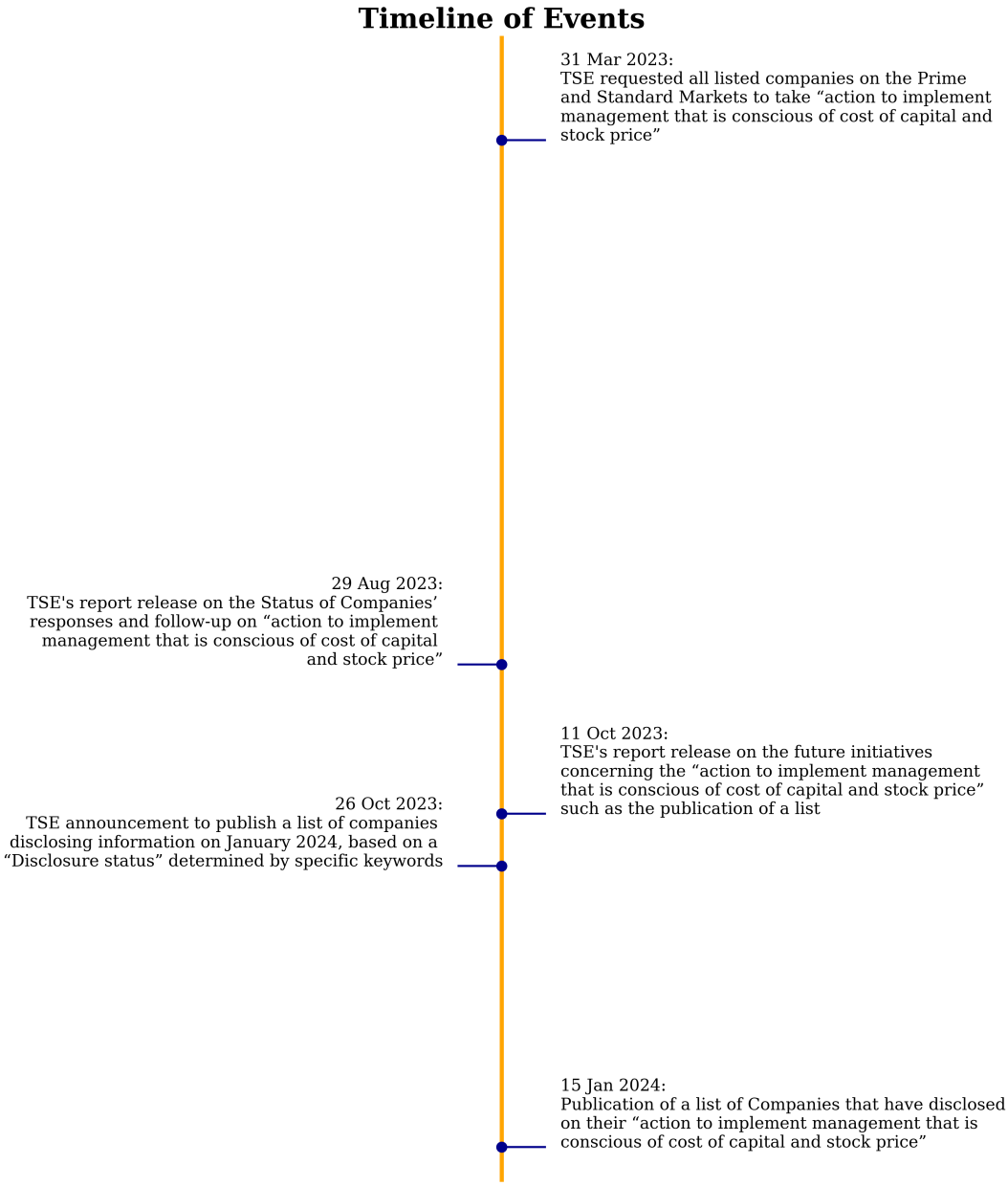
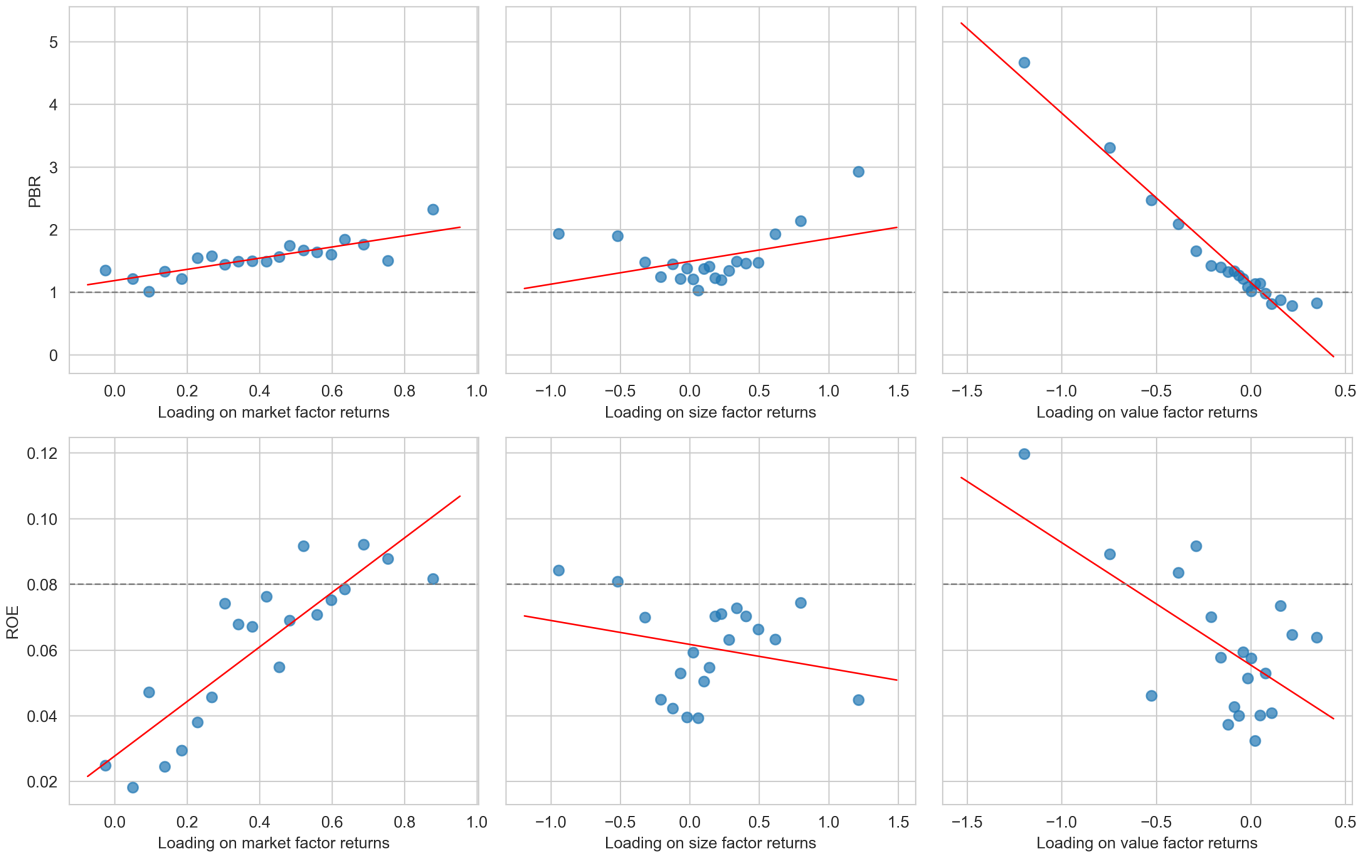
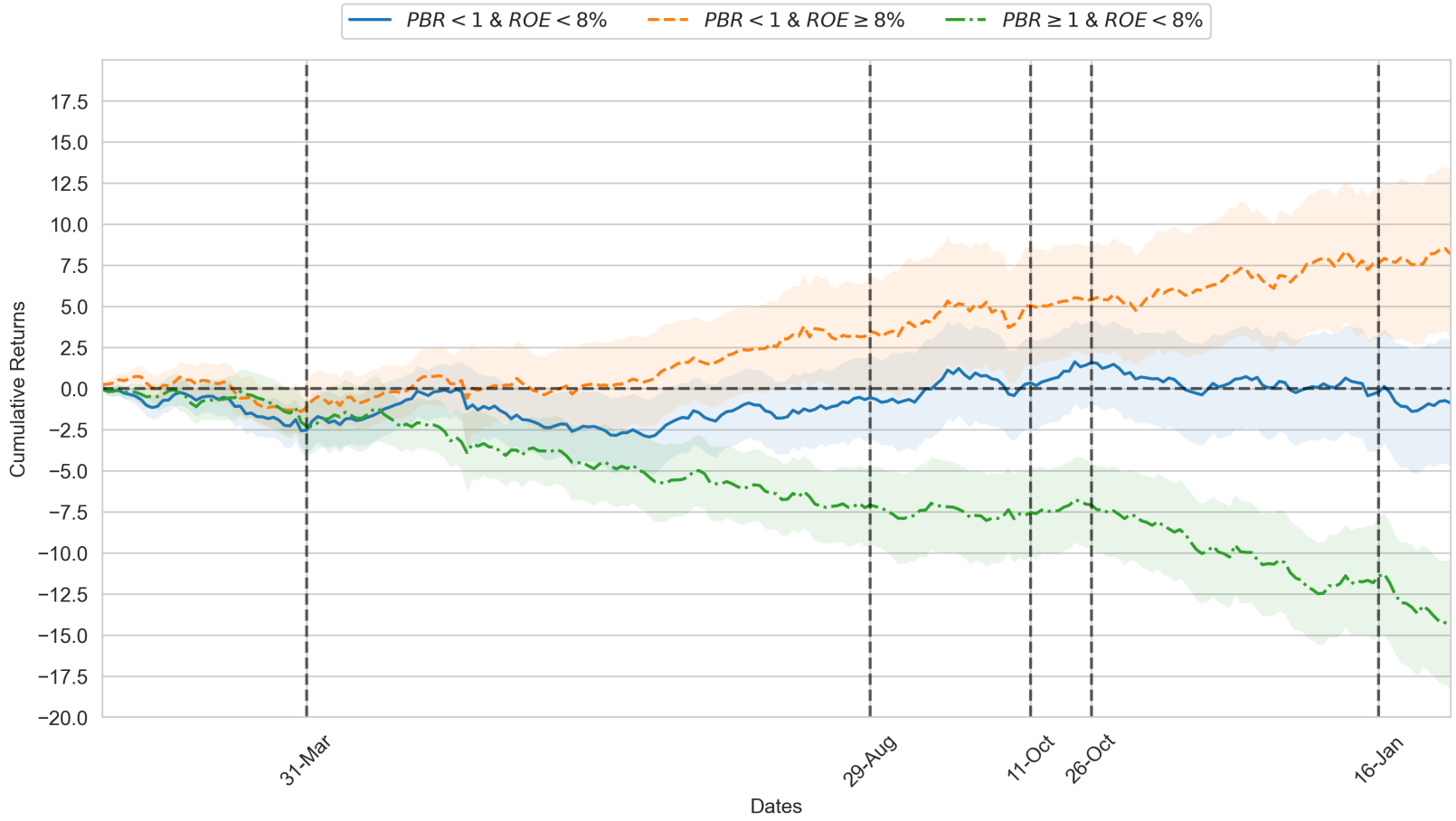


Figure 2: Binned scatter plots of Fama-French factor returns against PBR and ROE



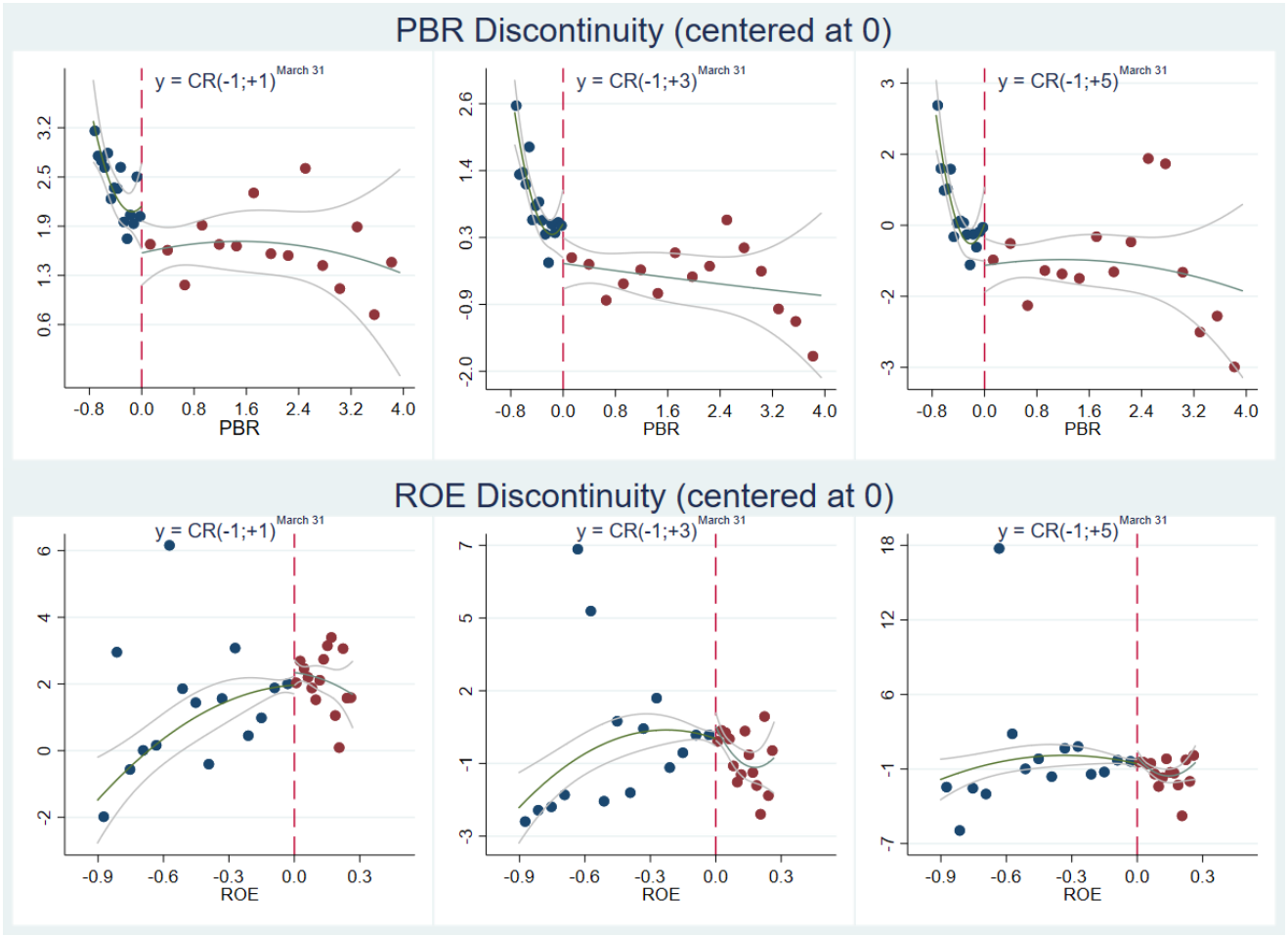
This graph displays the binned scatter plots of loadings (from left to right) on Fama-French market, size, and value factors (Fama and French, 1993) returns against PBR (top panel) and ROE (bottom panel). The factor loadings are calculated by regressing firms' daily excess returns on the daily market excess returns, size, and value factor returns from February 17, 2022, to February 28, 2023. The horizontal gray line indicates the threshold values of $PBR = 1$ and $ROE = 8\%$, respectively.

Figure 3: Cumulative Returns for buckets of firms with PBR<≥ 1 and ROE<≥8%



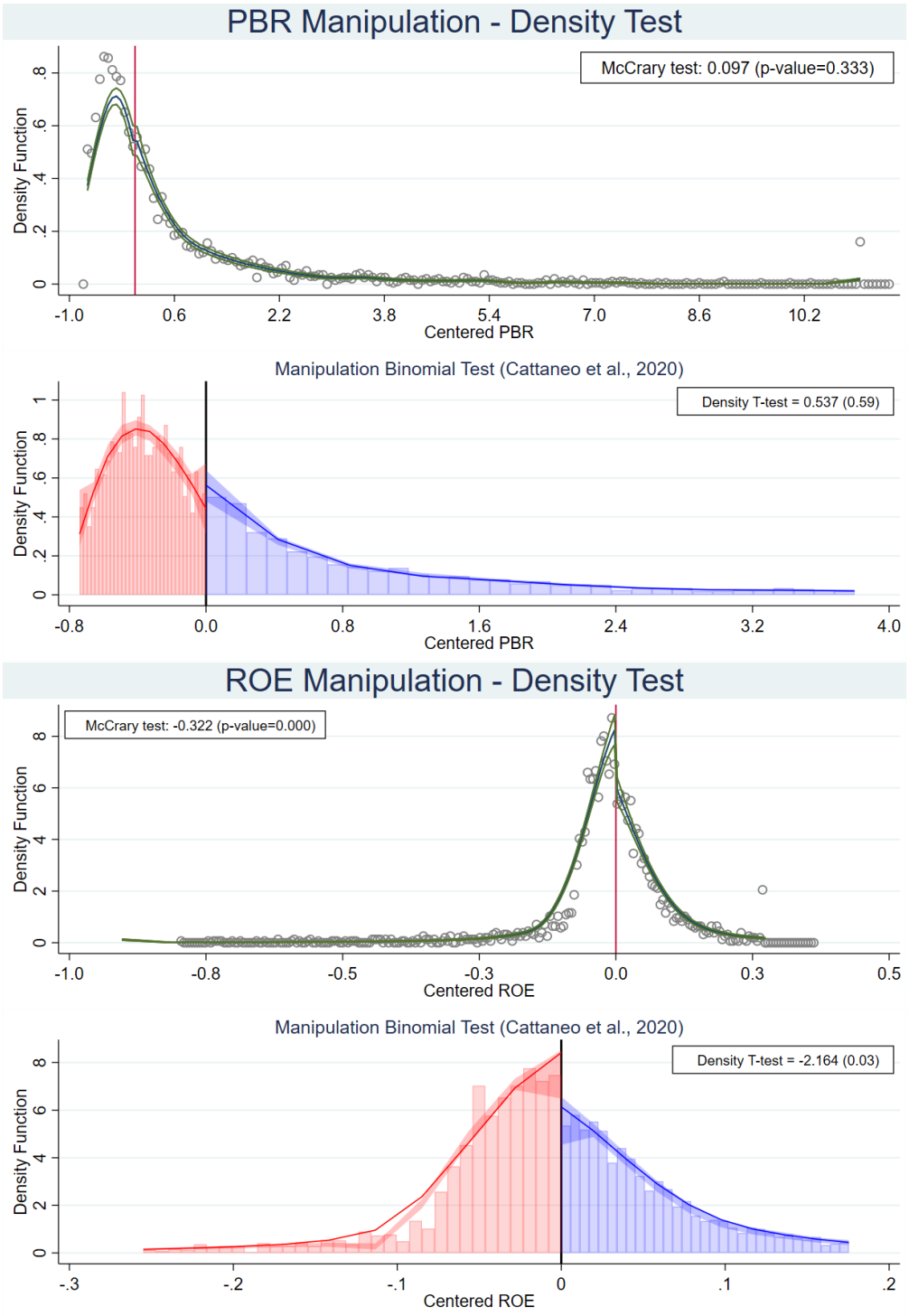
This graph shows the evolution of the coefficients on three different firms' buckets in regressions with the cumulative stock returns (in percentage points) for Japanese firms from February 6, 2023, to February 2, 2024, as the dependent variable. The figure also displays 90% confidence intervals for all buckets. The buckets represent three dummies used as regressors. $PBR < 1 \& ROE < 8\%$ is a dummy counting 1 for firms with $PBR < 1$ and $ROE < 8\%$. $PBR < 1 \& ROE \geq 8\%$ is a dummy counting 1 for firms with $PBR < 1$ and $ROE \geq 8\%$. $PBR \geq 1 \& ROE < 8\%$ is a dummy counting 1 for firms with $PBR \geq 1$ and $ROE < 8\%$. We also include the full set of controls and industry-fixed effects. The vertical lines represent the potential event dates considered in the analysis.

Figure 4: PBR and ROE Discontinuity Effect on Cumulative Returns



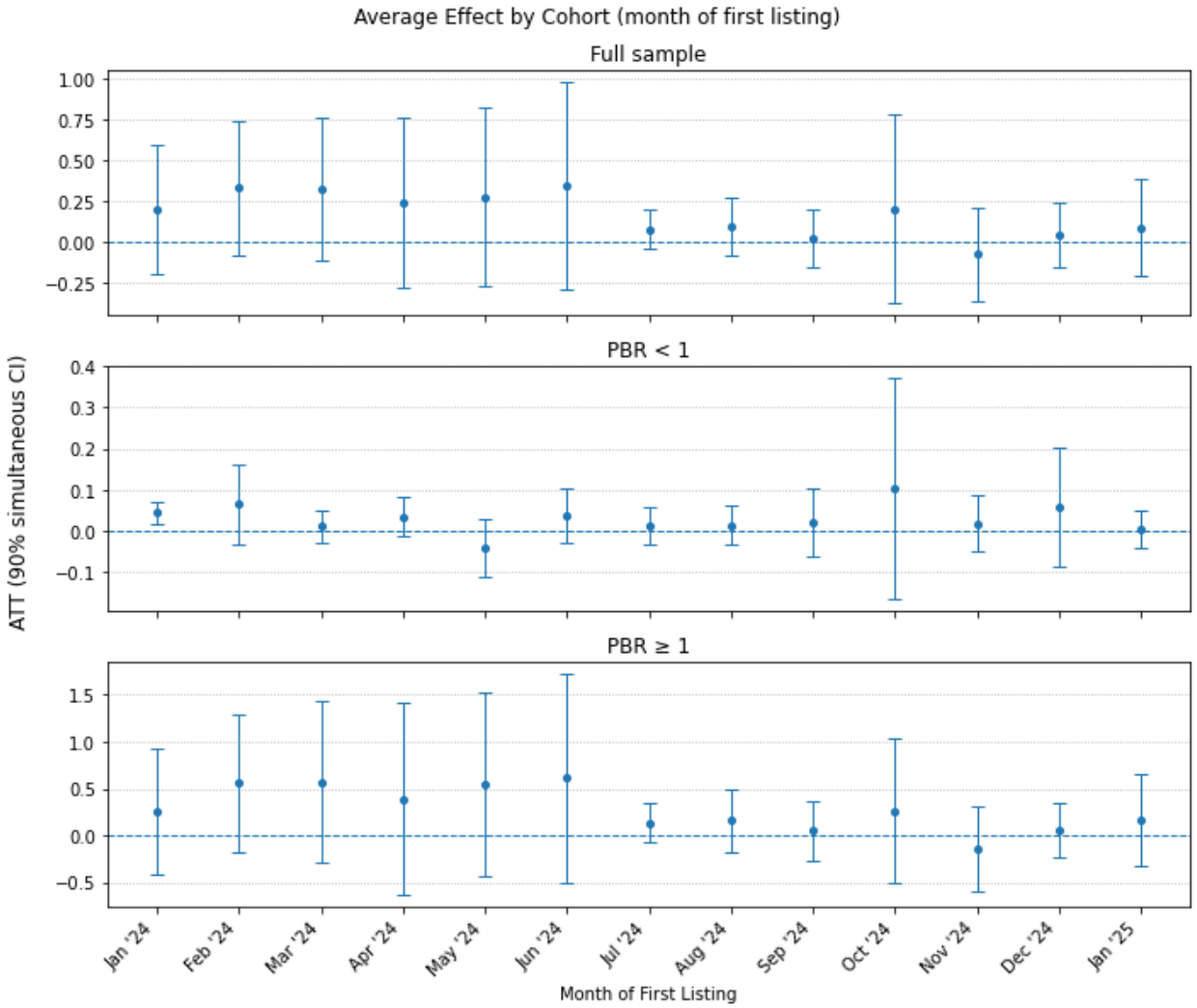
This figure illustrates local second-order polynomial regressions of cumulative raw returns based on firms' PBR and ROE. To center their distributions around zero, we subtract 1 from all PBR values and 0.08 from all ROE values. The top panels show the relationship between cumulative returns and PBR for three event windows on March 31, 2023: (–1, +1), (–1, +3), and (–1, +5). The bottom panels display similar plots for ROE. The fitted curves are estimated separately on each side of the cut-off, with 90% confidence intervals. For clarity, PBR and ROE observations are grouped into 15 bins on each side of the cut-off.

Figure 5: PBR and ROE Density Test



The figure illustrates the density tests performed for PBR and ROE. The upper panel displays the McCrary (2008) density test alongside the proposed density test by Cattaneo et al. (2020) on PBR values. The lower panel replicates these tests on ROE values. Additionally, 90% confidence intervals are included, and the box presents the results of the density tests along with their corresponding p-values for each plot in the figure.

Figure 6: PBR and ROE Discontinuity Effect on Cumulative Returns



This figure illustrates cohort-specific average treatment effects on monthly price-to-book ratios estimated using the Callaway and Sant'Anna (2021) difference-in-differences framework and the doubly-robust estimation method. We group the average treatment on treated by group to compute average treatment effects for each group across different time periods. Cohorts are defined by the month in which firms first appear on the TSE list. We allow for one period of anticipation, since information disclosed in each list update is not fully new. Firms submit their disclosure documents by the end of the previous month, potentially enabling investors to anticipate the upcoming list release and incorporate its implications into prices. Panel (a) displays the results for the full sample. Panel (b) restricts the analysis to firms with a PBR<1 before the TSE initiative. Panel (c) displays the results for high-PBR firms. As a control group, we use both never-treated firms and those that have not yet participated in the treatment at time t.

Table 1: Descriptive Statistics

The table summarizes returns data. Stock returns are reported in percentage points. $CR(-1,+1)$ measures the three-day raw stock returns spanning one day before and one day after the event date. $CR(-1,+3)$ captures the five-day stock returns, including one day before and three days following the event date. $CR(-1,+5)$ reflects the seven-day stock returns, covering one day before and five days after the event date. We estimate each stock's factor loadings by regressing daily excess returns on market excess returns ($Beta^{MKT}$), size ($Loading^{Size}$), and value ($Loading^{Value}$) factors from February 17, 2022, to February 28, 2023. PBR is the Price-to-Book Ratio expressed in absolute terms. ($1\{PBR < 1\}$) is a dummy variable counting 1 for firms with the Price-to-Book Ratio below 1x. ROE is the ratio expressed in absolute values, while ($1\{ROE \geq 8\%\}$) is a dummy counting 1 for firms with ROE equal to or greater than 8%. *Size* is determined as the natural logarithm of the firm's market capitalization. *Cash* represents cash and short-term investments divided by total assets. *Leverage* is determined as the sum of long-term debt plus debt in current liabilities divided by total assets. *Sales Growth* is determined as the percentage change in corporate annual revenues. $ForeignOwnership$ measures the percentage of corporate foreign investors. $Cross-Shareholdings$ measures the percentage of cross-shareholdings in a company. $Ownership^{Banks}$ measures the percentage of firms' ownership by banks, while $Ownership^{Stable}$ is the percentage of stable ownership. All continuous explanatory variables are winsorized at the 1st and 99th percentiles.

Variable	N	Mean	Std	Min	25%	50%	75%	Max
Panel A: Cumulative Stock Returns (-1;+1)								
$CR_{March31}$	3,169	2.003	3.967	-25.0	0.325	1.704	3.296	73.284
$CR_{August29}$	3,169	1.579	3.069	-23.589	0.283	1.356	2.568	70.270
$CR_{October11}$	3,169	1.368	3.726	-31.835	-0.294	0.943	2.727	53.815
$CR_{October26}$	3,169	0.865	2.912	-30.380	-0.292	0.807	2.109	29.730
$CR_{January16}$	3,169	-0.270	4.067	-61.129	-1.659	-0.313	0.866	56.466
Panel B: Cumulative Stock Returns (-1;+3)								
$CR_{March31}$	3,169	0.282	4.215	-25.0	-1.667	0.100	1.731	84.657
$CR_{August29}$	3,169	2.772	3.940	-26.369	0.835	2.411	4.197	83.784
$CR_{October11}$	3,169	-1.345	5.389	-42.050	-3.123	-1.160	0.484	114.995
$CR_{October26}$	3,169	0.576	4.026	-34.177	-1.058	0.558	2.379	31.268
$CR_{January16}$	3,169	0.193	4.694	-59.355	-1.613	-0.0	1.620	51.831
Panel C: Cumulative Stock Returns (-1;+5)								
$CR_{March31}$	3,169	-0.312	5.393	-25.0	-2.680	-0.491	1.383	92.893
$CR_{August29}$	3,169	3.950	4.906	-30.262	1.330	3.432	5.849	74.314
$CR_{October11}$	3,169	-0.228	5.812	-37.446	-2.281	-0.288	1.498	114.995
$CR_{October26}$	3,169	1.857	4.866	-32.392	-0.342	1.454	3.818	59.718
$CR_{January16}$	3,169	1.252	5.094	-64.032	-0.736	0.735	2.837	55.676
Panel D: Factor Loadings								
$Beta^{MKT}$	3,169	0.398	0.241	-0.075	0.207	0.399	0.579	0.953
$Loading^{Size}$	3,169	0.134	0.463	-1.190	-0.094	0.123	0.367	1.490
$Loading^{Value}$	3,169	-0.143	0.351	-1.531	-0.249	-0.052	0.063	0.437
Panel E: Firm-Level & Corporate Governance-Level Characteristics								
PBR	3,169	1.541	1.772	0.260	0.611	0.960	1.673	12.026
$1\{PBR < 1\}$)	3,169	0.52	0.5	0.0	0.0	1.0	1.0	1.0
ROE	3,169	0.061	0.139	-0.824	0.033	0.070	0.114	0.348
$1\{ROE \geq 8\%\}$)	3,169	0.426	0.495	0.0	0.0	0.0	1.0	1.0
Size	3,169	10.244	1.786	7.247	8.857	10.040	11.378	15.153
Leverage	3,169	0.453	0.192	0.097	0.303	0.446	0.591	0.921
Cash	3,169	0.231	0.162	0.016	0.107	0.193	0.316	0.745
Sales Growth	3,169	10.581	17.296	-39.712	1.998	8.506	16.948	86.814
$Cross-Shareholdings$	3,100	6.489	8.705	0.0	0.0	2.600	10.100	37.100
$Ownership^{Banks}$	3,100	3.181	3.955	0.0	0.0	1.600	5.100	16.700
$Ownership^{Stable}$	3,100	38.515	18.188	1.800	24.900	38.900	52.225	78.300
$Foreign$	3,099	12.146	12.612	0.060	1.947	7.584	19.021	55.138

Table 2: Cross-sectional Regressions of CR (–1;+1) on $1\{PBR < 1\}$ and $1\{ROE >= 8\%\}$

This table summarizes the results for the cross-sectional regressions on cumulative stock returns for different event dates. $CR(-1,+1)$ measures the three-day stock returns with one day of leakage and one day after the event date. The main explanatory variables consist of a dummy variable ($1\{PBR < 1\}$), counting 1 for firms with the Price-to-Book Ratio below the unit, and a dummy variable ($1\{ROE \geq 8\%\}$), counting 1 for firms with ROE equal to or greater than 8%. *Size* is determined as the natural logarithm of the firm's market capitalization. *Cash* represents cash and short-term investments divided by total assets. *Leverage* is determined as the sum of long-term debt plus debt in current liabilities divided by total assets. *Sales Growth* is determined as the percentage change in corporate annual revenues. $Beta^{MKT}$, $Loading^{Size}$, and $Loading^{Value}$ by regressing daily stock excess returns on market excess returns, as well as the size and value factor returns (Fama and French, 1993) from February 17, 2022, to February 28, 2023. All continuous explanatory variables are winsorized at the 1st and 99th percentiles and then standardized to have a mean of zero and a variance of one. The robust standard errors are reported below the coefficient estimates.*; **; *** correspond to the 10%, 5%, and 1% significant level, respectively.

Dependent Variable	**CR(–1;+1)**				
Event Date	March 31	August 29	October 11	October 26	January 16
$1\{PBR < 1\}$	0.852***	0.053	0.321*	0.314**	0.432**
	(0.193)	(0.155)	(0.187)	(0.125)	(0.208)
$1\{ROE \geq 8\%\}$	0.697***	0.032	0.234	0.150	0.098
	(0.163)	(0.132)	(0.152)	(0.112)	(0.169)
Size	0.012	0.085	0.271***	0.080	-0.070
	(0.093)	(0.077)	(0.099)	(0.072)	(0.104)
Cash	-0.036	0.091	-0.043	0.014	0.065
	(0.094)	(0.094)	(0.110)	(0.072)	(0.110)
Leverage	0.131	0.154*	0.035	0.104*	0.198**
	(0.087)	(0.080)	(0.090)	(0.058)	(0.092)
SalesGrowth	0.057	0.033	0.145	-0.088	0.077
	(0.084)	(0.080)	(0.094)	(0.060)	(0.116)
$Beta^{MKT}$	0.398***	0.340***	0.484***	0.167**	-0.234**
	(0.120)	(0.075)	(0.103)	(0.070)	(0.098)
$FactorLoading^{Size}$	0.182*	-0.072	-0.320***	-0.030	-0.061
	(0.096)	(0.069)	(0.110)	(0.067)	(0.105)
$FactorLoading^{Value}$	0.010	-0.137*	-0.142	0.451***	0.842***
	(0.082)	(0.073)	(0.087)	(0.078)	(0.115)
Constant	0.018	0.801	-0.556	0.747	-1.708***
	(0.844)	(1.271)	(0.875)	(0.561)	(0.564)
Industry FE	Yes	Yes	Yes	Yes	Yes
Observations	3,169	3,169	3,169	3,169	3,169
Adjusted R^2	0.066	0.039	0.097	0.075	0.060
F Statistic	11.265***	5.636***	13.625***	8.615***	5.872***

Table 3: Cross-sectional Regressions of Cumulative Returns with Asymmetric Event Windows on $1\{PBR < 1\}$ and $1\{ROE \geq 8\%\}$

This table summarizes the results for the cross-sectional regressions on cumulative stock returns for different event dates. $CR(-1,+3)$ measures the five-day stock returns with one day of leakage and three days after the event date. $CR(-1,+5)$ measures the seven-day stock returns with one day of leakage and five days after the event date. The main explanatory variables consist of a dummy variable ($1\{PBR < 1\}$), counting 1 for firms with the Price-to-Book Ratio below the unit, and a dummy variable ($1\{ROE \geq 8\%\}$), counting 1 for firms with ROE equal to or greater than 8%. The coefficient for *Size*, *Cash*, *Leverage*, *Sales Growth*, $Beta^{MKT}$, $Loading^{Size}$, and $Loading^{Value}$ are not shown to save space. All continuous explanatory variables are winsorized at the 1st and 99th percentiles and then standardized to have a mean of zero and a variance of one. The robust standard errors are reported below the coefficient estimates.*; **; *** correspond to the 10%, 5%, and 1% significant level, respectively.

Dependent Variable	**CR(−1;+3)**				
Event Date	March 31	August 29	October 11	October 26	January 16
$1\{PBR < 1\}$	0.717***	0.121	0.475	0.355**	0.539**
	(0.215)	(0.187)	(0.295)	(0.178)	(0.241)
$1\{ROE \geq 8\%\}$	0.480***	0.128	0.306	0.371**	0.717***
	(0.182)	(0.164)	(0.203)	(0.157)	(0.198)
Controls and FE	Yes	Yes	Yes	Yes	Yes
Observations	3,169	3,169	3,169	3,169	3,169
Adjusted R^2	0.060	0.047	0.062	0.067	0.050
Dependent Variable	**CR(−1;+5)**				
Event Date	March 31	August 29	October 11	October 26	January 16
$1\{PBR < 1\}$	0.515*	0.260	0.544*	0.361*	0.684**
	(0.270)	(0.244)	(0.304)	(0.207)	(0.269)
$1\{ROE \geq 8\%\}$	0.488**	0.161	0.250	0.331*	0.986***
	(0.234)	(0.192)	(0.225)	(0.184)	(0.225)
Controls and FE	Yes	Yes	Yes	Yes	Yes
Observations	3,169	3,169	3,169	3,169	3,169
Adjusted R^2	0.046	0.064	0.039	0.049	0.029

Table 4: Cross-sectional Regressions Controlling for Different Groups of Firms

This table summarizes the results for the cross-sectional regressions of cumulative stock returns for different event dates. $CR(-1,+1)$ measures the three-day stock returns with one day of leakage and one day after the event date. $CR(-1,+3)$ measures the five-day stock returns with one day of leakage and three days after the event date. $CR(-1,+5)$ measures the seven-day stock returns with one day of leakage and five days after the event date. $PBR < 1 \& ROE < 8\%$ is a dummy counting 1 for firms with $PBR < 1$ and $ROE < 8\%$. $PBR < 1 \& ROE \geq 8\%$ is a dummy counting 1 for firms with $PBR < 1$ and $ROE \geq 8\%$. $PBR \geq 1 \& ROE < 8\%$ is a dummy counting 1 for firms with $PBR \geq 1$ and $ROE < 8\%$. The coefficients for *Size*, *Cash*, *Leverage*, *Sales Growth*, $Beta^{MKT}$, $Loading^{Size}$, and $Loading^{Value}$ are not shown to save space. The analysis includes industry-fixed effects. All continuous explanatory variables are winsorized at the 1st and 99th percentiles and then standardized to have a mean of zero and a variance of one. The robust standard errors are reported below the coefficient estimates.*; **; *** correspond to the 10%, 5%, and 1% significant level, respectively.

Dependent Variable	**CR(−1;+1)**				
Event Date	March 31	August 29	October 11	October 26	January 16
$PBR < 1$ & $ROE < 8$	0.141	0.031	0.087	0.129	0.330
	(0.247)	(0.137)	(0.208)	(0.161)	(0.221)
$PBR < 1$ & $ROE \geq 8$	0.699***	0.157	0.322	-0.046	0.386
	(0.247)	(0.186)	(0.206)	(0.168)	(0.244)
$PBR \geq 1$ & $ROE < 8$	-0.826***	0.055	-0.233	-0.453***	-0.136
	(0.245)	(0.191)	(0.227)	(0.160)	(0.280)
Adjusted R^2	0.066	0.039	0.096	0.078	0.059
Dependent Variable	**CR(−1;+3)**				
Event Date	March 31	August 29	October 11	October 26	January 16
$PBR < 1$ & $ROE < 8\%$	0.241	-0.006	0.150	-0.064	-0.194
	(0.286)	(0.193)	(0.308)	(0.223)	(0.261)
$PBR < 1$ & $ROE \geq 8\%$	0.752**	0.131	0.278	-0.142	0.377
	(0.293)	(0.242)	(0.306)	(0.248)	(0.305)
$PBR \geq 1$ & $ROE < 8\%$	-0.451*	-0.119	-0.471	-0.787***	-0.854***
	(0.256)	(0.238)	(0.301)	(0.226)	(0.320)
Adjusted R^2	0.059	0.047	0.062	0.069	0.050
Dependent Variable	**CR(−1;+5)**				
Event Date	March 31	August 29	October 11	October 26	January 16
$PBR < 1$ & $ROE < 8$	0.043	0.095	0.276	-0.016	-0.325
	(0.318)	(0.277)	(0.313)	(0.248)	(0.312)
$PBR < 1$ & $ROE \geq 8\%$	0.675**	0.218	0.354	-0.114	0.446
	(0.339)	(0.326)	(0.326)	(0.299)	(0.355)
$PBR \geq 1$ & $ROE < 8$	-0.353	-0.197	-0.409	-0.729***	-1.186***
	(0.341)	(0.289)	(0.338)	(0.260)	(0.357)
Adjusted R^2	0.046	0.063	0.038	0.050	0.029
Controls and FE	Yes	Yes	Yes	Yes	Yes
Observations	3,169	3,169	3,169	3,169	3,169

Table 5: Cross-sectional Regressions of Cumulative Returns on Higher–Order Terms of PBR and ROE

This table summarizes the results for the cross-sectional regressions of cumulative stock returns for the event windows $CR(-1,+1)$. We employ PBR and ROE and their higher–order terms as key explanatory variables. The coefficients for *Size*, *Cash*, *Leverage*, *Sales Growth*, $Beta^{MKT}$, $Loading^{Size}$, and $Loading^{Value}$ are not shown to save space. The analysis includes industry-fixed effects. All continuous explanatory variables are winsorized at the 1st and 99th percentiles and then standardized to have a mean of zero and a variance of one. The robust standard errors are reported below the coefficient estimates.*; **; *** correspond to the 10%, 5%, and 1% significant level, respectively.

Dependent Variable	**CR(−1;+1)**				
Event Date	March 31	August 29	October 11	October 26	January 16
PBR	-0.749**	-0.053	-0.654**	-0.682***	-0.502*
	(0.337)	(0.233)	(0.293)	(0.185)	(0.286)
PBR^2	0.420**	0.048	0.008	0.108	0.375*
	(0.188)	(0.133)	(0.167)	(0.117)	(0.193)
PBR^3	-0.056**	-0.004	0.016	0.007	-0.055*
	(0.025)	(0.019)	(0.023)	(0.017)	(0.029)
ROE	0.261	0.053	0.346***	0.152	0.047
	(0.173)	(0.115)	(0.132)	(0.121)	(0.174)
ROE^2	0.060	-0.112	0.067	0.014	-0.186*
	(0.114)	(0.068)	(0.086)	(0.071)	(0.096)
ROE^3	0.013	-0.022**	0.001	0.001	-0.017
	(0.020)	(0.011)	(0.014)	(0.013)	(0.019)
Controls and FE	Yes	Yes	Yes	Yes	Yes
Observations	3,169	3,169	3,169	3,169	3,169
Adjusted R^2	0.068	0.041	0.102	0.083	0.072

Table 6: Treatment Switching and Time-Varying Endogenous Treatment Effects around Policy Announcements

This table reports cross-sectional regressions of cumulative returns ($CR(-1,+1)$) around the events associated with the TSE reform. $Panel(a)$ examines whether market reactions are driven by dynamic or endogenous reclassification into treatment by distinguishing between firms that consistently exhibited a price-to-book ratio (PBR) below 1x from the pre-policy period through to the event immediately before that under examination ($Cohort^{PBR<1}$) and firms that crossed the $PBR < 1$ threshold only in the month immediately preceding each event ($Switchers$). $Panel(b)$ addresses potential endogeneity in treatment assignment by estimating a time-varying endogenous treatment effects model in which the treatment indicator $1\{PBR < 1\}$ is defined based on the firm's PBR measured in the last month before the event and is modeled jointly with equation (1). In the treatment equation, we include the ($1\{ROE \geq 8\%\}$) dummy variable and $Cohort^{PBR<1}$. The dummy variable ($1\{ROE \geq 8\%\}$) counts 1 for firms with ROE equal to or greater than 8%. The coefficients for *Size*, *Cash*, *Leverage*,*Sales Growth*, $Beta^{MKT}$, and factor loadings are not shown to save space. The analysis includes industry-fixed effects. All continuous explanatory variables are winsorized at the 1st and 99th percentiles and then standardized to have zero mean and unit variance. The robust standard errors are reported below the coefficient estimates.*; **; *** correspond to the 10%, 5%, and 1% significant level, respectively.

Panel (a) Dependent Variable	**CR(−1;+1)**				
Event Date	March 31	August 29	October 11	October 26	January 16
$1\{PBR < 1\}^{March}$	0.973***				
	(0.177)				
$Switchers^{August}$		-0.247			
		(0.238)			
$Switchers^{October}$			0.112	0.032	
			(0.292)	(0.260)	
$Switchers^{January}$					-0.637**
					(0.324)
$Cohort^{PBR<1}$		0.086	0.269	0.477***	0.356*
		(0.163)	(0.187)	(0.128)	(0.205)
$1\{ROE >= 8\%\}$	0.707***	0.056	0.243	0.217*	0.084
	(0.178)	(0.132)	(0.154)	(0.113)	(0.170)
Constant	0.730	0.966	-0.901	1.054**	-1.558**
	(0.460)	(1.553)	(1.040)	(0.503)	(0.663)
Controls and FE	Yes	Yes	Yes	Yes	Yes
Observations	3,086	3,084	3,084	3,084	3,084
Adjusted R^2	0.066	0.040	0.096	0.077	0.062
F Statistic	10.484***	5.543***	12.794***	8.451***	5.909***
Panel (b) Dependent Variable		**CR(−1;+1)**			
Event Date		August 29	October 11	October 26	January 16
$1\{PBR < 1\}^{Treatment}$		0.097	0.304	0.549***	0.408*
		(0.184)	(0.203)	(0.140)	(0.215)
$1\{ROE >= 8\%\}$		0.063	0.247	0.228**	0.110
		(0.138)	(0.153)	(0.112)	(0.169)
Controls and FE		Yes	Yes	Yes	Yes
Observations		3,084	3,084	3,084	3,084
Wald test (main model)		217.99***	515.08***	343.61***	233.47***
Wald test (ρ=0)		0.60	0.01	0.17	8.31***
$Prob > \chi^2$		0.438	0.931	0.683	0.004

Table 7: Cross-sectional Regressions of Cumulative Returns on the Interaction with Ownership Characteristics

This table summarizes the results for the cross-sectional regressions of cumulative stock returns. $CR(-1,+3)$ measures the cumulative five-day stock returns with one day of leakage and three days after the event date. *Cross* measures the percentage of cross-shareholdings in a company. Own^{Banks} measures the percentage of ownership by banks. Own^{Stable} measures the percentage ownership stake held by stable investors. Other control variables, such as *Size*, *Cash*, *Leverage*,*Sales Growth*, $Beta^{MKT}$, and *Size* and *Value* factor loadings, are included in the analysis. The analysis includes industry-fixed effects. All continuous explanatory variables are winsorized at the 1st and 99th percentiles and then standardized to have zero mean and unit variance. The robust standard errors are reported below the coefficient estimates.*; **; *** correspond to the 10%, 5%, and 1% significant level, respectively.

Panel: (a)	***Cross-Shareholdings***			***Ownership by Banks***			***Stable Owners' Equity Stake***		
Dependent Variable	**CR(−1;+3)**			**CR(−1;+3)**			**CR(−1;+3)**		
Event Date	March 31	October 26	January 16	March 31	October 26	January 16	March 31	October 26	January 16
$1\{PBR<1\}$	0.761***	0.291	0.456*	0.759***	0.296	0.489**	0.732***	0.349*	0.527**
	(0.205)	(0.186)	(0.235)	(0.210)	(0.182)	(0.239)	(0.218)	(0.180)	(0.241)
$1\{ROE\geq 8\}$	0.494***	0.374**	0.706***	0.499***	0.359**	0.704***	0.494***	0.357**	0.707***
	(0.183)	(0.157)	(0.195)	(0.181)	(0.156)	(0.196)	(0.179)	(0.158)	(0.198)
CrossShareholdings	-0.078	0.158	0.350						
	(0.180)	(0.214)	(0.215)						
$1\{PBR<1\}\times Cross$	0.006	0.111	-0.272						
	(0.181)	(0.210)	(0.211)						
$1\{ROE\geq 8\%\}\times Cross$	0.008	-0.097	-0.122						
	(0.182)	(0.148)	(0.174)						
Own^{Banks}				-0.085	0.172	0.292			
				(0.154)	(0.177)	(0.211)			
$\{PBR<1\}\times Own^{Banks}$				-0.006	0.155	-0.282			
				(0.154)	(0.174)	(0.201)			
$\{ROE\geq 8\%\}\times Own^{Banks}$				0.058	-0.275**	-0.110			
				(0.148)	(0.140)	(0.166)			
Own^{Stable}							-0.114	0.021	0.275
							(0.163)	(0.146)	(0.257)
$1\{PBR<1\}\times Own^{Stable}$							0.146	0.077	-0.268
							(0.172)	(0.159)	(0.224)
$1\{PBR<1\}\times Own^{Stable}$							0.161	0.070	-0.287
							(0.180)	(0.157)	(0.233)
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	3,100	3,100	3,100	3,100	3,100	3,100	3,100	3,100	3,100
Adjusted R^2	0.057	0.069	0.049	0.057	0.069	0.049	0.057	0.067	0.049

Table 8: Cross-sectional Regressions of Cumulative Returns on the Interaction with Foreign Investors

This table summarizes the results of cross-sectional regressions of cumulative stock returns across different event windows. $CR(-1,+1)$, $CR(-1,+3)$ and $CR(-1,+5)$ measure the cumulative returns. The key explanatory variables are the interaction terms between $1\{PBR < 1\}$ and $1\{ROE \geq 8\%\}$ with *Foreign* (% of foreign investors) as key explanatory variables. The coefficients for *Size*, *Cash*, *Sales Growth*, $Beta^{MKT}$, $Loading^{Size}$, and $Loading^{Value}$ are not shown to save space. The analysis includes industry-fixed effects. All continuous explanatory variables are winsorized at the 1st and 99th percentiles and then standardized to have zero mean and unit variance. The robust standard errors are reported below the coefficient estimates.*; **; *** correspond to the 10%, 5%, and 1% significant level, respectively.

Dependent Variable	**CR(−1;+1)**			**CR(−1;+3)**			**CR(−1;+5)**		
Event Date	March 31	October 26	January 16	March 31	October 26	January 16	March 31	October 26	January 16
$1\{PBR < 1\}$	0.863***	0.302**	0.459**	0.724***	0.329*	0.573**	0.522**	0.318	0.702***
	(0.189)	(0.124)	(0.202)	(0.211)	(0.180)	(0.236)	(0.266)	(0.211)	(0.265)
$1\{ROE \geq 8\%\}$	0.716***	0.137	0.092	0.505***	0.354**	0.724***	0.525**	0.299	0.987***
	(0.163)	(0.113)	(0.168)	(0.182)	(0.158)	(0.196)	(0.231)	(0.185)	(0.223)
Foreign	0.098	-0.055	-0.481***	0.247*	0.212	-0.412*	0.377*	0.410**	-0.331
	(0.135)	(0.099)	(0.167)	(0.146)	(0.134)	(0.229)	(0.197)	(0.172)	(0.236)
$1\{PBR < 1\}\times$Foreign	0.096	-0.091	0.281*	-0.037	-0.247	0.404*	0.014	-0.543***	0.379*
	(0.147)	(0.106)	(0.168)	(0.164)	(0.151)	(0.207)	(0.204)	(0.198)	(0.225)
$1\{ROE \geq 8\%\}\times$Foreign	-0.168	-0.061	0.148	-0.217	-0.198	0.196	-0.403**	-0.077	0.146
	(0.141)	(0.108)	(0.160)	(0.159)	(0.152)	(0.204)	(0.192)	(0.194)	(0.216)
Controls and FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	3,099	3,099	3,099	3,099	3,099	3,099	3,099	3,099	3,099
Adjusted R^2	0.065	0.074	0.063	0.058	0.067	0.051	0.047	0.051	0.028

Table 9: Cross-Sectional Regressions of Cumulative Returns on Industry-Level Spillover Exposure

This table reports cross-sectional regressions of cumulative returns ($CR(-1,+1)$) around the key events associated with the TSE reform. $\{PBR<1\}$ is the treatment indicator that equals 1 for firms with $PBR<1$. $\overline{\{PBR<1\}_{ic}}$ computes, for each firm, the fraction of low-PBR firms within its industry, excluding the firm itself. The coefficients for ($1\{ROE \geq 8\%\}$), *Size*, *Cash*, *Leverage*,*Sales Growth*, $Beta^{MKT}$, and factor loadings are not shown to save space. All continuous explanatory variables are winsorized at the 1st and 99th percentiles. The standard errors are clustered at the industry level and reported below the coefficient estimates.*; **; *** correspond to the 10%, 5%, and 1% significant level, respectively.

Dependent Variable	**CR(−1;+1)**								
Event Date	March 31			October 26			January 16		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
$\{PBR<1\}$	0.989***	0.829***	0.811***	0.243**	0.178**	0.168*	0.381	0.460*	0.445*
	(0.243)	(0.216)	(0.237)	(0.107)	(0.090)	(0.091)	(0.261)	(0.257)	(0.239)
$\overline{\{PBR<1\}_{ic}}$		1.171			0.472			-0.583	
		(0.777)			(0.350)			(0.497)	
$\overline{\{PBR<1\}_{ic}}\times\{PBR<1\}$			1.903***			0.888**			0.019
			(0.614)			(0.437)			(0.457)
$\overline{\{PBR<1\}_{ic}}\times(1-\{PBR<1\})$			0.505			0.094			-1.131*
			(1.088)			(0.510)			(0.620)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	3,169	3,169	3,169	3,169	3,169	3,169	3,169	3,169	3,169
Adjusted R^2	0.034	0.037	0.038	0.053	0.053	0.054	0.056	0.056	0.057
F Statistic	11.069***	7.725***	7.780***	20.203***	25.342***	20.163***	41.291***	51.676***	36.775***

Table 10: Cross-sectional Regressions of Cumulative Returns on the Interaction between $1\{PBR < 1\}$ and Disclosure Dummies

This table summarizes the results for the cross-sectional regressions of cumulative stock returns. The dependent variables considered are the cumulative returns during different event windows. $CR(-1,+1)$ measures the three-day stock returns on and after the event date, $CAPM(-1;+1)$ displays CAPM-adjusted cumulative abnormal returns, $CAPM(-1;+1)\&FL$ shows those with factor loadings controlled, and $FF(-1;+1)$ presents Fama-French-adjusted cumulative abnormal returns. *Disclosed* is a dummy variable that counts 1 for firms that disclose their plans in their corporate governance reports. *UnderCons* is a dummy variable counting 1 for firms disclosing to construct their plan in the future. *No_Disclosure* is a dummy variable counting 1 for firms with missing information. Other control variables, such as *Size*, *Cash*, *Leverage*, *Sales Growth*, $Beta^{MKT}$, and factor loadings are included in the analysis. The analysis includes industry-fixed effects. All continuous explanatory variables are winsorized at the 1st and 99th percentiles and then standardized. The robust standard errors are reported below the coefficient estimates.*; **; *** correspond to the 10%, 5%, and 1% significant level, respectively.

Dep. Variable	**CR(–1;+1)**			**CAPM(–1;+1)**			**CAPM(–1;+1) & FL**			**FF(–1;+1)**		
Event Date: January 16	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
$\{PBR < 1\}$	0.132	0.436**	0.522**	0.665***	0.863***	0.892***	0.235	0.523**	0.596**	0.301	0.538**	0.589**
	(0.262)	(0.210)	(0.233)	(0.250)	(0.237)	(0.262)	(0.259)	(0.222)	(0.246)	(0.248)	(0.236)	(0.261)
No_Disclosure	-0.463**			-0.473**			-0.483**			-0.447*		
	(0.231)			(0.235)			(0.232)			(0.231)		
$\{PBR < 1\}\times No_Disc$	0.379			0.201			0.349			0.272		
	(0.288)			(0.283)			(0.289)			(0.280)		
UnderConsideration		0.622			0.660			0.613			0.624	
		(0.464)			(0.464)			(0.449)			(0.450)	
$\{PBR < 1\}\times UnderCons$		-0.206			-0.211			-0.209			-0.226	
		(0.581)			(0.566)			(0.557)			(0.556)	
Disclosed			0.320			0.316			0.348			0.299
			(0.229)			(0.233)			(0.232)			(0.230)
$\{PBR < 1\}\times Disclosed$			-0.432			-0.226			-0.396			-0.296
			(0.282)			(0.278)			(0.286)			(0.276)
$\{ROE \geq 8\%\}$	0.090	0.104	0.089	0.099	0.112	0.097	0.146	0.160	0.145	0.141	0.154	0.140
	(0.169)	(0.169)	(0.168)	(0.167)	(0.167)	(0.166)	(0.169)	(0.169)	(0.168)	(0.166)	(0.167)	(0.166)
Controls and FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	3,169	3,169	3,169	3,169	3,169	3,169	3,169	3,169	3,169	3,169	3,169	3,169
Adjusted R^2	0.060	0.060	0.060	0.015	0.015	0.014	0.027	0.027	0.026	0.009	0.009	0.008

Table 11: The Effects of the TSE List Release on Changes in Firm Fundamentals

This table presents cross-sectional regressions of variations in ROE (ΔROE), and in PBR (ΔPBR), changes in stock illiquidity, and analysts' average EPS forecast revisions for the subsequent two fiscal years (FY1 and FY2), scaled by the stock price on March 31, 2023. For EPS forecast revisions, we use the last forecast issued between October 26 and December 31, 2023, and the last forecast issued between January 16 and February 15, 2024. ΔPBR and ΔROE are computed as the difference between current and one-year lagged values for each firm. Current values are retrieved from the most recent firm-level financial data available after April 2024, up to May 2025.Amihud (2002)'s stock illiquidity measure is calculated as the average daily ratio of the absolute value of daily stock returns to the trading volume. $\Delta Illiquidity(\%)$ is calculated using daily returns over the post-TSE list release event window (from January 17, 2024, to February 15, 2024) and the pre-TSE list release event window (from October 27, 2023, to December 29, 2023). As a robustness check, we also compute an alternative measure, $\Delta Illiquidity(\%)^{Long}$, using the same post-event window and a longer pre-event window (from July 1, 2022, to March 30, 2023). ($1\{PBR < 1\}$) equals 1 for firms with the Price-to-Book Ratio below the unit, and ($1\{ROE \geq 8\%\}$) counts 1 for firms with ROE equal or greater than 8%. The coefficients for *Size*, *Cash*, *Leverage*, *Sales Growth*, $Beta^{MKT}$, $Loading^{Size}$, and $Loading^{Value}$ are not shown to save space. The analysis includes industry-fixed effects. All continuous variables are winsorized at the 1st and 99th percentiles to control for extreme values. All continuous explanatory variables are also standardized to have a mean of zero and a variance of one. The robust standard errors are reported below the coefficient estimates.*; **; *** correspond to the 10%, 5%, and 1% significant level, respectively.

Dependent Variable	ΔROE	ΔEPS^{FY1}	ΔEPS^{FY2}	ΔPBR	$\Delta Illiquidity(\%)$	$\Delta Illiquidity(\%)^{Long}$
	(1)	(2)	(3)	(4)	(5)	(6)
$1\{PBR < 1\}$	-0.011*	0.050	-0.018	0.065*	-0.013**	-0.064***
	(0.006)	(0.051)	(0.044)	(0.038)	(0.007)	(0.013)
$1\{ROE >= 8\%\}$	-0.012**	-0.018	-0.021	-0.013	0.004	0.003
	(0.005)	(0.041)	(0.032)	(0.033)	(0.005)	(0.011)
Controls and FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	3,056	1,085	1,062	3,052	3,169	3,169
Adjusted R^2	0.003	0.009	0.044	0.073	0.099	0.239

Supplementary Appendix to

Shocks and Capital Market Responses: The Tokyo Stock Exchange Capital Efficiency Initiative

A Additional Descriptive Statistics

Table A.1: Descriptive Statistics of Alternative Cumulative Abnormal Returns (CARs)

The table summarizes returns data. Stock cumulative abnormal returns are reported in percentage points. CAR indicates cumulative abnormal returns for the following event windows: $(-1;+1)$,$(-1;+3)$, and $(-1;+5)$. We use the one-month T-bill rate from Kenneth French's website as the risk-free rate. For the CAPM-adjusted CAR, daily abnormal returns are calculated as the stock's excess return minus its beta times the market excess return. Market beta is determined by regressing the daily excess returns of the market on its own daily excess returns from February 17, 2022, to February 28, 2023. Similarly, Fama-French-Adjusted returns are calculated as a stock's excess return minus the sum of its factor exposures times factor returns.

Variable	N	Mean	Std	Min	25%	50%	75%	Max
Panel A: Cumulative Abnormal Stock Returns (-1;+1)								
$CAR\ (CAPM-Adj)_{March31}$	3,169	0.840	3.713	-25.957	-0.784	0.586	2.099	60.526
$CAR\ (FF-Adj)_{March31}$	3,169	1.147	3.692	-24.471	-0.457	0.853	2.338	60.602
$CAR\ (CAPM-Adj)_{Aug29}$	3,169	0.625	2.927	-26.559	-0.499	0.453	1.603	58.102
$CAR\ (FF-Adj)_{Aug29}$	3,169	0.768	2.927	-26.448	-0.430	0.574	1.718	58.147
$CAR\ (CAPM-Adj)_{Oct11}$	3,169	0.298	3.547	-36.251	-1.180	0.090	1.613	45.557
$CAR\ (FF-Adj)_{Oct11}$	3,169	0.646	3.536	-35.261	-0.851	0.362	1.880	46.186
$CAR\ (CAPM-Adj)_{Oct26}$	3,169	0.500	2.955	-34.067	-0.652	0.479	1.743	26.713
$CAR\ (FF-Adj)_{Oct26}$	3,169	0.722	2.878	-34.147	-0.435	0.631	1.869	28.181
$CAR\ (CAPM-Adj)_{Jan16}$	3,169	0.657	4.056	-77.213	-0.707	0.517	1.746	49.422
$CAR\ (FF-Adj)_{Jan16}$	3,169	0.937	4.026	-75.947	-0.454	0.696	2.005	50.118
Panel B: Cumulative Abnormal Stock Returns (-1;+3)								
$CAR\ (CAPM-Adj)_{March31}$	3,169	-0.468	4.149	-22.329	-2.473	-0.609	1.121	68.514
$CAR\ (FF-Adj)_{March31}$	3,169	0.011	4.085	-21.812	-2.078	-0.247	1.514	68.730
$CAR\ (CAPM-Adj)_{Aug29}$	3,169	1.142	3.755	-30.791	-0.518	0.833	2.415	67.013
$CAR\ (FF-Adj)_{Aug29}$	3,169	1.460	3.71	-30.537	-0.244	1.050	2.666	67.128
$CAR\ (CAPM-Adj)_{Oct11}$	3,169	-1.276	5.047	-50.952	-3.038	-1.067	0.543	84.717
$CAR\ (FF-Adj)_{Oct11}$	3,169	-0.722	4.959	-49.438	-2.561	-0.684	1.011	85.665
$CAR\ (CAPM-Adj)_{Oct26}$	3,169	0.792	4.025	-39.059	-0.872	0.750	2.610	31.113
$CAR\ (FF-Adj)_{Oct26}$	3,169	0.798	4.009	-39.567	-0.876	0.734	2.560	31.272
$CAR\ (CAPM-Adj)_{Jan16}$	3,169	0.870	4.710	-70.140	-0.898	0.546	2.230	48.541
$CAR\ (FF-Adj)_{Jan16}$	3,169	1.166	4.688	-68.768	-0.639	0.732	2.490	48.572
Panel C: Cumulative Abnormal Stock Returns (-1;+5)								
$CAR\ (CAPM-Adj)_{March31}$	3,169	-0.450	5.039	-21.665	-2.788	-0.593	1.312	72.160
$CAR\ (FF-Adj)_{March31}$	3,169	0.057	5.011	-21.106	-2.314	-0.216	1.685	72.029
$CAR\ (CAPM-Adj)_{Aug29}$	3,169	2.179	4.630	-36.125	-0.036	1.737	3.850	59.857
$CAR\ (FF-Adj)_{Aug29}$	3,169	2.622	4.599	-35.837	0.316	2.095	4.317	60.206
$CAR\ (CAPM-Adj)_{Oct11}$	3,169	-0.454	5.460	-43.398	-2.458	-0.442	1.325	89.421
$CAR\ (FF-Adj)_{Oct11}$	3,169	0.026	5.446	-42.224	-2.024	-0.165	1.701	89.848
$CAR\ (CAPM-Adj)_{Oct26}$	3,169	0.461	4.779	-36.438	-1.547	0.311	2.412	49.571
$CAR\ (FF-Adj)_{Oct26}$	3,169	0.690	4.762	-36.288	-1.380	0.469	2.616	49.695
$CAR\ (CAPM-Adj)_{Jan16}$	3,169	1.434	5.088	-82.350	-0.602	0.912	3.055	47.812
$CAR\ (FF-Adj)_{Jan16}$	3,169	1.664	5.099	-81.293	-0.445	1.064	3.278	49.869

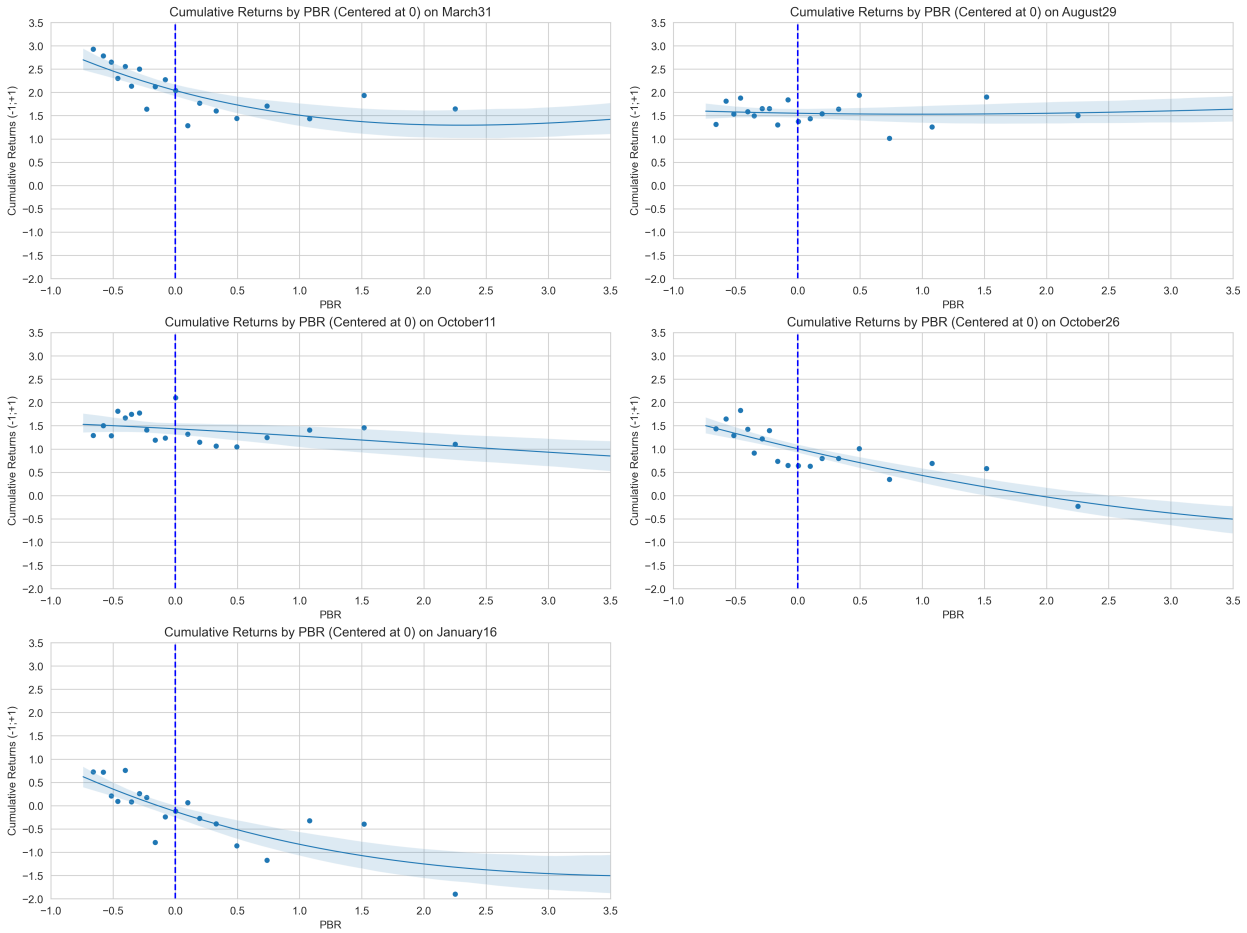
Table A.2: Descriptive Statistics for Additional Variables

The table presents descriptive statistics for the additional variables used to investigate the mechanisms underlying the main results. ΔPBR and ΔROE are computed as the difference between current and one-year lagged values for each firm. Current values are retrieved from the most recent firm-level financial data available after April 2024, up to May 2025. Changes in analysts' average EPS forecast are computed as the difference between the last forecasts issued between January 16 and February 15, 2024, and those issued between October 26 and December 31, 2023, for the subsequent two fiscal years (FY1 and FY2). Changes in analysts' average earnings forecasts are scaled by the stock price on March 31, 2023 and multiplied by 100. Amihud (2002)'s stock illiquidity measure is calculated as the average daily ratio of the absolute value of daily stock returns to the trading volume. $\Delta Illiquidity(\%)$ is calculated using daily returns over the post-TSE list release event window (from January 17, 2024, to February 15, 2024) and the pre-TSE list release event window (from October 27, 2023, to December 29, 2023). $\Delta Illiquidity(\%)^{Long}$ is calculated using the same post-event window and a longer pre-event window (from July 1, 2022, to March 30, 2023). For ease of interpretation, we multiply stock illiquidity measures by 100.

Variable	N	Mean	Std	Min	25%	50%	75%	Max
Panel A: Performance and Valuation Measures								
ΔPBR	3,052	-0.143	0.757	-4.362	-0.217	-0.071	0.049	2.783
ΔROE	3,056	0.001	0.115	-0.521	-0.021	0.001	0.020	0.633
ΔEPS^{FY1}	1,085	-0.004	0.635	-3.664	-0.021	0	0.044	2.152
ΔEPS^{FY2}	1,062	-0.010	0.482	-2.217	-0.046	0	0.033	1.974
Panel B: Stock Illiquidity proxies								
$\Delta Illiquidity(\%)$	3,169	-0.034	0.142	-0.860	-0.016	-0.001	0.000	0.370
$\Delta Illiquidity(\%)^{Long}$	3,169	-0.126	0.356	-2.099	-0.054	-0.006	-0.000	0.281

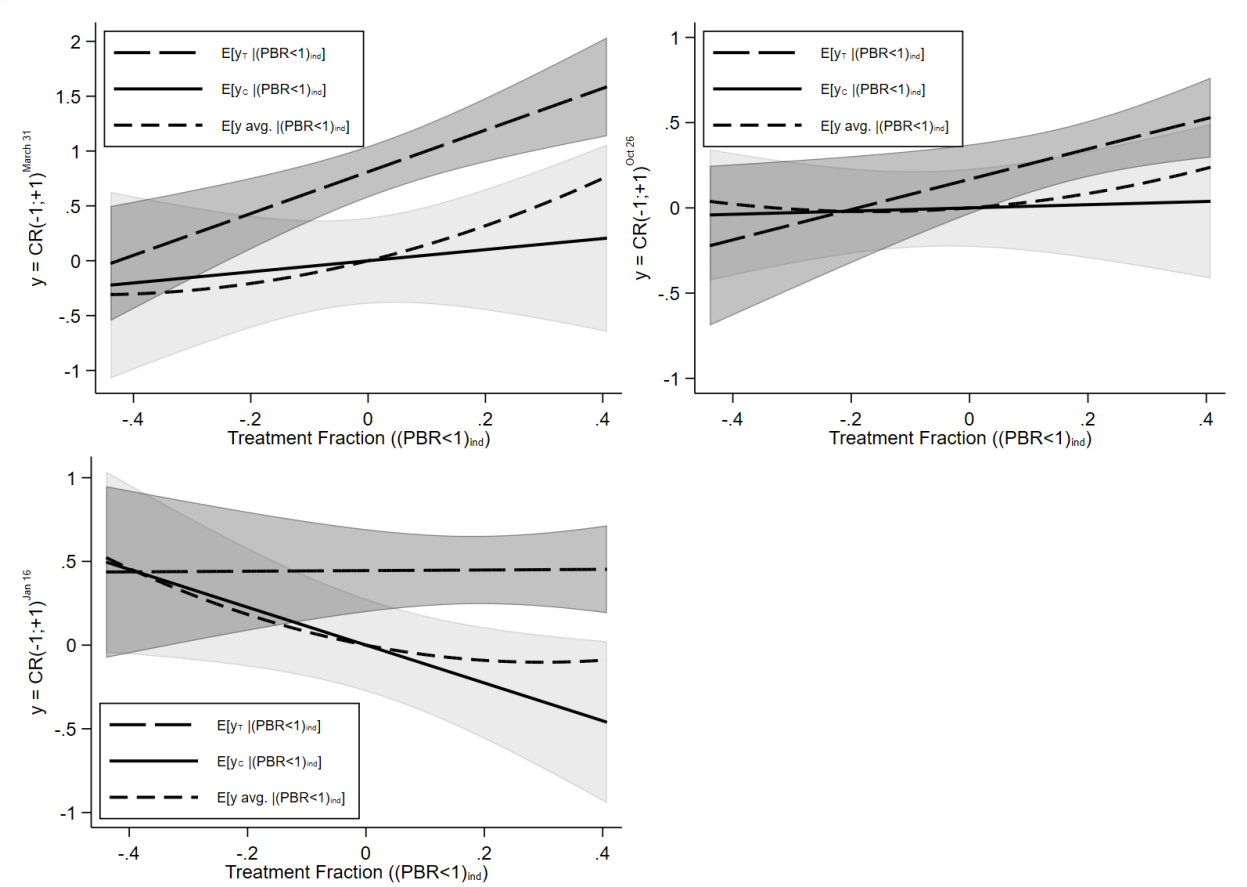
B Additional Results

Figure B.1: Cumulative Returns on PBR higher order terms



This figure plots the cross-sectional regressions of cumulative stock returns for the event windows $CR(-1,+1)$ around the five dates analyzed. We employ PBR and its higher-order terms as key explanatory variables. We subtract 1 from all PBR values to center the distribution to 0. The blue line represents a third-order polynomial regression of cumulative returns on PBR, with 90% confidence intervals. We group PBR observations into 20 bins for ease of representation.

Figure B.2: PBR Spillover Effects at the Industry Level



This figure predicts the cumulative returns ($CR(-1;+1)$) as a function of the industry-level fraction of firms with $PBR < 1$ around the event dates (March 31, October 25, and January 16) with 90% confidence intervals. Predictions are computed using the estimated coefficients reported in Table 9, columns (3), (6), and (9), respectively. Separate expressions are used to trace the response for treated units, controls, and the industry-average effect. For treated units, cumulative returns are given by $E[y_T|(PBR < 1)_{ind}] = \beta_0 + \beta_1 + \beta_T \times \overline{PBR < 1}_{ic}$. For controls, we use the equation $E[y_C|(PBR < 1)_{ind}] = \beta_0 + \beta_C \times \overline{PBR < 1}_{ic}$. The industry-level effect is computed as $E[y_{avg}|(PBR < 1)_{ind}] = \beta_0 + (\beta_1 + \beta_C) \times \overline{PBR < 1}_{ic} + (\beta_T - \beta_C) \times (\overline{PBR < 1}_{ic})^2$. The treatment fraction is centered around the mean. We use the same control variables employed for Table 9.

Table B.1: Cross-sectional Regressions of PBR on the Interaction with Ownership Characteristics

This table summarizes the results for the cross-sectional regressions on the price-to-book-ratio. Among the key explanatory variables, $Cross$ measures the percentage of cross-shareholdings in a company. Own^{Banks} measures the percentage of ownership by banks. Own^{Stable} measures the percentage ownership stake held by stable investors. We also include a dummy variable ($1\{ROE \geq 8\%\}$), counting 1 for firms with ROE equal to or greater than 8%. *Size* is determined as the natural logarithm of the firm's market capitalization. *Cash* represents cash and short-term investments divided by total assets. *Leverage* is determined as the sum of long-term debt plus debt in current liabilities divided by total assets. *Sales Growth* is determined as the percentage change in corporate annual revenues. $Beta^{MKT}$, $Loading^{Size}$, and $Loading^{Value}$ are calculated by regressing one year of excess daily returns (from February 17, 2022, through February 28, 2023) on market excess returns, size, and value factor returns, obtained from Kenneth French's website. The analysis includes industry-fixed effects. All continuous explanatory variables are winsorized at the 1st and 99th percentiles and then standardized to have zero mean and unit variance. The robust standard errors are reported below the coefficient estimates.*; **; *** correspond to the 10%, 5%, and 1% significant level, respectively.

Dependent Variable	**PBR**		
	(1)	(2)	(3)
$Cross - Shareholdings$	-0.064***		
	(0.020)		
$Ownership^{Banks}$		-0.096***	
		(0.019)	
$Ownership^{Stable}$			-0.031
			(0.032)
$1\{ROE \geq 8\%\}$	0.156***	0.155***	0.167***
	(0.053)	(0.053)	(0.053)
Leverage	0.394***	0.392***	0.399***
	(0.046)	(0.046)	(0.046)
Size	0.447***	0.439***	0.439***
	(0.043)	(0.043)	(0.044)
Cash	0.359***	0.353***	0.368***
	(0.044)	(0.044)	(0.044)
Sales Growth	0.223***	0.224***	0.224***
	(0.039)	(0.039)	(0.039)
$Beta^{MKT}$	-0.192***	-0.195***	-0.203***
	(0.036)	(0.035)	(0.036)
$Loadings^{Size}$	0.239***	0.238***	0.245***
	(0.041)	(0.041)	(0.040)
$Loadings^{Value}$	-0.795***	-0.793***	-0.808***
	(0.050)	(0.050)	(0.050)
Constant	1.043	0.992	1.050
	(0.690)	(0.692)	(0.690)
Industry FE	Yes	Yes	Yes
Observations	3,100	3,100	3,100
Adjusted R^2	0.440	0.441	0.439
F Statistic	34.897***	35.129***	32.488***

Table B.2: Cross-sectional Regressions of alternative CAR (–1;+1) on $1\{PBR < 1\}$ and $1\{ROE \geq 8\%\}$

This table summarizes the results for the cross-sectional regressions on alternative cumulative returns during different event windows. Panel (a) displays CAPM-adjusted cumulative abnormal returns, Panel (b) shows those with factor loadings controlled, and Panel (c) presents Fama-French-adjusted cumulative abnormal returns. The main explanatory variables consist of a dummy variable ($1\{PBR < 1\}$), counting 1 for firms with the Price-to-Book Ratio below the unit, and a dummy variable ($1\{ROE \geq 8\%\}$), counting 1 for firms with ROE equal to or greater than 8%. The coefficient for *Size*, *Cash*, *Leverage*, *Sales Growth*, $Beta^{MKT}$, $Loading^{Size}$, and $Loading^{Value}$ are not shown to save space. All continuous explanatory variables are winsorized at the 1st and 99th percentiles and then standardized to have a mean of zero and a variance of one. The robust standard errors are reported below the coefficient estimates.*; **; *** correspond to the 10%, 5%, and 1% significant level, respectively.

Panel (a):	**CAR CAPM-Adjusted (–1;+1)**				
Event Date	March 31	August 29	October 11	October 26	January 16
$1\{PBR < 1\}$	0.970***	0.091	0.373**	0.578***	0.863***
	(0.181)	(0.146)	(0.183)	(0.122)	(0.231)
$1\{ROE \geq 8\%\}$	0.660***	0.013	0.220	0.100	0.105
	(0.149)	(0.130)	(0.148)	(0.113)	(0.167)
Adjusted R^2	0.061	0.018	0.050	0.067	0.014
Panel (b):	**CAR CAPM-Adjusted (–1;+1) & Factor Loadings**				
$1\{PBR < 1\}$	0.824***	0.022	0.273	0.279**	0.520**
	(0.183)	(0.151)	(0.183)	(0.128)	(0.218)
$1\{ROE \geq 8\%\}$	0.676***	0.023	0.238	0.142	0.154
	(0.149)	(0.129)	(0.148)	(0.113)	(0.169)
Adjusted R^2	0.067	0.018	0.054	0.086	0.026
Panel (c):	**CAR FF-Adjusted (–1;+1)**				
$1\{PBR < 1\}$	0.527***	-0.104	0.030	0.218*	0.536**
	(0.181)	(0.145)	(0.185)	(0.122)	(0.230)
$1\{ROE \geq 8\%\}$	0.706***	0.034	0.271*	0.133	0.147
	(0.149)	(0.130)	(0.149)	(0.112)	(0.167)
Adjusted R^2	0.044	0.013	0.033	0.028	0.008
Controls and FE	Yes	Yes	Yes	Yes	Yes
Observations	3,169	3,169	3,169	3,169	3,169

Table B.3: Cross-sectional Regressions with Different Robustness Tests

This table shows regression results for different event windows and robustness tests, with t-statistics in parentheses. Panel (a) displays the coefficients' statistical significance based on the adjusted t-statistics (reported in square brackets), calculated using the distribution of cumulative returns in different non-event periods (Cohn et al., 2016). Panel (b) displays the statistical significance of the coefficients as derived from the bootstrap p–values (reported in square brackets), which measure the percentage of 1,000 repetitions with coefficients higher (lower) than the actual regression coefficient if the latter is positive (negative) (Cai and Walkling, 2011).*; **; *** correspond to the 10%, 5%, and 1% significant level, respectively.

Robustness Test		**Panel (a) – Adjusted T-Stats**			**Panel (b) – Bootstrap p–values**		
Dep. Variable	Predictor	March 31	October 26	January 16	March 31	October 26	January 16
CR(-1;+1)	$1\{PBR < 1\}$	0.852***	0.314	0.432**	0.852***	0.314**	0.432***
		(4.414)	(2.521)	(2.083)	(4.414)	(2.521)	(2.083)
		[3.990]	[1.602]	[2.126]	[0.000]	[0.010]	[0.005]
	$1\{ROE \geq 8\%\}$	0.697**	0.150	0.098	0.697**	0.150	0.098
		(4.279)	(1.342)	(0.577)	(4.279)	(1.342)	(0.577)
		[2.558]	[0.107]	[-0.130]	[0.020]	[0.426]	[0.525]
	$PBR < 1$ & $ROE < 8\%$	0.141	0.129	0.330*	0.141	0.129	0.330**
		(0.570)	(-0.802)	(1.498)	(0.570)	(-0.802)	(1.498)
		[1.026]	[0.987]	[1.650]	[0.113]	[0.113]	[0.023]
	$PBR < 1$ & $ROE \geq 8\%$	0.699***	-0.046	0.386	0.699***	-0.046	0.386**
		(2.827)	(-0.276)	(1.584)	(2.827)	(-0.276)	(1.584)
		[2.754]	[-0.089]	[1.562]	[0.000]	[0.432]	[0.033]
	$PBR \geq 1$ & $ROE < 8\%$	-0.826***	-0.453	-0.136	-0.826***	-0.453*	-0.136
		(-3.367)	(-2.837)	(-0.485)	(-3.367)	(-2.837)	(-0.485)
		[-2.883]	[-1.391]	[-0.122]	[0.000]	[0.095]	[0.473]
CR(-1;+5)	$1\{PBR < 1\}$	0.515**	0.361	0.684***	0.515***	0.361**	0.684**
		(1.904)	(1.745)	(2.546)	(1.904)	(1.745)	(2.546)
		[2.000]	[1.506]	[2.542]	[0.003]	[0.017]	[0.000]
	$1\{ROE \geq 8\%\}$	0.488	0.331	0.986**	0.488	0.331	0.986**
		(2.082)	(1.794)	(4.385)	(2.082)	(1.794)	(4.385)
		[0.561]	[0.100]	[2.025]	[0.234]	[0.377]	[0.045]
	$PBR < 1$ & $ROE < 8\%$	0.043	-0.016	-0.325	0.043	-0.016	-0.325
		(0.134)	(-0.064)	(-1.044)	(0.134)	(-0.064)	(-1.044)
		[0.956]	[0.830]	[0.161]	[0.116]	[0.840]	[0.519]
	$PBR < 1$ & $ROE \geq 8\%$	0.675*	-0.114	0.446	0.675***	-0.114	0.446*
		(1.992)	(-0.383)	(1.256)	(1.992)	(-0.383)	(1.256)
		[1.919]	[-0.156]	[1.317]	[0.000]	[0.410]	[0.065]
	$PBR \geq 1$ & $ROE < 8\%$	-0.353	-0.729	-1.186**	-0.353	-0.729	-1.186**
		(-1.034)	(-2.804)	(-3.317)	(-1.034)	(-2.804)	(-3.317)
		[-0.279]	[-1.281]	[-2.497]	[0.382]	[0.102]	[0.014]
Controls and FE		Yes	Yes	Yes	Yes	Yes	Yes
Observations		3,169	3,169	3,169	3,169	3,169	3,169

Table B.4: Cross-sectional Regressions of Alternative Cumulative Abnormal Returns on High–Order Terms of PBR and ROE

This table summarizes the results for the cross-sectional regressions on alternative cumulative returns for the event windows $CR(-1,+1)$ for different event dates. We employ CAPM-adjusted cumulative returns, CAPM-adjusted cumulative returns with factor loadings controlled, and Fama-French-adjusted cumulative returns. We employ PBR and ROE and their higher–order terms as key explanatory variables. The coefficients for *Size*, *Cash*, *Leverage*, *Sales Growth*, $Beta^{MKT}$, $Loading^{Size}$, and $Loading^{Value}$ are not shown to save space. The analysis includes industry-fixed effects. All continuous explanatory variables are winsorized at the 1st and 99th percentiles and then standardized to have a mean of zero and a variance of one. The robust standard errors are reported below the coefficient estimates.*; **; *** correspond to the 10%, 5%, and 1% significant level, respectively.

Dependent Variable	**Panel (a) CAR CAPM-Adjusted(–1;+1)**			**Panel (b) CAR CAPM-Adjusted & FL (–1;+1)**			**Panel (c) CAR FF-Adjusted(–1;+1)**		
Event Date	March 31	October 26	January 16	March 31	October 26	January 16	March 31	October 26	January 16
PBR	-0.909***	-1.038***	-1.051***	-0.713**	-0.672***	-0.602**	-0.241	-0.499***	-0.547**
	(0.276)	(0.159)	(0.264)	(0.308)	(0.187)	(0.279)	(0.275)	(0.158)	(0.263)
PBR^2	0.457***	0.170	0.507***	0.411**	0.093	0.415**	0.348**	0.080	0.429**
	(0.171)	(0.117)	(0.196)	(0.172)	(0.117)	(0.193)	(0.171)	(0.116)	(0.195)
PBR^3	-0.060**	0.002	-0.067**	-0.055**	0.008	-0.060**	-0.052**	0.009	-0.063**
	(0.023)	(0.017)	(0.030)	(0.023)	(0.017)	(0.030)	(0.023)	(0.017)	(0.030)
ROE	0.267	0.173	0.042	0.259	0.175	0.046	0.249	0.150	0.045
	(0.165)	(0.128)	(0.186)	(0.164)	(0.128)	(0.185)	(0.164)	(0.129)	(0.187)
ROE^2	0.050	-0.000	-0.191*	0.051	0.010	-0.177*	0.061	0.002	-0.172*
	(0.108)	(0.073)	(0.099)	(0.108)	(0.073)	(0.097)	(0.108)	(0.073)	(0.098)
ROE^3	0.011	-0.006	-0.018	0.012	-0.003	-0.014	0.016	-0.002	-0.013
	(0.019)	(0.013)	(0.021)	(0.019)	(0.014)	(0.021)	(0.019)	(0.014)	(0.021)
Controls and FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	3,169	3,169	3,169	3,169	3,169	3,169	3,169	3,169	3,169
Adjusted R^2	0.064	0.083	0.034	0.069	0.093	0.041	0.048	0.035	0.023

Table B.5: Cross-sectional Regressions of Cumulative Returns for Firms with a PBR Value Between 0.9 and 1.1

This table summarizes the results for the cross-sectional regressions of cumulative stock returns for different event windows. $CR(-1,+1)$, $CR(-1,+3)$ and $CR(-1,+5)$ measure the cumulative returns. The main explanatory variables consist of a dummy variable ($1\{PBR<1\}$), counting 1 for firms with the Price-to-Book Ratio below the unit, and a dummy variable ($1\{ROE \geq 8\%\}$), counting 1 for firms with ROE equal or greater than 8%. The coefficients for *Size*, *Cash*, *Leverage*,*Sales Growth*, *Beta*, and factor loadings are not shown to save space. The analysis includes industry-fixed effects. All continuous explanatory variables are winsorized at the 1st and 99th percentiles and then standardized to have zero mean and unit variance. The robust standard errors are reported below the coefficient estimates.*; **; *** correspond to the 10%, 5%, and 1% significant level, respectively.

Dependent Variable	**CR(–1;+1)**				
Event Date	March 31	August 29	October 11	October 26	January 16
$1\{PBR<1\}$	0.353	0.265	-0.721**	-0.356	0.171
	(0.318)	(0.304)	(0.345)	(0.257)	(0.349)
$1\{ROE \geq 8\%\}$	0.169	0.618*	0.373	0.343	0.936***
	(0.317)	(0.353)	(0.326)	(0.261)	(0.306)
Adjusted R^2	0.125	0.041	0.166	0.067	0.040
Dependent Variable	**CR(–1;+3)**				
Event Date	March 31	August 29	October 11	October 26	January 16
$1\{PBR<1\}$	0.471	0.200	-0.022	-0.647	0.182
	(0.369)	(0.360)	(0.361)	(0.437)	(0.491)
$1\{ROE \geq 8\%\}$	-0.076	0.752**	0.432	0.892**	1.723***
	(0.364)	(0.356)	(0.379)	(0.413)	(0.390)
Adjusted R^2	0.033	0.117	0.096	0.129	0.103
Dependent Variable	**CR(–1;+5)**				
Event Date	March 31	August 29	October 11	October 26	January 16
$1\{PBR<1\}$	0.585	0.381	0.045	-0.628	0.320
	(0.434)	(0.431)	(0.426)	(0.499)	(0.595)
$1\{ROE \geq 8\%\}$	0.012	0.828*	0.283	0.848*	1.868***
	(0.441)	(0.424)	(0.423)	(0.477)	(0.470)
Adjusted R^2	-0.009	0.142	0.081	0.081	0.109
Controls and FE	Yes	Yes	Yes	Yes	Yes
Observations	334	334	334	334	334

Table B.6: Regression Discontinuity Effect of PBR on March 31, 2023

This table reports the regression discontinuity (RD) estimates of the effect of PBR around March 31, 2023, using different cumulative return windows: (-1,+1), (-1,+3), and (-1,+5). We employ both local linear and local polynomial estimation methods for a continuity-based RD design and compute data-driven optimal bandwidths (h) following Calonico et al. (2014), in line with Grembi et al. (2016). For each cumulative return, we first estimate a local polynomial of order one using the same bandwidth on both sides of the cutoff; second, we use a polynomial of order two, maintaining the same bandwidth on both sides; and third, we allow for different bandwidths on each side of the cutoff. Each specification includes the following balanced controls: ($1\{ROE \geq 8\%\}$), *Size*, *Cash*, *Leverage*, *Sales Growth*, $Beta^{MKT}$, and $Loading^{Size}$. Covariates are not printed to save space. All continuous explanatory variables are winsorized at the 1st and 99th percentiles. Robust bias-corrected t-statistics are reported below the coefficient estimates.*; **; *** correspond to the 10%, 5%, and 1% significant level, respectively.

Panel (a):	**CR (–1;+1)**					
	(1)	(2)	(3)	(4)	(5)	(6)
$RD\ Effect$	-0.537	-0.435	-0.010	0.051	-0.095	-0.027
	(-1.506)	(-1.135)	(0.307)	(0.425)	(0.057)	(0.150)
$h^{Treated}$	0.304	0.260	0.231	0.224	0.198	0.202
$h^{Control}$	0.304	0.260	0.231	0.224	1.495	1.444
$Effective\ Obs^{Treated}$	636	519	450	427	362	376
$Effective\ Obs^{Control}$	445	395	355	343	1062	1046
Panel (b):	**CR (–1;+3)**					
	(1)	(2)	(3)	(4)	(5)	(6)
$RD\ Effect$	-0.461	-0.481	-0.358	-0.322	-0.138	-0.132
	(-0.990)	(-1.053)	(-0.397)	(-0.314)	(-0.118)	(-0.081)
$h^{Treated}$	0.248	0.255	0.258	0.264	0.218	0.220
$h^{Control}$	0.248	0.255	0.258	0.264	1,474	1,452
$Effective\ Obs^{Treated}$	493	510	515	530	413	418
$Effective\ Obs^{Control}$	382	390	394	401	1,059	1,048
Panel (c):	**CR (–1;+5)**					
	(1)	(2)	(3)	(4)	(5)	(6)
$RD\ Effect$	-0.327	-0.380	-0.372	-0.385	-0.342	-0.403
	(-0.725)	(-0.813)	(-0.520)	(-0.571)	(-0.455)	(-0.614)
$h^{Treated}$	0.274	0.253	0.303	0.311	0.275	0.280
$h^{Control}$	0.274	0.253	0.303	0.311	1,386	1,368
$Effective\ Obs^{Treated}$	558	507	632	650	560	569
$Effective\ Obs^{Control}$	411	389	445	452	1,029	1,023
Polynomial Order	1	1	2	2	2	2
Same Bandwidth	Yes	Yes	Yes	Yes	No	No
Controls	No	Yes	No	Yes	No	Yes
Observations	3,169	3,169	3,169	3,169	3,169	3,169

Table B.7: Cross-sectional Regressions of Cumulative Returns on $1\{PBR < 1\}$ controlling for Disclosure Dummies

This table summarizes the results for the cross-sectional regressions of cumulative stock returns. The dependent variables considered are the cumulative returns during different event windows. $CR(-1,+1)$ measures the three-day stock returns on and after the event date, $CAPM(-1;+1)$ displays CAPM-adjusted cumulative abnormal returns, $CAPM(-1;+1)\&FL$ shows those with factor loadings controlled, and $FF(-1;+1)$ presents Fama-French-adjusted cumulative abnormal returns. *Disclosed* is a dummy variable that counts 1 for firms that disclose their plans in their corporate governance reports. *UnderCons* is a dummy variable counting 1 for firms disclosing to construct their plan in the future. *No_Disclosure* is a dummy variable counting 1 for firms with missing information. Other control variables, such as *Size*, *Cash*, *Leverage*, *Sales Growth*, $Beta^{MKT}$, and factor loadings are included in the analysis. The analysis includes industry-fixed effects. All continuous explanatory variables are winsorized at the 1st and 99th percentiles and then standardized. The robust standard errors are reported below the coefficient estimates.*; **; *** correspond to the 10%, 5%, and 1% significant level, respectively.

Panel (a)	**CR(–1;+1)**			**CAPM(–1;+1)**			**CAPM(–1;+1) & FL**			**FF(–1;+1)**		
Event: January 16	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
$\{PBR < 1\}$	0.399*	0.422**	0.425**	0.804***	0.849***	0.838***	0.479**	0.509**	0.506**	0.488**	0.523**	0.519**
	(0.208)	(0.207)	(0.208)	(0.231)	(0.231)	(0.232)	(0.219)	(0.218)	(0.219)	(0.230)	(0.230)	(0.231)
No_Disclosure	-0.245			-0.357**			-0.282*			-0.289*		
	(0.150)			(0.149)			(0.146)			(0.148)		
UnderCons		0.488*			0.524*			0.478*			0.478*	
		(0.279)			(0.268)			(0.264)			(0.266)	
Disclosed			0.065			0.182			0.114			0.123
			(0.141)			(0.142)			(0.141)			(0.142)
$1(ROE \geq 8\%)$	0.095	0.103	0.096	0.101	0.111	0.101	0.150	0.159	0.151	0.144	0.153	0.145
	(0.169)	(0.169)	(0.169)	(0.167)	(0.167)	(0.167)	(0.169)	(0.169)	(0.169)	(0.167)	(0.167)	(0.167)
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	3,169	3,169	3,169	3,169	3,169	3,169	3,169	3,169	3,169	3,169	3,169	3,169
Adjusted R^2	0.060	0.060	0.059	0.015	0.015	0.014	0.027	0.027	0.026	0.009	0.009	0.008

Table B.8: Cross-sectional Regressions of Cumulative Returns on the Interaction Between $1\{PBR < 1\}$ and Different Levels of Disclosure

The table presents the results of cross-sectional regressions of cumulative stock returns. The explanatory variables include $1\{PBR < 1\}$, which assigns a value of 1 to firms with a PBR below 1, and the categorical variables (*Limited*, *Moderate*, *Extensive*), which indicate different levels of disclosure in reports published before December 31, 2023. We use the Phi-4 LLM to evaluate corporate governance reports and rank companies by disclosure levels. Specifically, the model assesses disclosures along three dimensions: (i) proactiveness, (ii) originality, and (iii) the level of detail. Companies are scored as 0 for non-disclosure, 2 for Limited disclosure, 3 for Moderate disclosure, and 4 for Extensive disclosure. Each specification includes the following balanced controls: ($1\{ROE \geq 8\%\}$), *Size*, *Cash*, *Leverage*, *Sales Growth*, $Beta^{MKT}$, $Loading^{Size}$ and $Loading^{Value}$. Covariates are not printed to save space. All continuous explanatory variables are winsorized at the 1st and 99th percentiles. Robust standard errors are reported below the coefficient estimates.*; **; *** correspond to the 10%, 5%, and 1% significant level, respectively.

Dependent Variable	**CR (–1;+1)**	
Event Date: January 16	(1)	(2)
$1\{PBR < 1\}$	0.433**	0.514**
	(0.210)	(0.241)
Limited Disclosure	0.393	0.978*
	(0.335)	(0.560)
$1\{PBR < 1\} \times LimitedDisclosure$		-0.919
		(0.692)
$ModerateDisclosure$	0.220	0.326
	(0.167)	(0.281)
$1\{PBR < 1\} \times ModerateDisclosure$		-0.183
		(0.345)
$ExtensiveDisclosure$	0.077	0.053
	(0.170)	(0.261)
$1\{PBR < 1\} \times ExtensiveDisclosure$		0.023
		(0.337)
$1\{ROE \geq 8\%\}$	0.087	0.097
	(0.172)	(0.172)
Constant	-1.804***	-1.761***
	(0.592)	(0.571)
Controls and FE	Yes	Yes
Observations	3,112	3,112
Adjusted R^2	0.059	0.059
F Statistic	5.484***	5.334***

Table B.9: Cross-Sectional Regressions of Cumulative Returns on Monthly TSE List Releases

This table presents regressions of cumulative stock returns around the monthly publication of the TSE list. *New Listed* identifies firms appearing on the TSE list for the first time in month t, while *Already Listed* includes firms that remained listed from previous months. $Spillover^{Industry}$ is defined as the logarithm of one plus the number of other explicitly named firms in the same industry during month t(excluding firm i). The interaction term $NewListed \times Spillover^{Industry}$ tests whether the market reaction to joining the TSE list varies with the concentration of listed peers in the same industry. Standard errors are two-way clustered at the firm and time levels and reported below the coefficient estimates.*; **; *** correspond to the 10%, 5%, and 1% significant level, respectively.

Dependent Variable	**CR(−1;+1)**			
Model	(1)	(2)	(3)	(4)
New Listed	-0.128	-0.297	-0.130	-0.141
	(0.138)	(0.347)	(0.136)	(0.130)
Already Listed	-0.227	-0.171	-0.229*	-0.225*
	(0.130)	(0.151)	(0.126)	(0.126)
$Spillover^{Industry}$		-0.227	0.127	0.119
		(1.218)	(0.461)	(0.463)
New Listed×$Spillover^{Industry}$				-0.122
				(0.108)
R^2 Within	0.094	0.001	0.094	0.094
Dependent Variable	**CR(−1;+3)**			
Model	(1)	(2)	(3)	(4)
New Listed	-0.095	-0.287	-0.111	-0.117
	(0.173)	(0.424)	(0.171)	(0.167)
Already Listed	-0.133	-0.075	-0.148	-0.146
	(0.174)	(0.180)	(0.169)	(0.170)
$Spillover^{Industry}$		0.031	1.043	1.039
		(1.566)	(0.669)	(0.675)
New Listed×$Spillover^{Industry}$				-0.072
				(0.130)
R^2 Within	0.116	0.000	0.116	0.116
Dependent Variable	**CR(−1;+5)**			
Model	(1)	(2)	(3)	(4)
New Listed	-0.249	-0.335	-0.259	-0.262
	(0.205)	(0.401)	(0.201)	(0.204)
Already Listed	-0.253	-0.235	-0.263	-0.262
	(0.203)	(0.187)	(0.197)	(0.197)
$Spillover^{Industry}$		-1.000	0.703	0.702
		(1.571)	(0.882)	(0.885)
New Listed×$Spillover^{Industry}$				-0.027
				(0.109)
R^2 Within	0.098	0.003	0.098	0.098
Firm FE	Yes	Yes	Yes	Yes
Time Fe	Yes	No	Yes	Yes
Observations	39,156	39,156	39,156	39,156

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c/o University of Geneva, Bd. Du Pont d'Arve 42, CH-1211 Geneva 4
T +41 22 379 84 71, rps@sfi.ch, www.sfi.ch

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