

# Managerial Incentives and Share Repurchase Decisions: Evidence from Global Board Reforms

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## Abstract

There is considerable disagreement about whether managers conduct share repurchases primarily for the long-term benefits of shareholders or for their own short-term gains. This study addresses this important issue by applying a stacked difference-in-differences methodology to major board reforms across 36 countries. The results show that board reforms significantly increase repurchases and improve resource allocation efficiency, with the effects being most pronounced among firms with low investment opportunities and high financial flexibility. Board reforms designed to reduce agency costs lead to greater repurchasing activity. Overall, these findings support the view that share repurchases result in the long-term benefits of shareholders.

**Keywords:** Board reforms; share repurchases; corporate governance; investment efficiency; difference-in-differences

**JEL:** G15; G18; G35; G38

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## **I. Introduction**

The increasing use of share repurchases as a preferred payout mechanism has been a highly contentious development in global equity markets because of the long-running debate among academics, practitioners, and regulators about the value proposition of repurchasing company stock. Critics argue that share repurchases (or buybacks) are motivated primarily by managerial opportunism to artificially boost earnings per share (EPS) and manipulate stock prices, while advocates argue that repurchases are an effective way to return excess cash to shareholders. A recent report by Wall Street Horizon succinctly summarizes this controversy under the heading, “An Age-Old Debate: Are Buybacks Good or Bad?”<sup>1</sup> In addition to being highly controversial, repurchase decisions are also enormously consequential. During the 12-month period ending in March 2025, S&P 500 corporate managers had repurchased \$999.20 billion of company stock, compared with paying out \$642.10 billion in dividends over the same period.<sup>2</sup> Unlike repurchases, dividend payouts are relatively uncontroversial with a broad consensus among academics, practitioners, and regulators that dividend payouts are consistent with the long-term interests of shareholders. Repurchase decisions have remained controversial at least in part because of the mixed evidence that critics and advocates have presented to date.

The main purpose of this study is to shed new light on this “age-old debate” by examining the impact of global corporate governance shocks on subsequent share repurchase

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<sup>1</sup> This report from 10 July 2025 is available at: <https://www.wallstreethorizon.com/blog/Buybacks-Reach-Record-Highs-as-Q2-Earnings-Season-Approaches>.

<sup>2</sup> These figures are available at: <https://press.spglobal.com/2025-06-25-S-P-500-Q1-2025-Buybacks-Set-Quarterly-Record-at-293-Billion,-Up-20-6,-Helping-EPS-Growth-Impact-and-Expenditures-Expected-to-Decline-in-Q2-2025>.

decisions. Since the late 1990s, countries have implemented significant board reforms to compel managers to make decisions that are better aligned with shareholder interests. A growing body of research has documented the beneficial effects of these global board reforms on various corporate decisions and outcomes (e.g., Fauver, Hung, Li, and Taboada 2017; Bae, El Ghoul, Guedhami, and Zheng 2021). The impact of these reforms on share repurchase decisions can therefore provide new evidence about shareholder perceptions and preferences regarding payout policies – i.e., will a shareholder-incentive-aligned manager make greater or lesser use of share repurchases?

The public debate about the causes and consequences of share repurchases is both heated and unresolved. Despite decades of controversy, critics and advocates have not reached a consensus on the desirability or efficacy of this payout mechanism. The financial press is filled with debates about whether share repurchases are “good or evil” for company shareholders or society at large,<sup>3,4</sup> with well-known corporate managers sometimes presenting diametrically opposing views.<sup>5</sup> Elected political leaders<sup>6</sup> and organized trade unions<sup>7</sup> have advocated the

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<sup>3</sup> See <https://www.wsj.com/articles/is-the-surge-in-stock-buybacks-good-or-evil-1448188684>

<sup>4</sup> See <https://www.investors.com/politics/editorials/stock-buybacks-evil/>

<sup>5</sup> For example, a 2017 *Wall Street Journal* (WSJ) article titled “Who’s Right: Warren Buffett or Larry Fink?” presented a debate over whether managers are underinvesting in the U.S. economy by channeling funds to shareholders through share repurchases. In the article, Larry Fink, chairman and chief executive officer of BlackRock Inc., criticizes the ‘furious pace’ of repurchases as detrimental, arguing that firms are ignoring profitable investment opportunities. In contrast, Warren Buffett, chairman of Berkshire Hathaway, contends that there is no evidence supporting this claim. The article is available at: <https://www.wsj.com/articles/whos-right-warren-buffett-or-larry-fink-1488472177>

<sup>6</sup> For example, Senator Elizabeth Warren has repeatedly criticized stock buybacks as a form of stock market manipulation that diverts funds from productive investment, noting that they were illegal until the Securities and Exchange Commission’s (SEC) adoption of Rule 10b-18 in 1982. The article is available at: <https://casten.house.gov/media/in-the-news/theres-a-reason-why-stock-buybacks-used-to-be-illegal>

<sup>7</sup> For example, labor unions have argued that stock buybacks exacerbate income inequality and weaken workers’ bargaining power by diverting profits away from wages and investment. The Communications Workers of America (CWA), for example, has called for legislation such as the Reward Work Act of 2019 to ban open-market repurchases and reverse the SEC’s 1982 rule that legalized them. The article is available at:

restriction or outright banning of share repurchases, raising concerns that span shareholder value, real investment, and the distribution of corporate resources to other stakeholders such as employees.

Academic studies often disagree about managers' underlying motivations for conducting share repurchases. Some studies suggest that personal opportunism plays a significant role (e.g., Bonaimé and Ryngaert 2013; Brockman, Khurana, and Martin 2008; Hribar, Jenkins, and Johnson 2006), while others find that repurchases serve shareholders by returning excess cash or acquiring undervalued shares (e.g., Dittmar and Field 2015; Gullon and Michaely 2004; Brockman and Chung 2001; Ikenberry, Lakonishok, and Vermaelen 1995). A similar disagreement extends to the real consequences of repurchases. Some studies find that repurchases crowd out value-enhancing investments (e.g., Chen and Wang 2012; Almeida, Fos, and Kronlund 2016), while others find no such effect (e.g., Boudry, Kallberg, and Liu 2013; Kahle and Stulz 2021; Brockman, Lee, and Salas 2026).

At least some of the conflicting findings regarding the motivations and consequences of share repurchases boil down to the particular circumstances under investigation (e.g., corporate earnings falling just short of analysts' consensus). There are certainly instances of managerial opportunism during repurchasing activities, just as there are instances of managerial opportunism during investing and financing activities. In contrast to previous studies, our empirical approach examines the impact of country-wide governance reforms on the payout policies of all firms

within said country (i.e., regardless of firm-specific circumstances). This approach allows us to identify the overall effect of a positive governance shock on share repurchases and, in turn, assess the extent to which managers use repurchases opportunistically for their own personal benefits rather than to advance the interests of their shareholders.

To shed light on this important question, we analyze 131,742 firm-year observations from 47,565 unique firms across 36 countries that implemented major board reforms between 1985 and 2021. Because conventional two-way fixed effects (TWFE) difference-in-difference (DiD) estimators can be biased under staggered adoption when treatment effects are heterogeneous (Baker, Larcker, and Wang 2022), we apply a stacked DiD design to identify the effects of board reforms on share repurchase decisions.

Our findings reveal a significant increase in share repurchases following board reforms. In our baseline regression, the ratio of share repurchases to total assets increases by 0.107 percentage points after board reforms, which corresponds to 21.1% of the sample mean of share repurchases. When employing alternative staggered DiD estimators, this increase rises to 0.120 (0.135) percentage points, which corresponds to 23.6% (26.6%) of the sample mean. These results are both economically and statistically significant, indicating that by strengthening corporate governance, board reforms encourage managers to return excess cash to shareholders through share repurchases rather than retaining these cash balances or allocating them to suboptimal projects. The baseline results remain robust across various alternative measures, including repurchase intensity relative to total market capitalization, equity value, sales, and cash

flows, as well as log-transformed repurchase ratios. Our results also hold when adjusting for different regression specifications, applying propensity score matching (PSM), and restricting the sample criteria.

Next, we examine whether the observed increase in share repurchases comes at the expense of valuable investment opportunities. We find that board reforms primarily promote repurchases among firms with limited investment opportunities and/or high financial flexibility. In contrast, among firms with abundant investment opportunities but constrained financial flexibility, board reforms have no impact on share repurchases. Furthermore, we observe no significant effect of repurchase activity on capital expenditures or R&D investment. To assess whether board reforms reduce investment efficiency due to increased repurchases, we apply the methodologies of Richardson (2006) and Biddle, Hilary, and Verdi (2009) to estimate investment inefficiency. Our results show that firms engaging in share repurchases exhibit improved investment efficiency in the post-reform period – consistent with Warren Buffett’s claim that he is “not aware of any enticing project that in recent years has died for lack of capital.” These findings suggest that the increase in share repurchases following board reforms reflects a stronger alignment of managerial decisions with shareholder interests rather than an inefficient allocation of capital.

Additionally, we explore how major reform components influence share repurchase activity. Global board reforms typically focus on three major components: (1) board independence, (2) audit committee and auditor independence, and (3) separation of the chairman

and CEO roles. In addition to reform components, there are also differences in reform types, with some reform types following a comply-or-explain framework and others adopting a rule-based structure. Our analyses show that reforms related to board independence, as well as audit committee and auditor independence, chairman-CEO separation and rule-based reforms, significantly increase share repurchases. When dividing samples by investment opportunities, we find that all reforms, except for reforms involving audit committee and auditor independence, and rule-based reforms, promote share repurchases among firms with poor investment opportunities while having no effect on firms with strong investment opportunities.

In contrast, reforms involving audit committee and auditor independence, and rule-based reforms yield more subtle results; specifically, firms tend to increase repurchases even with strong investment opportunities. However, after including financial flexibility in our analysis, we show that reforms involving audit committee and auditor independence, and rule-based reforms encourage repurchases among firms with strong investment opportunities only for those firms that are relatively unconstrained financially. These findings show that although the effects of board reforms on share repurchases vary across the components and types of board reforms, all reform consequences support the view that better manager-shareholder alignment encourages value-enhancing repurchase decisions.

Finally, we examine how country-level corporate governance characteristics shape the effects of board reforms on share repurchase activity. Our results indicate that board reforms have stronger effects on share repurchases for firms operating in countries with weak investor

protection and less developed corporate governance institutions – although the statistical significance of these findings is somewhat weak. Overall, these findings suggest a possible substitutive relationship between institutional quality and board reforms, consistent with Chen, Guedhami, Yang, and Zaynutdinova (2020), Driss (2023), and Li, Maydew, Willis, and Xu (2023).

This study makes several contributions. First and foremost, we contribute to the long-standing debate over whether share repurchases represent managerial opportunism or shareholder value maximization. Because the two motives can coexist across the broad population of repurchases, clarifying which one predominates is of considerable importance. Whereas much of the existing evidence is examined in condition-specific or market-specific settings (e.g., Almeida et al. 2016; Bratten, Huang, Jenkins, and Xie 2025), we use global board reforms as a plausibly exogenous shock to managerial incentives to provide the first large-scale causal evidence that when managers are forced to act in the best interests of shareholders, they increase share repurchases rather than cut them. This finding implies that under stronger corporate governance, share repurchases are a manifestation of efficient cash distribution rather than a symptom of managerial short-termism. Moreover, the results demonstrate that the increase in repurchases is concentrated among firms with low investment opportunities and/or high financial flexibility. The subsequent increase in repurchases leads to improved investment efficiency. Taken together, these findings provide new evidence that repurchases under shareholder-incentive-aligned managers enhance capital allocation efficiency, indicating that the shareholder-wealth-

maximization effect of share repurchases predominates.

Second, although recent studies have examined how global board reforms strengthen governance and affect corporate performance and managerial decision-making, this study expands the scope of outcomes linked to these reforms by introducing share repurchases into this research stream. Methodologically, we contribute to this branch of the literature by applying the stacked DiD design, which corrects for the biases associated with conventional TWFE staggered DiD settings. Moreover, we contribute to the literature by providing more nuanced evidence on how the effects of board reforms vary across specific reform types and components.

Finally, this study provides important policy insights to ongoing discussions about the regulation and taxation of share repurchases. In recent years, policymakers worldwide have expressed growing concerns about the rising use of share repurchases and have advocated for stricter restrictions on them. For example, in a 2019 *Wall Street Journal* article,<sup>8</sup> Securities Exchange Commission (SEC) Commissioner Robert Jackson proposed removing certain legal protections for open-market share repurchases, while several U.S. presidential candidates argued that buybacks “shortchange the economy by directing back into the stock market funds that could have gone directly to workers.” At the end of 2021,<sup>9</sup> the SEC proposed new disclosure requirements compelling firms to explain the rationale and criteria for their buybacks, and the

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<sup>8</sup> The article is available at: <https://www.wsj.com/articles/record-stock-buybacks-draw-fire-from-democratic-presidential-hopefuls-11549321288>

<sup>9</sup>The article is available at: <https://www.wsj.com/articles/companies-plan-to-pour-even-more-cash-into-buybacks-dividends-in-2022-11640169002>. A more recent *WSJ* article from May 5, 2023, titled “SEC Buyback-Disclosure Rule Stirs Worry Over Costs and Compliance,” summarizes recent trends in buyback restrictions (The article is available at: <https://www.wsj.com/articles/sec-buyback-disclosure-rule-stirs-worry-over-costs-and-compliance-d31548fa>).

U.S. House of Representatives passed a bill introducing a 1% excise tax on repurchases, subsequently enacted as part of the 2022 Inflation Reduction Act (IRA). Similar policy movements have emerged in the United Kingdom and the European Union.<sup>10</sup> However, these policy initiatives rest largely on the premise that repurchases undermine long-term real investment and economic growth. Our evidence challenges this premise. We show that when governance quality improves, firms use repurchases as a value-enhancing payout mechanism that coincides with more efficient investments, not less. This finding suggests that the perceived macroeconomic harm of repurchases is overstated and one-sided, and that governance reforms, rather than punitive regulation, represent a more effective policy tool for aligning repurchase decisions with shareholder interests.<sup>11</sup>

The remainder of this paper is organized as follows. Section II reviews the relevant literature on share repurchases and board reforms, and develops our main hypotheses. Section III describes the data, sample construction, and variable definitions, along with descriptive statistics. Section IV examines the effects of board reforms on share repurchases and conducts robustness checks. Section V explores the relationship between board reforms, share repurchases, and

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<sup>10</sup> A 2024 *Guardian* report notes that the United Kingdom’s Liberal Democrats proposed raising their previously introduced 1% levy on share buybacks to 4%, with Treasury spokesperson Sarah Olney claiming that “this new levy would not just raise much-needed money for public services, it would encourage investment, help create jobs and boost growth including in the green industries of the future” (The article is available at: <https://www.theguardian.com/politics/2024/mar/16/lib-dems-to-open-conference-with-call-to-copy-bidens-tax-on-share-buybacks>). Similarly, a 2024 *Le Figaro* article reports that the French government planned to introduce a tax of about 1% on share repurchases (The article is available at: <https://www.lefigaro.fr/conjoncture/le-gouvernement-veut-taxer-les-rachats-d-actions-des-cette-annee-20240424>), and a 2025 *Corriere della Sera* article states that the Italian government is considering a comparable buyback tax as well (This article is available at: [https://www.corriere.it/economia/finanza/25\\_agosto\\_28/manovra-rispunta-la-tassa-sui-buyback-delle-societa-quotate-cos-e-e-chi-colpirebbe-a0156426-17e2-4e7e-86fc-bda2ec341x1k.shtml](https://www.corriere.it/economia/finanza/25_agosto_28/manovra-rispunta-la-tassa-sui-buyback-delle-societa-quotate-cos-e-e-chi-colpirebbe-a0156426-17e2-4e7e-86fc-bda2ec341x1k.shtml)).

<sup>11</sup> Similarly, a conceptual analysis grounded in prior research proposes that “critics of buybacks should drop the idea of punishing cash payouts per se, and instead focus on making the case for legislation that creates incentives that directly promote the specific behaviours they desire” (DeAngelo 2023, 398).

investment decisions. Section VI conducts additional analyses focusing on the major components of the reforms, the different types of reforms, and country-level corporate governance characteristics. Section VII concludes the paper.

## **II. Related Literature and Hypothesis Development**

### **A. Share Repurchases and Global Board Reforms**

As discussed above, much of the previous repurchase literature focuses on specific conditions under which corporate managers' use of share repurchases can lead to suboptimal outcomes. Chen and Wang (2012), for example, examine the potential consequences of share repurchases when the repurchasing firm is financially constrained. Similarly, Almeida et al. (2016) use Hribar et al.'s (2006) identification strategy to analyze specific conditions under which managers are incentivized to implement "accretive share repurchases." Such conditions occur when managers expect their EPS to fall one cent below analysts' consensus forecasts, and therefore use repurchases to raise their EPS by at least one cent. Although these studies add to our understanding of the potential abuses of share repurchases, they are not designed to capture the overall (net) effect of share repurchase decisions on shareholder welfare.<sup>12</sup> In contrast, our research design uses the setting of country-level shocks to corporate governance to examine changes in repurchase decisions across all firms in said country. This approach allows us to draw more definitive conclusions about how shareholders perceive the net effects of share

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<sup>12</sup> As Bonaimé and Kahle (2022, 202) point out, "Almeida et al.'s study focuses specifically on the subset of repurchases driven by a desire to meet EPS forecasts, not repurchases in general."

repurchases.<sup>13</sup> Following stronger governance constraints due to board reform shocks, managers are more likely to conduct payout policies in the best interests of their shareholders.

Bratten et al. (2025) employ a similar approach by examining the impact of a market-wide regulatory shock on subsequent share repurchase decisions. In 2003, the SEC amended Rule 10b-18 to mandate additional disclosure requirements for share repurchasing firms (i.e., monthly repurchase numbers reported on a quarterly basis). The SEC expected that the additional transparency of such disclosures would reduce managerial opportunism around share repurchases. Using this setting, Bratten et al. (2025) show that managers' use of accretive share repurchases declines after the regulatory shock to repurchase disclosures. While these results use a U.S. market-wide disclosure shock, they are also based on the specific circumstances of accretive share repurchases. In contrast, our study uses staggered, market-wide governance shocks in a global setting which does not rely on any specific circumstances of the affected firms (i.e., vulnerability to EPS misses).

Since the late 1990s, global board reforms have sought to strengthen corporate governance by imposing or recommending greater board independence, audit committee and auditor independence, and the separation of the chairman and CEO roles. A large body of research examines these reforms and their impact on managerial decisions and corporate

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<sup>13</sup> As more countries have legalized or liberalized share repurchase activity, evidence based on single-country settings raises concerns about external validity. Both observable and unobservable cross-country differences underscore the importance of examining repurchase behavior in a broader international context, as the economic consequences may vary substantially. For example, in the United States, firms appear able to use repurchases to meet or beat EPS thresholds (e.g., Almeida et al. 2016; Farrell et al. 2014), whereas comparable evidence from the United Kingdom does not show similar patterns according to a PwC report (This report is available at: <https://www.pwc.co.uk/economic-services/documents/share-repurchases-executive-pay-investment.pdf>).

activities. The results have led to a consensus that global board reforms align managerial behavior more closely with shareholder interests by enhancing board oversight, accountability, and fiduciary responsibilities. Fauver et al. (2017) represent a pioneering effort to systematically collect board reform information for 41 countries and examine their effects on firm value using a standard staggered DiD approach. They find that firm value, measured by Tobin's Q, increases by approximately 10% of the sample mean following the implementation of board reforms. While their empirical results show that the impacts vary across reform types and legal origins, the overall evidence supports the effectiveness of these reforms and underscores the importance of manager-shareholder alignment for firm value.

Following Fauver et al. (2017), a growing body of evidence across various dimensions of corporate decision-making confirms that board reforms align managerial actions with outside investors' interests. From the perspective of the free cash flow hypothesis (Jensen 1986; Jensen and Meckling 1976), board reform mitigates agency conflicts by constraining managerial discretion over excess cash and inefficient investments. Stronger boards tend to impose greater discipline on resource allocation decisions, reducing the likelihood of empire-building or value-destroying projects. For instance, Chen et al. (2020) show that board reforms reduce corporate cash holdings, consistent with improved governance limiting the accumulation of idle resources. In terms of investment decisions, Driss (2023) finds that the reforms enhance investment efficiency, reflected in higher investment–Q sensitivity, while Ahmad, Aktas, Cumming, and Xu (2024) find that board reforms enhance M&A outcomes by reducing target firms' reservation

prices, indicating more disciplined acquisition strategies. In terms of capital structure, Ben-Nasr, Boubaker, and Sassi (2021) and Driss, El Ghouli, Guedhami, and Wald (2023) find that the reforms strengthen monitoring by increasing leverage and optimizing firms' debt choices, ultimately enhancing shareholder value. Similarly, within La Porta, Lopez-De-Silanes, Shleifer, and Vishny's (2000) theoretical framework, Bae et al. (2021) find that board reforms lead to higher dividend payouts, supporting the dividend outcome model rather than the substitute model.

From the perspective of managerial opportunism, board reforms improve corporate transparency and reduce the scope for managers to engage in activities that obscure firm value by enhancing monitoring intensity and information disclosure quality. For example, Hu, Li, Taboada, and Zhang (2020) find that strengthened board governance reduces stock price crash risk by mitigating bad-news hoarding and improving transparency. Chen, Goyal, and Zolotoy (2022) find that stronger boards are associated with lower IPO underpricing and better long-term IPO performance, consistent with reduced information asymmetry between insiders and investors. Li et al. (2023) show that governance reforms diminish corporate tax avoidance, reflecting a lower propensity for opportunistic earnings management through aggressive tax strategies. Similarly, Chen, Liu, and Zhao (2024) provide evidence that reforms reduce both discretionary accruals and real earnings management, further supporting the argument that improved governance constrains managerial opportunism. Collectively, across multiple perspectives, the global board reform literature highlights the critical role of global board

reforms in aligning managers' interests more closely with those of shareholders.

## **B. Hypotheses Development**

Although board reforms have been shown to strengthen the alignment of interests between managers and shareholders, it is not at all clear what impact this stronger alignment will have on share repurchase decisions. Based on the literature, stronger alignment can increase share repurchases as a means of disgorging free cash flow to shareholders, while it can also decrease share repurchases as a result of mitigated managerial opportunism.

On the positive side, several studies highlight the role of repurchases as a mechanism for distributing excess cash to shareholders, thus enhancing shareholder value. According to Jensen's (1986) free cash flow hypothesis, share repurchases mitigate agency problems by reducing the discretionary free cash flow available to managers, thereby limiting inefficient investments. Empirical evidence suggests that firms with excess cash and limited investment opportunities are more likely to repurchase shares to prevent overinvestment (Dittmar 2000; Grullon and Michaely 2004; Boubaker, Eshraghi, and Liu 2024). Additionally, studies indicate that share repurchases do not reduce productive investment activity and typically occur only after firms have exhausted all value-enhancing investment opportunities (Brav, Graham, Harvey, and Michaely 2005; Asness, Hazelkorn, and Richardson 2018; Fried and Wang 2019, 2021; Graham 2022; Guest, Kothari, and Venkat 2023).

By strengthening corporate governance and increasing board oversight, board reforms should encourage managers to return excess cash to shareholders through share repurchases

rather than retaining it or allocating it to suboptimal projects. Enhanced monitoring can mitigate agency costs by reducing the likelihood of managerial cash hoarding and inefficient capital allocation (e.g., pet projects), ensuring that free cash flow is used in a way that maximizes shareholder value. Consistent with this analysis, we posit that board reforms will lead to an increase in share repurchase activity.

#### **H1a: Board reforms lead to an increase in share repurchases.**

On the negative side, prior research also highlights the potential downside of share repurchases, as they may be used opportunistically by managers for personal gain. Managers with stock options can benefit from increases in share prices following repurchase programs (Chan, Ikenberry, Lee, and Wang 2010; Cook and Zhang 2022), and synchronized insider trading has been documented around repurchase activities (Ahmed and Taffler 2018; Babenko, Tserlukevich, and Vedrashko 2012; Bonaimé and Ryngaert 2013; Netter and Mitchell 1989). Studies show that firms often use repurchases to boost EPS or to meet/exceed analyst expectations (Bens, Nagar, Skinner, and Wong 2003; Farrell, Unlu, and Yu 2014; Hribar et al. 2006). Moreover, CEOs whose compensation is directly linked to EPS are more likely to engage in repurchases (Cheng, Harford, and Zhang 2015; Kim and Ng 2018). As a result, managers may prioritize repurchases over valuable long-term investments to achieve short-term performance targets or increase their personal compensation (Almeida et al. 2016; Cook and Zhang 2022; Wang, Yin, and Yu 2021). Such opportunistic share repurchases can divert scarce resources from more profitable investment opportunities, and thereby conflict with shareholders' long-term

interests.

Board reforms, by enhancing monitoring and accountability, are expected to limit managerial opportunism in repurchase decisions. In this context, strengthened governance mechanisms can deter managers from engaging in repurchases at the expense of long-term firm value. Consistent with this line of reasoning, we posit that board reforms will lead to a decrease in share repurchase activity.

**H1b: Board reforms lead to a decrease in share repurchases.**

A critical consideration in the relationship between board reforms and share repurchases is how these reforms influence the allocation of corporate resources between payouts and investments. Given that board reforms align managers' interests with those of shareholders, corporate resource allocation decisions should become more efficient in the post-reform period. In other words, board reforms are expected to promote value-enhancing share repurchase decisions, depending on a firm's investment opportunities and cash flow conditions.

In cases where board reforms increase share repurchases, this increase is likely driven by financial flexibility rather than the abandonment of valuable investment projects. Firms with limited investment opportunities and ample cash flow face a higher risk of investing in value-destroying projects. In such cases, stronger board oversight is expected to encourage firms to return excess cash to shareholders through repurchases rather than retain it, thereby preventing overinvestment and enhancing shareholder wealth. Consequently, the effect of board reforms in promoting share repurchases should be most pronounced for firms with weak investment

opportunities and high financial flexibility.

Conversely, in cases where board reforms lead to a decrease in share repurchases, this reduction likely reflects the reallocation of corporate resources from repurchases to value-enhancing investment projects. For firms with strong investment opportunities but constrained financial flexibility, opportunistic repurchase motives—such as artificially inflating EPS or increasing managerial compensation—can be particularly detrimental to shareholder value. Strengthened corporate governance can mitigate such opportunistic behavior by ensuring that firms prioritize profitable investment opportunities over repurchases, thereby enhancing capital allocation efficiency. As a result, the effect of board reforms in curbing share repurchases should be most pronounced for firms with strong investment opportunities and low financial flexibility.

Regardless of whether board reforms increase or decrease share repurchases, they are designed to promote the efficient allocation of corporate resources between share repurchases and investments. Under strengthened governance mechanisms, we should not observe a reduction in value-enhancing (i.e., positive net present value) investments due to share repurchases, as decisions to repurchase shares are made after selecting all valuable investment projects. Therefore, we predict that board reforms will enhance firms' investment efficiency in the context of share repurchases by aligning managerial actions more closely with shareholder interests.

**H2: Share repurchase decisions following board reforms increase corporate investment efficiency.**

### **III. Data and Research Design**

#### **A. Sample**

Our initial sample consists of 44 countries and territories from Wang et al.'s (2021) sample, where share repurchases are legalized and the firms' share repurchase activities have been observed. We then retain only the countries and territories with available board reform information based on Fauver et al. (2017) and Ahmad et al. (2024). Fauver et al. (2017) compiled a dataset on board reforms covering the major reform years from 1998 to 2007 across 41 countries. This dataset has been widely adopted in prior studies that examine the impact of board reforms on corporate activities (e.g., Bae et al. 2021; Chen et al. 2020). Building on this approach, Ahmad et al. (2024) expanded the dataset to 61 countries, extending the major board reform years from 1995 to 2010. After taking the intersection of Wang et al.'s (2021) share repurchase sample and Fauver et al. (2017) and Ahmad et al.'s (2024) board reform sample, our sample retains 41 countries and territories. Next, to ensure that share repurchases were legally permitted prior to the reform, we further restrict the sample to countries where repurchases were legalized before the respective reform year, which removes three countries and territories (i.e., China, Greece, and Turkey). We then exclude two countries and territories (i.e., Russia and Taiwan) due to missing macroeconomic indicators in the World Bank DataBank database. Consequently, our final sample comprises 36 countries and territories.<sup>14</sup>

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<sup>14</sup> Details on the samples used in the literature and the sample filtering in this paper are reported in Table A2 in the Appendix.

Our sample period spans from 1985 to 2021, which allows us to examine a symmetric window of up to 10 years before and after each country’s board reform. Consistent with Fauver et al. (2017) and Wang et al. (2021), we exclude firms from the financial sector (Standard Industrial Classification (SIC) codes 6000–6999) and utility sector (SIC codes 4900–4999). We also exclude firm-year observations with missing or negative values for total assets and sales, and those reporting negative share repurchases.<sup>15</sup> We acquire firm-level financial data from LSEG Datastream, and macroeconomic indicators from the World Bank DataBank. Additionally, country-level corporate governance variables are retrieved from the World Bank DataBank and Djankov, La Porta, Lopez-de-Silanes, and Shleifer et al. (2008).

## **B. Empirical Design**

Although conventional TWFE DiD estimators are widely used in prior studies on global board reforms, recent econometric advances demonstrate that standard TWFE estimators can produce biased estimates under staggered adoption when treatment effects are heterogeneous or dynamic across cohorts (e.g., Baker et al. 2022; Goodman-Bacon 2021; Sun and Abraham 2021). In such cases, TWFE implicitly compares already-treated units with later-treated units, leading to “bad comparisons” that can even reverse the sign of the estimated effect. Notably, Baker et al. (2022) replicate Fauver et al.’s (2017) analysis of the effect of board reforms on firm value and find that, once the “bad comparisons” problem is addressed, the treatment effects become less significant than initially reported.<sup>16</sup> Given that we expect heterogeneous effects of board reforms

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<sup>15</sup> Similar to global share repurchase studies (e.g., Haw, Ho, Hu, and Zhang 2011; Lee and Suh 2011; Wang et al. 2021), we assign a value of 0 for share repurchases with missing values.

<sup>16</sup> In Panel B of Table 4 in Fauver et al. (2017), the average treatment effect of major board reforms on firm value

on repurchase policies, relying on the conventional TWFE DiD approach could be problematic.

To identify the causal impact of board reforms on corporate share repurchases and investment efficiency, we employ a stacked DiD design following Baker et al. (2022), Cengiz, Dube, Lindner, and Zipperer (2019), and Gormley and Matsa (2011). The stacked DiD approach addresses key limitations of traditional staggered DiD designs by restructuring the data into event-centered cohorts around each treatment adoption and re-estimating treatment effects within a restricted event window. By stacking these cohorts and assigning never-treated and/or not-yet-treated observations as valid controls within each window, the estimator avoids comparisons involving already-treated units, thereby preserving the causal interpretation of the estimated treatment effects.

Specifically, following Baker et al. (2022), we set a symmetric event window of up to five years before and after each board reform and estimate the specification using firm-level data while absorbing cohort-firm and cohort-year fixed effects. We use only not-yet-treated observations as the control group, given that very few countries (or observations) with a long history of share repurchases have never implemented board reforms. Standard errors are clustered at the country level to account for correlated shocks.

### **C. Board Reform**

The primary variable of interest in this study is *Board Reform*, which takes the value of 1

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(measured by Tobin's Q) is positive, with a coefficient of 0.148, significant at the 5% level. Baker et al. (2022) replicate this result using the same model and DiD design and report a coefficient of 0.096, significant at the 1% level (Panel A of Table 3). When employing a stacked DiD approach, this coefficient decreases to 0.063 and loses statistical significance at the 10% level (Panel B of Table 3).

for firm-year observations after the implementation of a major board reform in a given country, and 0 otherwise. Following Fauver et al. (2017), we define a board reform as the first major board reform implemented in a given country. We also classify board reforms based on their major components (i.e., whether they involve board independence, audit committee and auditor independence, or chairman and CEO separation) and construct separate dummy variables for each component. In addition, board reforms are categorized into two different types of reforms: comply-or-explain versus rule-based. A comply-or-explain reform typically involves the introduction of a corporate governance code that requires firms to either adopt the recommended governance practices or provide an explanation for non-compliance. In contrast, a rule-based reform is implemented through statutory changes, such as amendments to company law or securities regulations, which legally mandate firms to adhere to specific governance practices.

#### **D. Dependent Variables**

The primary dependent variable in this study is share repurchases, measured as the ratio of share repurchase expenditures to total assets (*Rep/Asset (%)*)<sup>17</sup>. To ensure robustness, we construct alternative measures of share repurchases by scaling total share repurchases by market capitalization, equity, sales, and cash flow. Additionally, we use the natural logarithm of share repurchases as an alternative specification and include a dummy variable indicating whether a firm engaged in share repurchases in a given year.

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<sup>17</sup> Following prior studies on global share repurchases (e.g., Haw et al. 2011; Lee and Suh 2011; Wang et al. 2021), we obtain share repurchase data from LSEG Datastream, which reports the funds used to decrease the outstanding shares of common and/or preferred stock. Since these funds can include a reduction in the net number of preferred stock outstanding as well, prior studies exclude companies with preferred stock on the balance sheet. We follow this practice, which results in a loss of less than 1% of the total sample – consistent with the literature.

For investment-related dependent variables, we measure investment using capital expenditures scaled by total assets (*Capex/Asset*) and R&D expenditures scaled by total assets (*RD/Asset*). Following Richardson (2006) and Biddle et al. (2009), investment inefficiency is proxied using the absolute value of residuals from an investment estimation model (*Investment Inefficiency* (Richardson 2006) and *Investment Inefficiency* (Biddle et al. 2009)).<sup>18</sup> A higher value of these two variables indicates greater investment inefficiency.

## E. Control Variables

To control for factors that influence board reforms and shareholder payouts, we include a comprehensive set of variables based on prior studies, including Bae et al. (2021), Chen et al. (2020), and Wang et al. (2021). Firm-level control variables include EBIT scaled by total assets (*EBIT/Asset*), property, plant, and equipment scaled by total assets (*PPE/Asset*), the ratio of cash and short-term investments to total assets (*Cash/Asset*), and dividends scaled by total assets (*Div/Asset*). Additionally, we control for sales growth (*Sales Growth*), prior-year stock returns (*Stock Returns*), the market-to-book ratio (*Market-to-book Ratio*), the standard deviation of cashflow in past three years (*SD (Cashflow)*), and the WW index (*WW Index*) proposed by Whited and Wu (2006).

At the industry level, we control for market concentration by calculating the Herfindahl-Hirschman Index (*HHI*) using two-digit SIC industry classification. At the country level, we control for macroeconomic conditions using GDP growth (*GDP Growth*), the consumer price

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<sup>18</sup> These two methods are widely used in the corporate finance literature to assess whether firms are engaging in suboptimal investment activities, including both overinvestment and underinvestment (e.g., Cutillas Gomariz and Sánchez Ballesta 2014; Deb, Duong, Singh, and Singh 2024; Ee, Hasan, and Huang 2022).

index (*CPI*), stock market index returns (*Stk Mkt Return*), and lending interest rate (*Interest Rate*).<sup>19</sup> Detailed definitions of all variables are provided in Table A1 in the Appendix.

## **F. Summary Statistics**

Our final sample comprises 131,742 firm-year observations from 47,565 firms across 36 countries. Table 1 presents the years of board reforms, major components of the reforms, and different types of reforms across countries. The distribution of reform years indicates that reforms were not concentrated in a specific period, but were implemented at different times across countries. Moreover, the focus of board reforms varies by country. Specifically, reforms related to audit committee and auditor independence were the most common, implemented in 32 countries, followed by reforms related to board independence, which were adopted in 31 countries. Regarding different types of reforms, comply-or-explain reforms were the most prevalent, implemented in 23 countries.

In addition to the year, major components, and types of board reforms, Table 1 also reports the year of share repurchase legalization, the total number of firms per country, the number of firm-year observations where share repurchases were conducted, and the number of firms that have ever engaged in share repurchases. The United States accounts for the largest proportion of firms, comprising over 25% of the total sample, followed by Japan, which accounts for approximately 10%. In contrast, the number of firms in Ireland and Austria is fewer than 100.

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<sup>19</sup> We use the lending interest rate as our measure of interest rates because it offers broader country coverage than the available alternatives. Other candidate measures (e.g., the central bank policy rate from the BIS and the IMF, deposit rate from the IMF, and the real interest rate from the World Bank) are unavailable for a substantial number of countries in our sample. For the four countries lacking lending interest rate data (Denmark, New Zealand, Poland, and Spain), we use the government bond rate as a substitute. Restricting the sample to countries with lending interest rate data yields very similar results.

The share repurchase adoption rate also varies significantly across countries. In countries such as Switzerland, about half of firms have engaged in share repurchases, whereas in Bulgaria and Thailand, the proportion is below 10%.<sup>20</sup> These findings highlight substantial cross-country variation in both sample size and share repurchase activity.

[Insert Table 1 About Here]

Panel A of Table 2 presents descriptive statistics for all variables. The mean share repurchase-to-total assets ratio (*Rep/Asset (%)*) is 0.508%, with a median of 0% and a standard deviation of 1.927%, indicating substantial variation in repurchase activity. The *Rep Dummy* variable shows that 20.8% of firm-year observations involved share repurchases. The mean value of *Board Reform* is 0.679, suggesting that approximately 67.9% of the observations occurred after a board reform was implemented. All firm-level continuous variables are winsorized at the 1st and 99th percentiles to mitigate the influence of outliers.

Panel B of Table 2 presents the correlation matrix for key variables. The correlation between *Board Reform* and *Rep/Asset (%)* is positive, indicating that firms tend to engage in more share repurchases following board reforms. This finding is consistent with the hypothesis H1a that strengthened corporate governance is associated with an increase in share repurchases. Additionally, *Rep/Asset (%)* exhibits a negative correlation with investment-related variables,

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<sup>20</sup> This value is calculated by dividing “No. of Firms (Share repurchases)” by “No. of Firms.”

while *Board Reform* is positively correlated with investment-related variables. Given that the correlation coefficients among key variables are relatively low, multicollinearity is unlikely to affect our results.

[Insert Table 2 About Here]

#### IV. Board Reform and Share Repurchases

##### A. Main Analysis

Table 3 presents the regression results for share repurchases as the dependent variable, using the board reform dummy as the key explanatory variable. We estimate the following staggered difference-in-differences regression model:

$$(1) \quad Rep/Asset_{i,c,t} = \alpha_i + \alpha_t + \beta Board\ Reform_{c,t} + \gamma Controls_{i,c,t-1} + \varepsilon_{i,c,t}$$

where  $i$ ,  $c$ , and  $t$  denote firm, country, and year, respectively; and  $\alpha_i$  and  $\alpha_t$  represent cohort-firm fixed effects and cohort-year fixed effects, respectively. *Controls* include firm-level, industry-level, and country-level control variables. Standard errors are clustered at the country level.

Column 1 of Table 3 presents the regression results without control variables, using only the board reform dummy as the explanatory variable. The coefficient on *Board Reform* is positive and statistically significant, suggesting that board reforms are associated with an increase in share repurchases. Column 2 reports the results from our baseline model, which

includes the full set of control variables. The coefficient on *Board Reform* remains positive and statistically significant at the 1% level, indicating that, on average, firms increase their share repurchases by 0.107 percentage points of total assets following a board reform. This increase represents approximately 21.1% of the sample mean (5.6% of the standard deviation) of *Rep/Asset*, highlighting the economic significance of board reforms on repurchase activity. These findings support Hypothesis 1a, which posits that board reforms enhance governance by better aligning managerial decisions with shareholder interests, leading to an increase in share repurchases.

[Insert Table 3 About Here]

Regarding firm characteristics, we find that *EBIT/Asset*, *Cash/Asset*, and *Sales Growth* are positively associated with share repurchases, while *PPE/Asset*, *Market-to-book Ratio*, *SD (Cashflow)*, and *WW Index* exhibit a negative association. The number of observations reported in Table 3 is larger than that in Table 2 because the stacked DiD approach constructs a cohort-specific stacked sample, allowing a given firm-year to appear in multiple cohort-specific stacks.<sup>21</sup>

## **B. Robustness**

### **1. Alternative Repurchase Measures**

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<sup>21</sup> In all tables using the stacked DiD specification, the reported number of observations refers to the stacked cohort-firm-year sample.

Table 4 presents robustness tests using alternative dependent variables to verify the validity of our baseline results. In Columns 1 to 4, we redefine share repurchases by scaling repurchase expenditures by market capitalization, equity, sales, and cash flow, respectively. Across all specifications, the coefficient on *Board Reform* remains positive and statistically significant at the 1% level, confirming that board reforms are associated with an increase in share repurchases.

To address concerns that extreme values in *Rep/Asset* may bias the results, Column 5 re-estimates the baseline model using the natural logarithm of  $(1 + \text{Rep/Asset})$  as the dependent variable. The results remain consistent, showing that board reforms lead to an approximate 4.1% increase in the share repurchase ratio. Furthermore, Column 6 presents the results that used a dummy variable indicating whether a firm engaged in share repurchases. The results indicate that board reform increases the probability of conducting a share repurchase by approximately 7.8 percentage points, further supporting Hypothesis 1a.

[Insert Table 4 About Here]

## 2. Alternative Models and Samples

Table 5 presents additional robustness tests by modifying the regression model specifications and sample selection criteria. First, to address potential biases arising from the repeated use of not-yet-treated countries as controls in our baseline model, we apply an inverse-

frequency weighting scheme. We assign lower weights to control observations that are used multiple times across different event-time stacks and report the result in Column 1. In Column 2, we include industry-year fixed effects in addition to cohort-firm and cohort-year fixed effects to control for temporary industry-level shocks that may affect share repurchase activity. Following previous repurchase studies (e.g., Brockman, Howe, and Mortal 2008; Lee and Suh 2011; Nyborg and Wang 2021), we estimate a two-sided Tobit model (censored at zero and one) in Column 3 to address the substantial number of zero observations of repurchases. Across all three models, the coefficient on *Board Reform* remains positive and statistically significant, reinforcing the baseline findings.

To address potential concerns related to self-selection bias and reduce the possibility that differences in firm characteristics confound our results, we balance the covariates between control and treatment groups. Columns 4 and 5 employ PSM and entropy balancing approaches, respectively. We estimate propensity scores using the full set of control variables from the baseline model, taking not-yet-treated firms as the control group.<sup>22</sup> For the entropy balancing method, we impose first-, second-, and third-order moment constraints on the covariates.<sup>23</sup> The results remain robust across both specifications.

Furthermore, we re-estimate the baseline model using alternative or restricted samples. First, we extend the event window from  $[-5, 5]$  to  $[-10, 10]$  to examine whether our results are

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<sup>22</sup> Figure A1 in the Appendix reports the balance test, which examines whether the matched treatment and control groups are similar in terms of the covariates. Figure A2 in the Appendix reports that the distribution of propensity scores is well balanced after implementing PSM.

<sup>23</sup> We set a convergence tolerance level of 0.15. Table A3 in the Appendix reports the comparison of the mean, variance, and skewness of the covariates between pre- and post-balancing.

sensitive to the choice of window length. Column 6 restricts the sample to observations within a ten-year window. Next, as shown in Table 1, firms from the United States comprise more than one-quarter of the total sample, raising concerns that they may disproportionately influence the results. To test the sensitivity of our findings, Column 7 of Table 5 re-estimates the baseline model excluding U.S. firms. The coefficients on *Board Reform* remain positive and statistically significant.

Finally, another potential source of bias is that in some countries, the year of share repurchase legalization closely coincides with the year of board reform implementation, making it difficult to disentangle the policy effects of board reforms from those of share repurchase legalization. To mitigate this concern, Column 8 restricts the sample to countries where share repurchases had been legalized at least five years prior to board reforms. Across all these checks, the coefficient on *Board Reform* remains positive. While statistical significance declines in some cases, all specifications retain significance at the 1% or 5% level, confirming the robustness of our baseline findings.

[Insert Table 5 About Here]

### 3. Alternative Staggered DiD Approaches

In this study, we employ stacked DiD as our main approach to address the limitations of conventional TWFE staggered DiD. In addition to stacked DiD, the literature proposes two other

approaches, which are re-weighting DiD estimates by Callaway and Sant’Anna (2021) (CS DiD) and the imputation-based DiD developed by Borusyak, Jaravel, and Spiess (2024) (imputation DiD). These methods are specifically designed for staggered adoption settings and mitigate the bias arising from heterogeneous or dynamic treatment effects across cohorts.<sup>24</sup> We employ these two estimators as complementary robustness checks.<sup>25</sup>

Table 6 shows that except for Column 1 where the coefficient is positive but not statistically significant at the 10% level, the other columns show that the average treatment effect of the board reform on share repurchases is positive and statistically significant. The economic significance estimated from the imputation DiD is larger than that from our baseline stacked DiD results, indicating that share repurchases increase by approximately 26.6% of the sample mean (7.0% of the standard deviation) of *Rep/Asset*, while the estimate from the CS DiD is comparable to the stacked DiD results. Overall, these findings suggest that the observed effects of board reforms on share repurchases are robust to alternative DiD identification strategies.

[Insert Table 6 About Here]

#### 4. Parallel Trends Test and Dynamic Treatment Effects

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<sup>24</sup> The CS DiD and imputation DiD approaches employ different designs from the stacked DiD method to address the limitations of TWFE staggered DiD approach. Specifically, the CS DiD approach estimates group-time average treatment effects and aggregates them using weights that reflect the relative size and timing of each cohort. In contrast, the imputation DiD approach predicts untreated potential outcomes for treated units by using outcomes of never-treated or not-yet-treated groups within the same cohort-time cell.

<sup>25</sup> Among the three staggered DiD approaches, we use stacked DiD as our primary specification because its OLS-based estimator readily accommodates the interaction terms required for H2 and mechanism analyses, while providing the most direct comparability with the related board-reform literature.

To examine the parallel trends assumption and understand the dynamics of treatment effects, we conduct an event study of the impact of board reforms on share repurchases using the stacked DiD approach. Figure 1 presents the results of dynamic treatment effects from five years before to five years after the reform,<sup>26</sup> where we set the reference period to one year prior to the reform. The pre-treatment coefficients provide little evidence of a systematic differential trend prior to treatment. The estimates fluctuate around zero and do not display a monotonic pattern leading up to the reform. Although the coefficient in the second year prior to the reform is statistically significant at the 5% level, it is the only significant pre-treatment coefficient and does not form part of a systematic pattern, so this isolated deviation is unlikely to indicate a persistent pre-reform trend. For the post-treatment period, the dynamic effects gradually increase over time. This pattern suggests that the impact of governance reforms is not immediate but rather accumulates gradually, consistent with the findings of Ben-Nasr et al. (2021), Chen et al. (2020), and Li et al. (2023).<sup>27</sup>

[Insert Figure 1 About Here]

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<sup>26</sup> To present the dynamic effects over a longer pre-treatment period and to mitigate potential multicollinearity, we extend the event window to [-7, 5] but do not exclude any relative-time indicators within the main estimation window of [-5, 5]. Employing a different approach (e.g., Baker et al. 2022; Borusyak et al. 2024), we also exclude two pre-treatment relative-time indicators in the estimation while maintaining the original window of [-5, 5]. In an unreported figure, the overall patterns of both pre- and post-treatment effects remain largely unchanged.

<sup>27</sup> To address the concern that the dynamics around the reform may reflect confounding macroeconomic conditions, we further control for a broad set of country-level macroeconomic variables: stock market capitalization (% of GDP) from the Global Financial Development Database; general government final consumption expenditure (% of GDP), domestic credit to the private sector (% of GDP), the official exchange rate, trade openness (% of GDP), and net foreign direct investment (FDI) inflows (% of GDP) from the World Bank. In unreported tests, we find that the estimated effect of board reform on share repurchases remains positive and statistically significant, and the pre-treatment dynamics are essentially unchanged.

To further examine the parallel trends assumption and to assess the robustness of the post-treatment effects to alternative estimation methods, we also perform event studies using the CS DiD and imputation DiD approaches. The results are reported in Figures A3 and A4 in the Appendix.<sup>28</sup> Under both alternative approaches, the pre-treatment effects are not statistically different from zero, and the post-reform effects remain positive and statistically significant, thus supporting the parallel trends assumption.

## 5. Placebo Test

To further check the robustness of our baseline results including the parallel trend assumption underlying our DiD design, and any concern that our results may be attributable to confounding events, we conduct a placebo test. We randomly assign each firm a random board reform year as the pseudo board reform year, generate pseudo dummy variables corresponding to *Board Reform*, and then repeat the baseline regression 1,000 times. This procedure generates a simulated distribution of the pseudo coefficients as shown in Figure 2. The distribution of pseudo coefficients exhibits a mean and median around 0.01, which are significantly smaller than the effect of *Board Reform* in our baseline model (0.107) at a significance level of 1%. These results suggest that the estimated effect is unlikely to arise from random assignment of reform timing alone.

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<sup>28</sup> Unlike the stacked DiD estimator, which requires specifying a reference period and whose dynamic effect estimates may vary depending on the choice of that period (e.g., Baker et al. 2022), the CS DiD and imputation DiD estimators directly estimate the average treatment effect at each event time without relying on a baseline period.

[Insert Figure 2 About Here]

## **V. Board Reforms, Investments, and Share Repurchases**

### **A. Investment Opportunities and Financial Flexibility**

Board reforms are expected to enhance the efficiency of corporate resource allocation by aligning managerial incentives more closely with shareholder interests. While Section IV demonstrates that board reforms lead to an increase in share repurchases, this section examines whether this increase in repurchases reflects a more efficient allocation of corporate resources, particularly in terms of investment activities.

If corporate resources are allocated more efficiently following board reforms, the observed increase in share repurchases should be more pronounced among firms with excess free cash flow and less common among firms with abundant investment opportunities. To test this prediction, Columns 1 and 2 of Table 7 divide the sample into high-investment-opportunity firms and low-investment-opportunity firms, using Tobin's  $Q$  ( $Q$ ) as a proxy for investment opportunities. Firms with  $Q > 1$  are classified as having high investment opportunities, while firms with  $Q \leq 1$  are classified as having low investment opportunities.<sup>29</sup> We find that after

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<sup>29</sup> We adopt  $Q = 1$  as the cutoff because it has a useful economic interpretation. Specifically, when  $Q > 1$ , the market values an additional unit of invested capital above its replacement cost, so the marginal investment is value-creating. In contrast, when  $Q < 1$ , an additional unit of invested capital tends to destroy value, so returning cash to shareholders becomes the value-maximizing use of funds (Tobin 1969; Lang, Stulz, and Walkling 1991; Servaes 1991). In addition, we perform robustness checks to ensure that our main results are not sensitive to a  $Q = 1$  cutoff by sorting firms into  $Q$  quintiles (see Table A4 in the Appendix). We perform analogous quintile-based robustness checks for the financial constraint cutoffs based on the WW index (see Table A5 in the Appendix). In both cases, the positive effect of board reform on repurchases is concentrated among low-investment-opportunity (and high-financial-flexibility) firms, consistent with our prediction that better-aligned managerial incentives improve resource allocation and shareholder wealth maximization.

board reforms are implemented, firms with low investment opportunities exhibit a significant increase in share repurchases (Column 1), while firms with high investment opportunities do not experience a significant increase (Column 2). This pattern is consistent with improved manager-shareholder alignment, suggesting that board reforms discourage share repurchases that would come at the expense of valuable investment opportunities.

Next, we examine whether financial flexibility influences firms' repurchasing behavior after board reforms. We classify firms into financially constrained and financially unconstrained groups based on the WW index,<sup>30</sup> where firms in the top tercile are considered financially constrained, while the remaining firms are considered financially unconstrained. The results in Columns 3 and 4 indicate that board reforms significantly increase share repurchases only among financially unconstrained firms. This pattern is consistent with our hypothesis that board reforms improve resource allocation by facilitating repurchases primarily among firms with sufficient financial flexibility, reflecting improved manager-shareholder alignment.

Furthermore, Column 5 examines firms that simultaneously have high investment opportunities and low financial flexibility and finds that board reforms do not significantly increase share repurchases in these firms. Column 6 examines firms that simultaneously have low investment opportunities and no financial constraints and finds that board reforms significantly increase share repurchases in these firms. Overall, these findings suggest that board

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<sup>30</sup> Farre-Mensa and Ljungqvist (2016) argue that no single proxy for financial constraints is uncontested in the literature. They show, for example, that widely used indices may capture firm characteristics such as size or age rather than financial constraint per se. Given these concerns, we verify that our results are robust to an alternative, cash-flow-based measure (EBIT) in Table A6.

reforms promote efficient repurchasing decisions by aligning managerial actions with shareholder interests.<sup>31</sup>

[Insert Table 7 About Here]

## B. Investment Intensity and Efficiency

Having shown that share repurchases following board reforms are concentrated among firms with limited investment opportunities and sufficient financial flexibility, we next examine whether these repurchases ultimately affect corporate investment intensity and efficiency by estimating the following regression model:

$$(2) \quad I_{i,c,t} = \alpha_i + \alpha_t + \beta Board\ Reform_{c,t} \times Rep\ Dummy_{i,c,t-1} \\ + \gamma Controls_{i,c,t-1} + \varepsilon_{i,c,t}$$

where  $I$  represents investment-related variables, including capital expenditures scaled by total assets ( $Capex/Asset$ ), R&D expenditures scaled by total assets ( $RD/Asset$ ), and investment inefficiency proxies following Richardson (2006) and Biddle et al. (2009). The key coefficient of interest is the interaction term  $Board\ Reform \times Rep\ Dummy$ , which captures the differential

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<sup>31</sup> Although Tobin's Q and the WW index are widely used as proxies for investment opportunities and financial flexibility, respectively, in the international corporate finance literature (Haider, Wang, and Wang 2024; Srinivasan 2020), their applicability in a cross-country setting has potential limitations. First, country-specific differences such as variations in valuation practices, market liquidity, and institutional frameworks could reduce cross-country comparability for both Tobin's Q and the WW index. Second, the WW index coefficients are originally calibrated using U.S. firms, raising concerns about their external validity. To address these issues, we re-estimate our models using alternative measures. Specifically, we use past sales growth as a proxy for investment opportunities since it captures firms' capacity for operational expansion, and we employ EBIT as a measure of financial flexibility since it captures firms' internally generated resources. Table A6 in the Appendix presents the results, which are consistent with those reported in Table 7.

effect of share repurchases on investment behavior following board reforms.

Columns 1 and 2 of Table 8 present the results for *Capex/Asset* and *RD/Asset*. In both specifications, the coefficient on *Board Reform*  $\times$  *Rep Dummy* is statistically insignificant. This finding indicates that share repurchases do not crowd out firms' real investments (i.e., capital expenditures and R&D) following board reforms, providing little evidence that such repurchases undermine investment activities. Columns 3 and 4 report the results for investment efficiency. The coefficient on *Board Reform*  $\times$  *Rep Dummy* is negative and statistically significant at the 1% level, suggesting that share repurchases following board reforms enhance investment efficiency. This result indicates that board reforms improve corporate resource allocation, ensuring that repurchase decisions do not come at the expense of value-enhancing investments.

[Insert Table 8 About Here]

Overall, these findings provide empirical support for Hypothesis 2, demonstrating that board reforms promote efficient corporate resource allocation by aligning managerial decisions with shareholder interests. Firms engage in value-maximizing share repurchases while maintaining or improving investment efficiency, reinforcing the view that board reforms enhance corporate governance and capital allocation efficiency.

## **VI. Additional Analyses**

### **A. Board Reform Characteristics and Share Repurchases**

Board reforms can be categorized based on their major components, namely board independence, audit committee and auditor independence, and chairman and CEO separation. Additionally, board reforms can be classified into different types of reforms including comply-or-explain and rule-based approaches. Prior studies report mixed evidence on whether reform effects are uniform across these categories. For example, Chen et al. (2020) and Li et al. (2023) find relatively uniform effects across major components and reform types, whereas Ben-Nasr et al. (2021), Driss (2023), and Fauver et al. (2017) find heterogeneous effects. Given these mixed results, we examine whether our main result holds across all components and types of governance reform, or whether it is concentrated within particular categories of reforms.

Table 9 presents regression results using the baseline model while dividing the sample based on the major components and different types of reforms. The dependent and independent variables remain consistent with the main analysis. Columns 1, 2, 3, and 5 show that the coefficients on *Board Reform* are positive and statistically significant, indicating that reforms involving audit committee and auditor independence, along with board independence reforms, chairman and CEO separation reforms, and rule-based reforms, are associated with an increase in share repurchases. In contrast, the coefficient on *Board Reform* is insignificant in Column 4 for comply-or-explain reforms, suggesting that these reforms might exert a relatively weaker impact on share repurchases.

[Insert Table 9 About Here]

To verify whether the weaker effects of certain board reforms on share repurchases are due to their inherently limited impact or to differences in the underlying mechanisms, we further examine whether investment opportunities influence the relationship between board reforms and share repurchases. Table 10 presents regression results in which the sample is divided based on investment opportunities. For reforms emphasizing board independence, we find that firms with high investment opportunities exhibit an insignificant change in share repurchases (Column 2), whereas firms with low investment opportunities experience a significant increase in repurchase activity following board reforms (Column 1). We observe the same pattern for reforms involving chairman and CEO separation (Columns 5 and 6), and comply-or-explain reforms (Columns 7 and 8).

[Insert Table 10 About Here]

By contrast, for reforms involving audit committee and auditor independence (Columns 3 and 4), and rule-based reforms (Columns 9 and 10), the coefficients on *Board Reform* are positive and statistically significant regardless of investment opportunities. To further assess whether this increase results from firms reallocating limited financial resources toward

repurchases, we examine the effect of financial flexibility on this relationship. Table 11 shows that for firms with high financial flexibility and high investment opportunities, reforms involving audit committee and auditor independence, and rule-based board reforms, significantly increase share repurchases (Columns 1 and 3). In contrast, for firms with low financial flexibility and high investment opportunities, the effect of board reforms on repurchases is insignificant (Columns 2 and 4). Thus, even where board reforms raise repurchases among high-investment-opportunity firms, they do so only when firms have the financial slack to repurchase without forgoing valuable investment.

[Insert Table 11 About Here]

Overall, although the unconditional effects of board reforms on share repurchases vary across major components and types, conditioning on investment opportunities and financial flexibility shows that these differences share a common logic. Board reforms increase repurchases primarily among firms with low investment opportunities, where returning cash is the efficient use of funds. When reforms increase repurchases among high-investment-opportunity firms, the increase is concentrated within financially unconstrained firms. This finding aligns closely with our central result. When managerial incentives are better aligned with shareholder interests, share repurchases increase without sacrificing valuable investment, consistent with improved resource allocation and shareholder wealth maximization.

## B. Board Reforms, Country-level Corporate Governance, and Share Repurchases

We next examine how country-level corporate governance characteristics influence the relationship between board reforms and share repurchases. Specifically, we estimate the following regression model:

$$(3) \quad \frac{Rep}{Asset}_{i,c,t} = \alpha_i + \alpha_t + \beta Board Reform_{c,t} \times Country level CG_{c,t-1} + \gamma Controls_{i,c,t-1} + \varepsilon_{i,c,t}$$

where *Country-level CG* represents five country-level corporate governance indicators: *Common Law*, *Regulatory Quality*, *Rule of Law*, *(Revised) Anti-Director Index*, and *Anti-self-dealing Index*. *Common Law* is a dummy variable that takes the value of one if a country follows the common law system (Anglo-American legal tradition) and zero if it follows the civil law system (Continental legal tradition). *Regulatory Quality* and *Rule of Law* are sourced from the World Governance Indicators of the World Bank DataBank and measure, respectively, the government's ability to formulate and implement sound policies and the extent to which legal frameworks are effectively enforced<sup>32</sup>. *(Revised) Anti-Director Index* and *Anti-self-dealing Index* are obtained from Djankov et al. (2008) and capture the level of managerial discretion and the strength of minority shareholder protection within a country. The key coefficient of interest is the interaction term between *Board Reform* and *Country-level CG*, which captures how the strength of a country's governance system influences the effect of board reforms on share repurchases. A larger value of these indicators suggests stronger country-level corporate governance.

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<sup>32</sup> The WGI dataset does not report *Regulatory Quality* and *Rule of Law* for years prior to 1996, or for 1997, 1999, and 2001. For years prior to 1996, we conservatively assign the 1996 values. For 1997, 1999, and 2001, we use linear interpolation between adjacent observations to ensure a smooth transition.

Table 12 presents the estimation results. In Columns 1, 2, 4, and 5, the coefficients on *Board Reform*  $\times$  *Country-level CG* are negative and statistically significant. In Column 3, the coefficient on the interaction term becomes insignificant, but remains negative. These findings suggest that the effect of board reforms on share repurchases is more pronounced in countries where corporate governance systems are weaker, despite the lack of strong statistical significance. This result is consistent with Chen et al. (2020), Driss (2023), and Li et al. (2023), who suggest a substitutive relationship between institutional quality and board reform, in contrast to Ben-Nasr et al. (2021) and Ahmad et al. (2024), who reject a substitutive relationship.

[Insert Table 12 About Here]

## VII. Conclusion

This study investigates the impact of board reforms on corporate share repurchase decisions using data from 36 countries that implemented board reforms between 1985 and 2021. Employing a stacked DiD design, we find that board reforms significantly increase share repurchases. Robustness analyses confirm that this main finding is consistent across different model specifications and sample settings. Importantly, the increase in share repurchases does not come at the expense of value-enhancing investments. Instead, we document that board reforms increase the efficient allocation of capital and improve repurchasing firms' investment efficiency. These findings indicate that when corporate governance is strengthened and managerial

incentives are better aligned with shareholder interests, firms are more likely to distribute excess cash through repurchases rather than hoard it or allocate it to suboptimal projects. In this sense, the shareholder-wealth-maximization objective appears to guide managerial actions. Overall, these results suggest that when governance reforms strengthen managerial incentives, firms increase share repurchases in a way consistent with long-term shareholder value and improved resource allocation.

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**FIGURE 1**  
**Event Study from Stacked DiD**

This figure reports the dynamic average treatment effects on the treated, along with the 95% confidence intervals, for relative-time periods ranging from five years before to five years after the year of board reform, as estimated using the stacked DiD estimator. The reference period is 1 year prior to board reform.

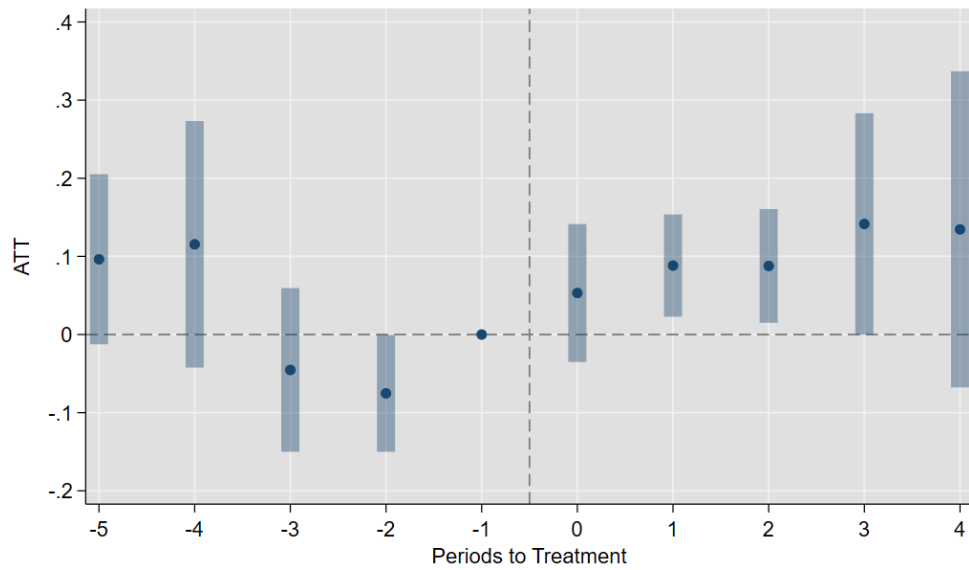


**FIGURE 2**  
**Distribution of Placebo Coefficients**

This figure presents the distribution of pseudo coefficients from the placebo test. In this test, pseudo dummy variables for *Board Reform* are created using randomly assigned pseudo board reform years for each firm. The pseudo coefficients are estimated using these dummy variables within the baseline regression model, with the estimation repeated 1,000 times. For comparison, the coefficient of *Board Reform* from the baseline regression model (Column 2 of Table 3) is shown as a dotted line.

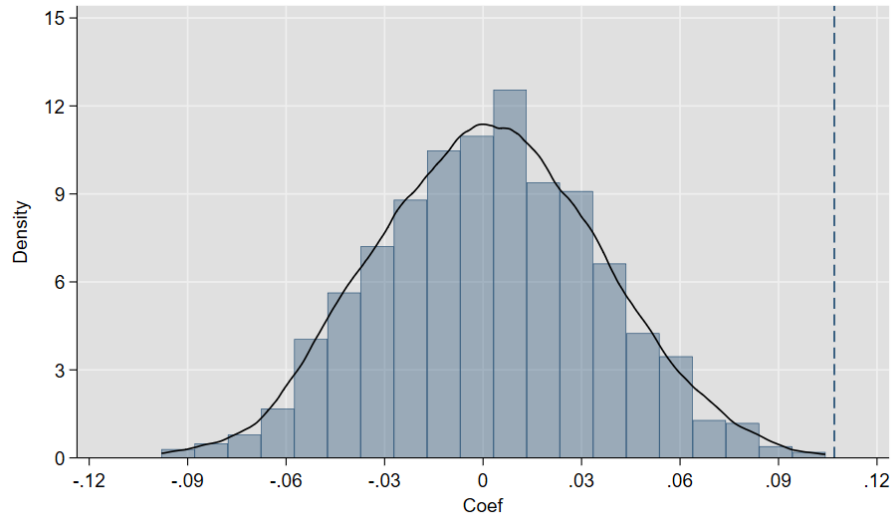


**TABLE 1**  
**Sample Distribution**

This table presents the distribution of the full sample by country. It provides the major reform year, reform components and types, the share repurchase legalization year, the number of share repurchase observations, the number of firms that have conducted share repurchases, and the total number of firms.

| Country   | Board Reform Year | Board Reform Characteristics |                                          |                             |                   | Legalization Year | No. of Share Repurchases | No. of Firms (Share Repurchases) | No. of Firms |
|-----------|-------------------|------------------------------|------------------------------------------|-----------------------------|-------------------|-------------------|--------------------------|----------------------------------|--------------|
|           |                   | Board Independence           | Audit Committee and Auditor Independence | Chairman and CEO Separation | Reform Types      |                   |                          |                                  |              |
| Australia | 2004              | Yes                          | Yes                                      | Yes                         | Comply-or-explain | 1995              | 581                      | 256                              | 2627         |
| Austria   | 2004              | Yes                          | Yes                                      | No                          | Comply-or-explain | 2003              | 57                       | 28                               | 79           |
| Belgium   | 2005              | Yes                          | Yes                                      | Yes                         | Comply-or-explain | 1984              | 145                      | 43                               | 131          |
| Brazil    | 2002              | No                           | No                                       | No                          | Rule-based        | 1976              | 65                       | 25                               | 253          |
| Bulgaria  | 2007              | Yes                          | Yes                                      | Yes                         | Comply-or-explain | 1991              | 2                        | 1                                | 216          |
| Canada    | 2004              | Yes                          | Yes                                      | Yes                         | Rule-based        | 1985              | 1150                     | 362                              | 4374         |
| Chile     | 2001              | No                           | Yes                                      | No                          | Rule-based        | 1981              | 9                        | 7                                | 152          |
| Denmark   | 2001              | Yes                          | No                                       | No                          | Comply-or-explain | 2000              | 157                      | 47                               | 185          |
| Egypt     | 2002              | Yes                          | Yes                                      | No                          | Rule-based        | 1992              | 24                       | 11                               | 207          |
| Finland   | 2004              | Yes                          | Yes                                      | Yes                         | Comply-or-explain | 1997              | 156                      | 53                               | 202          |
| France    | 2003              | No                           | Yes                                      | No                          | Rule-based        | 1998              | 749                      | 278                              | 999          |
| Germany   | 2002              | Yes                          | Yes                                      | No                          | Comply-or-explain | 1998              | 280                      | 171                              | 1558         |
| Hong Kong | 2005              | Yes                          | Yes                                      | Yes                         | Comply-or-explain | 1991              | 705                      | 318                              | 2163         |
| India     | 2002              | Yes                          | Yes                                      | No                          | Rule-based        | 1998              | 330                      | 189                              | 4176         |
| Indonesia | 2007              | Yes                          | Yes                                      | No                          | Rule-based        | 1995              | 83                       | 51                               | 791          |

|                |      |     |     |     |                   |      |      |      |      |
|----------------|------|-----|-----|-----|-------------------|------|------|------|------|
| Ireland        | 1995 | Yes | Yes | Yes | Comply-or-explain | 1990 | 18   | 9    | 68   |
| Israel         | 2000 | Yes | Yes | Yes | Rule-based        | 1999 | 63   | 32   | 523  |
| Italy          | 2006 | Yes | Yes | No  | Rule-based        | 1999 | 246  | 95   | 490  |
| Japan          | 2002 | No  | Yes | No  | Rule-based        | 1995 | 6860 | 1302 | 4657 |
| Kuwait         | 2010 | Yes | Yes | Yes | Comply-or-explain | 2010 | 66   | 28   | 105  |
| Malaysia       | 2001 | Yes | Yes | No  | Comply-or-explain | 1997 | 319  | 133  | 1165 |
| Mexico         | 2001 | Yes | Yes | No  | Rule-based        | 1996 | 230  | 59   | 136  |
| Netherlands    | 2004 | Yes | Yes | Yes | Comply-or-explain | 1992 | 218  | 61   | 146  |
| New Zealand    | 2004 | Yes | Yes | Yes | Comply-or-explain | 1994 | 53   | 22   | 159  |
| Norway         | 2005 | Yes | Yes | Yes | Comply-or-explain | 1999 | 246  | 81   | 440  |
| Peru           | 2005 | Yes | Yes | No  | Comply-or-explain | 1997 | 17   | 8    | 115  |
| Poland         | 2002 | Yes | No  | No  | Comply-or-explain | 2000 | 47   | 30   | 703  |
| Singapore      | 2003 | Yes | Yes | No  | Comply-or-explain | 1998 | 213  | 113  | 845  |
| South Africa   | 2002 | Yes | Yes | Yes | Comply-or-explain | 2000 | 247  | 85   | 335  |
| South Korea    | 1999 | Yes | Yes | No  | Rule-based        | 1994 | 1063 | 414  | 2921 |
| Spain          | 2006 | Yes | Yes | No  | Comply-or-explain | 1989 | 327  | 81   | 196  |
| Sweden         | 2006 | Yes | Yes | Yes | Comply-or-explain | 2000 | 223  | 81   | 1011 |
| Switzerland    | 2002 | No  | No  | No  | Comply-or-explain | 1992 | 426  | 120  | 232  |
| Thailand       | 2002 | Yes | Yes | No  | Comply-or-explain | 2001 | 30   | 25   | 780  |
| United Kingdom | 1998 | Yes | Yes | Yes | Comply-or-explain | 1981 | 552  | 255  | 2155 |

|                        |      |     |     |    |            |      |       |      |       |
|------------------------|------|-----|-----|----|------------|------|-------|------|-------|
| United States<br>Total | 2003 | Yes | Yes | No | Rule-based | 1982 | 13333 | 3382 | 12270 |
|                        |      |     |     |    |            |      | 29290 | 8256 | 47565 |

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**TABLE 2**  
**Descriptive Statistics and Correlation Matrix**

This table provides descriptive statistics in Panel A and a correlation matrix in Panel B for key variables in the study. Variables are defined in the Appendix. All firm-level continuous variables are winsorized at the 1% and 99% levels.

**Panel A. Descriptive Statistics**

|                                                            | N      | Mean   | SD     | P5      | P25     | P50    | P75    | P95     |
|------------------------------------------------------------|--------|--------|--------|---------|---------|--------|--------|---------|
| (1) <i>Rep/Asset (%)</i>                                   | 131742 | 0.508  | 1.927  | 0.000   | 0.000   | 0.000  | 0.000  | 3.188   |
| <i>Rep/MktCap (%)</i>                                      | 131742 | 0.531  | 1.857  | 0.000   | 0.000   | 0.000  | 0.000  | 3.689   |
| <i>Rep/Equity (%)</i>                                      | 103928 | 1.359  | 4.671  | 0.000   | 0.000   | 0.000  | 0.004  | 8.853   |
| <i>Rep/Sales (%)</i>                                       | 131742 | 0.600  | 2.397  | 0.000   | 0.000   | 0.000  | 0.000  | 3.465   |
| <i>Rep/Cashflow (%)</i>                                    | 131742 | 4.269  | 16.203 | 0.000   | 0.000   | 0.000  | 0.000  | 29.283  |
| <i>ln(1+Rep/Asset)</i>                                     | 131680 | 0.174  | 0.510  | 0.000   | 0.000   | 0.000  | 0.000  | 1.436   |
| <i>Rep Dummy</i>                                           | 131742 | 0.208  | 0.406  | 0.000   | 0.000   | 0.000  | 0.000  | 1.000   |
| (2) <i>Capex/Asset</i>                                     | 129101 | 0.063  | 0.912  | 0.001   | 0.013   | 0.033  | 0.068  | 0.194   |
| (3) <i>RD/Asset</i>                                        | 129890 | 0.064  | 3.615  | 0.000   | 0.000   | 0.000  | 0.011  | 0.161   |
| (4) <i>Investment Inefficiency</i><br>(Richardson 2006)    | 131104 | 0.169  | 4.549  | 0.004   | 0.021   | 0.046  | 0.097  | 0.392   |
| (5) <i>Investment Inefficiency</i><br>(Biddle et al. 2009) | 131104 | 0.155  | 3.579  | 0.008   | 0.039   | 0.081  | 0.128  | 0.353   |
| (6) <i>Board Reform</i>                                    | 131742 | 0.679  | 0.467  | 0.000   | 0.000   | 1.000  | 1.000  | 1.000   |
| (7) <i>EBIT/Asset</i>                                      | 131742 | -0.083 | 0.582  | -0.767  | -0.023  | 0.049  | 0.105  | 0.221   |
| (8) <i>PPE/Asset</i>                                       | 131742 | 0.568  | 0.412  | 0.045   | 0.239   | 0.503  | 0.822  | 1.309   |
| (9) <i>Cash/Asset</i>                                      | 131742 | 0.176  | 0.197  | 0.005   | 0.039   | 0.106  | 0.234  | 0.628   |
| (10) <i>Div/Asset</i>                                      | 131742 | 1.194  | 2.353  | 0.000   | 0.000   | 0.146  | 1.292  | 5.643   |
| (11) <i>Sales Growth (%)</i>                               | 131742 | 24.103 | 87.031 | -35.330 | -2.770  | 6.360  | 22.060 | 117.410 |
| (12) <i>Stock Returns (%)</i>                              | 131742 | 15.554 | 75.920 | -68.878 | -26.452 | 0.000  | 33.636 | 154.965 |
| (13) <i>Market-to-book Ratio</i>                           | 131742 | 2.408  | 4.954  | -0.310  | 0.750   | 1.460  | 2.820  | 9.010   |
| (14) <i>SD (Cashflow)</i>                                  | 131742 | 0.115  | 0.349  | 0.004   | 0.014   | 0.029  | 0.069  | 0.404   |
| (15) <i>WW Index</i>                                       | 131742 | 0.811  | 5.988  | -3.104  | -1.076  | -0.454 | 0.628  | 7.215   |
| (16) <i>HHI</i>                                            | 131742 | 0.227  | 0.232  | 0.040   | 0.068   | 0.130  | 0.298  | 0.782   |
| (17) <i>GDP Growth</i>                                     | 131742 | 3.012  | 2.409  | -0.334  | 1.700   | 2.785  | 4.103  | 7.725   |
| (18) <i>CPI</i>                                            | 131742 | 2.115  | 2.238  | -0.740  | 0.899   | 2.188  | 2.853  | 5.134   |
| (19) <i>Stk Mkt Return (%)</i>                             | 131742 | 7.217  | 17.906 | -22.705 | -7.109  | 11.285 | 20.330 | 34.798  |
| (20) <i>Interest Rate (%)</i>                              | 131742 | 6.032  | 3.282  | 1.767   | 4.110   | 5.793  | 7.957  | 12.300  |

**TABLE 2 (cont.)**  
**Descriptive Statistics and Correlation Matrix**

This table provides descriptive statistics in Panel A and a correlation matrix in Panel B for key variables in the study. Variables are defined in the Appendix. All firm-level continuous variables are winsorized at the 1% and 99% levels.

**Panel B. Correlation Matrix for Main Variables**

|      | (1)    | (2)    | (3)    | (4)    | (5)    | (6)    | (7)    | (8)    | (9)    | (10)   | (11)  | (12)   | (13)   | (14)   | (15)  | (16)  | (17)  | (18)  | (19)  | (20)  |
|------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-------|--------|--------|--------|-------|-------|-------|-------|-------|-------|
| (1)  | 1.000  |        |        |        |        |        |        |        |        |        |       |        |        |        |       |       |       |       |       |       |
| (2)  | -0.003 | 1.000  |        |        |        |        |        |        |        |        |       |        |        |        |       |       |       |       |       |       |
| (3)  | -0.002 | 0.039  | 1.000  |        |        |        |        |        |        |        |       |        |        |        |       |       |       |       |       |       |
| (4)  | -0.003 | 0.675  | 0.625  | 1.000  |        |        |        |        |        |        |       |        |        |        |       |       |       |       |       |       |
| (5)  | -0.003 | 0.406  | 0.907  | 0.845  | 1.000  |        |        |        |        |        |       |        |        |        |       |       |       |       |       |       |
| (6)  | 0.005  | 0.004  | 0.000  | -0.001 | 0.003  | 1.000  |        |        |        |        |       |        |        |        |       |       |       |       |       |       |
| (7)  | 0.068  | -0.016 | -0.066 | -0.069 | -0.069 | -0.028 | 1.000  |        |        |        |       |        |        |        |       |       |       |       |       |       |
| (8)  | -0.054 | 0.022  | 0.007  | 0.009  | 0.008  | -0.022 | 0.010  | 1.000  |        |        |       |        |        |        |       |       |       |       |       |       |
| (9)  | 0.050  | -0.000 | 0.019  | 0.008  | 0.015  | 0.061  | -0.168 | -0.349 | 1.000  |        |       |        |        |        |       |       |       |       |       |       |
| (10) | 0.047  | -0.001 | -0.008 | -0.007 | -0.006 | 0.037  | 0.196  | 0.032  | -0.019 | 1.000  |       |        |        |        |       |       |       |       |       |       |
| (11) | -0.022 | 0.009  | -0.004 | -0.003 | -0.003 | 0.027  | -0.053 | -0.107 | 0.087  | -0.041 | 1.000 |        |        |        |       |       |       |       |       |       |
| (12) | 0.013  | 0.005  | -0.004 | -0.006 | -0.004 | 0.065  | 0.083  | -0.021 | 0.057  | 0.034  | 0.061 | 1.000  |        |        |       |       |       |       |       |       |
| (13) | 0.073  | 0.003  | -0.016 | -0.015 | -0.017 | -0.012 | 0.057  | -0.115 | 0.161  | 0.071  | 0.076 | 0.181  | 1.000  |        |       |       |       |       |       |       |
| (14) | -0.036 | 0.010  | 0.064  | 0.063  | 0.065  | 0.042  | -0.670 | -0.060 | 0.195  | -0.108 | 0.103 | 0.003  | -0.023 | 1.000  |       |       |       |       |       |       |
| (15) | -0.030 | 0.014  | 0.024  | 0.024  | 0.026  | 0.033  | -0.163 | -0.079 | 0.110  | -0.056 | 0.130 | 0.106  | 0.071  | 0.165  | 1.000 |       |       |       |       |       |
| (16) | -0.074 | 0.007  | -0.010 | -0.003 | -0.006 | -0.036 | 0.087  | 0.081  | -0.093 | 0.173  | 0.012 | -0.005 | -0.004 | -0.070 | 0.007 | 1.000 |       |       |       |       |
| (17) | 0.013  | 0.006  | -0.001 | -0.002 | -0.000 | 0.011  | 0.035  | -0.018 | -0.028 | 0.106  | 0.067 | 0.086  | 0.037  | -0.001 | 0.050 | 0.055 | 1.000 |       |       |       |
| (18) | 0.036  | 0.008  | 0.004  | 0.006  | 0.005  | -0.051 | -0.031 | -0.008 | -0.040 | 0.049  | 0.072 | -0.007 | 0.026  | 0.056  | 0.044 | 0.156 | 0.218 | 1.000 |       |       |
| (19) | 0.035  | 0.007  | -0.002 | -0.005 | -0.001 | -0.019 | 0.055  | -0.004 | 0.003  | 0.067  | 0.041 | 0.177  | 0.072  | -0.021 | 0.054 | 0.029 | 0.502 | 0.080 | 1.000 |       |
| (20) | 0.044  | 0.009  | 0.003  | 0.007  | 0.006  | -0.206 | -0.008 | -0.009 | -0.051 | 0.089  | 0.075 | 0.011  | 0.031  | 0.038  | 0.056 | 0.171 | 0.376 | 0.723 | 0.175 | 1.000 |

**Table 3. Board Reforms and Share Repurchases**

| TABLE 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                     |                      |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|----------------------|
| Board Reforms and Share Repurchases                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                     |                      |
| This table reports regression results on the impact of board reforms on share repurchases, using a stacked DiD approach. Column 1 reports results using DiD regression without control variables. Column 2 reports results using baseline DiD regression. Variables are defined in the Appendix. All firm-level continuous variables are winsorized at the 1% and 99% levels. Standard errors are clustered at the country level. Stacked Obs. denotes the number of cohort-firm-year observations in the stacked sample constructed for the stacked DiD approach. <i>t</i> -statistics are reported in parentheses, ***, **, and * represent statistical significance at the 1%, 5%, and 10% levels, respectively. |                     |                      |
| Dependent Variable:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | <i>Rep/Asset</i>    |                      |
| Models:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Without Controls    | Baseline             |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 1                   | 2                    |
| <i>Board Reform</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 0.128***<br>(3.29)  | 0.107***<br>(3.46)   |
| <i>EBIT/Asset</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                     | 0.064***<br>(7.94)   |
| <i>PPE/Asset</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                     | -0.065***<br>(-2.92) |
| <i>Cash/Asset</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                     | 0.913***<br>(3.45)   |
| <i>Div/Asset</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                     | 0.022<br>(1.63)      |
| <i>Sales Growth</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                     | 0.002***<br>(3.06)   |
| <i>Stock Returns</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                     | -0.000<br>(-1.16)    |
| <i>Market-to-book Ratio</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                     | -0.001**<br>(-2.26)  |
| <i>SD (Cashflow)</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                     | -0.075***<br>(-5.88) |
| <i>WW Index</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                     | -0.031***<br>(-3.21) |
| <i>HHI</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                     | -0.133<br>(-1.16)    |
| <i>GDP Growth</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                     | 0.021*<br>(1.85)     |
| <i>CPI</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                     | 0.000<br>(1.31)      |
| <i>Stk Mkt Return</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                     | 0.003*<br>(1.70)     |
| <i>Interest Rate</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                     | 0.048**<br>(2.05)    |
| Constant                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 0.487***<br>(85.97) | -0.039<br>(-0.16)    |
| Cohort × Firm                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Yes                 | Yes                  |
| Cohort × Year                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Yes                 | Yes                  |
| Stacked Obs.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 478264              | 478261               |
| Adj-R <sup>2</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 0.356               | 0.360                |

**TABLE 4**  
**Robustness: Alternative Measures of Share Repurchase**

This table reports regression results on the impact of board reforms on share repurchases, using various alternative proxies for share repurchases. Variables are defined in the Appendix. All firm-level continuous variables are winsorized at the 1% and 99% levels. Standard errors are clustered at the country level. Stacked Obs. denotes the number of cohort-firm-year observations in the stacked sample constructed for the stacked DiD approach. *t*-statistics are reported in parentheses, \*\*\*, \*\*, and \* represent statistical significance at the 1%, 5%, and 10% levels, respectively.

| Dependent Variables:        | <i>Rep/MktCap</i>    | <i>Rep/Equity</i>    | <i>Rep/Sales</i>     | <i>Rep/Cashflow</i>  | <i>ln(1+Rep/Asset)</i> | <i>Rep Dummy</i>    |
|-----------------------------|----------------------|----------------------|----------------------|----------------------|------------------------|---------------------|
|                             | 1                    | 2                    | 3                    | 4                    | 5                      | 6                   |
| <i>Board Reform</i>         | 0.139***<br>(3.03)   | 0.218***<br>(2.75)   | 0.124***<br>(3.76)   | 1.336***<br>(3.95)   | 0.041***<br>(3.74)     | 0.078***<br>(2.82)  |
| <i>EBIT/Asset</i>           | 0.060***<br>(7.18)   | 0.167***<br>(9.59)   | 0.052***<br>(3.09)   | 0.296***<br>(7.37)   | 0.021***<br>(11.71)    | 0.017***<br>(10.62) |
| <i>PPE/Asset</i>            | -0.187***<br>(-3.66) | -0.100<br>(-1.55)    | -0.217***<br>(-3.78) | -0.851***<br>(-3.77) | -0.023***<br>(-3.51)   | -<br>(-2.80)        |
| <i>Cash/Asset</i>           | 0.702***<br>(3.97)   | 1.572***<br>(4.84)   | 1.001***<br>(3.58)   | 5.784***<br>(3.71)   | 0.239***<br>(3.67)     | 0.100**<br>(2.49)   |
| <i>Div/Asset</i>            | 0.010<br>(1.33)      | 0.053**<br>(2.09)    | 0.020*<br>(1.76)     | 0.131*<br>(1.94)     | 0.007**<br>(2.49)      | 0.005***<br>(4.33)  |
| <i>Sales Growth</i>         | 0.001***<br>(2.94)   | 0.000<br>(0.79)      | 0.000<br>(0.02)      | 0.001<br>(0.70)      | 0.000***<br>(3.10)     | 0.000***<br>(3.15)  |
| <i>Stock Returns</i>        | -0.001*<br>(-1.81)   | -0.000<br>(-1.33)    | -0.000<br>(-1.03)    | -0.003*<br>(-1.88)   | -0.000<br>(-1.63)      | -<br>(-2.82)        |
| <i>Market-to-book Ratio</i> | -0.007***<br>(-8.22) | 0.001<br>(0.29)      | -0.004***<br>(-6.46) | -0.024***<br>(-5.18) | -0.001***<br>(-3.72)   | -<br>(-3.15)        |
| <i>SD (Cashflow)</i>        | -0.058***<br>(-3.48) | -0.090***<br>(-2.74) | -0.093***<br>(-4.00) | -0.026<br>(-0.15)    | -0.019***<br>(-6.04)   | -<br>(-5.21)        |
| <i>WW Index</i>             | -0.017***<br>(-3.47) | -0.006<br>(-1.68)    | -0.004<br>(-1.06)    | -0.027<br>(-1.07)    | -0.007***<br>(-3.31)   | -<br>(-3.38)        |
| <i>HHI</i>                  | -0.091<br>(-0.92)    | -0.312<br>(-1.16)    | -0.219<br>(-1.34)    | -0.495<br>(-0.65)    | -0.042<br>(-1.51)      | 0.015<br>(0.41)     |
| <i>GDP Growth</i>           | 0.030*<br>(1.82)     | 0.040**<br>(2.07)    | 0.016<br>(1.42)      | 0.161*<br>(1.76)     | 0.006*<br>(1.85)       | 0.002<br>(0.81)     |
| <i>CPI</i>                  | 0.000<br>(1.32)      | 0.000**<br>(2.71)    | 0.000<br>(0.68)      | 0.001*<br>(1.95)     | 0.000<br>(0.94)        | -0.000*<br>(-1.73)  |
| <i>Stk Mkt Return</i>       | 0.003*<br>(1.85)     | 0.006*<br>(1.91)     | 0.004*<br>(1.88)     | 0.032*<br>(1.98)     | 0.001*<br>(1.93)       | 0.001*<br>(1.85)    |
| <i>Interest Rate</i>        | 0.042*<br>(1.85)     | 0.058<br>(1.91)      | 0.051**<br>(1.88)    | 0.389**<br>(1.98)    | 0.014**<br>(1.93)      | 0.013***<br>(1.85)  |

|                    |        |        |        |        |        |         |
|--------------------|--------|--------|--------|--------|--------|---------|
|                    | (2.03) | (1.57) | (2.16) | (2.31) | (2.20) | (4.13)  |
| Constant           | 0.135  | 0.526  | 0.145  | 0.089  | 0.026  | 0.074** |
|                    | (0.70) | (1.27) | (0.74) | (0.05) | (0.37) | (2.40)  |
| Cohort ×<br>Firm   | Yes    | Yes    | Yes    | Yes    | Yes    | Yes     |
| Cohort ×<br>Year   | Yes    | Yes    | Yes    | Yes    | Yes    | Yes     |
| Stacked<br>Obs.    | 478261 | 390960 | 478261 | 478261 | 477380 | 478261  |
| Adj-R <sup>2</sup> | 0.241  | 0.326  | 0.332  | 0.277  | 0.416  | 0.456   |

**TABLE 5**  
**Robustness: Alternative Samples and Models**

This table reports regression results on the impact of board reforms on share repurchases, using alternative samples and models. Columns 1–3 report results using alternative models. Columns 4 and 5 report results using PSM approach and entropy balancing approach, respectively. Columns 6–8 report the results using several alternative or restricted samples. Variables are defined in the Appendix. All firm-level continuous variables are winsorized at the 1% and 99% levels. Standard errors are clustered at the country level. Stacked Obs. denotes the number of cohort-firm-year observations in the stacked sample constructed for the stacked DiD approach. *t*-statistics are reported in parentheses across all columns except Column 3, *z*-statistics are reported in Column 3. \*\*\*, \*\*, and \* represent statistical significance at the 1%, 5%, and 10% levels, respectively.

| Dependent Variable:         | <i>Rep/Asset</i>            |                             |                     |                      |                      |                               |                               |                                                             |
|-----------------------------|-----------------------------|-----------------------------|---------------------|----------------------|----------------------|-------------------------------|-------------------------------|-------------------------------------------------------------|
| Samples or Models:          | Inverse-frequency Weighting | Additional Industry-Year FE | Tobit Model         | PSM 1:1              | Entropy Balancing    | Alternative Window: [-10, 10] | Restricted Sample: Exclude US | Restricted Sample: Consideration of Repurchase Legalization |
|                             | 1                           | 2                           | 3                   | 4                    | 5                    | 6                             | 7                             | 8                                                           |
| <i>Board Reform</i>         | 0.097***<br>(3.06)          | 0.100***<br>(2.80)          | 0.171***<br>(6.01)  | 0.129***<br>(3.40)   | 0.082**<br>(2.45)    | 0.092***<br>(3.07)            | 0.104***<br>(3.03)            | 0.092**<br>(2.69)                                           |
| <i>EBIT/Asset</i>           | 0.044***<br>(6.97)          | 0.064***<br>(7.35)          | 0.569***<br>(4.07)  | 0.048**<br>(2.64)    | 0.048***<br>(4.07)   | 0.096***<br>(6.71)            | 0.055**<br>(2.27)             | 0.064***<br>(7.59)                                          |
| <i>PPE/Asset</i>            | -0.063***<br>(-3.35)        | -0.046*<br>(-1.78)          | -0.066**<br>(-2.04) | -0.087<br>(-1.53)    | -0.080<br>(-1.62)    | -0.046<br>(-1.17)             | -0.081**<br>(-2.26)           | -0.072***<br>(-3.03)                                        |
| <i>Cash/Asset</i>           | 0.692***<br>(3.79)          | 0.935***<br>(3.50)          | 0.153<br>(1.64)     | 0.880***<br>(4.65)   | 0.882***<br>(6.45)   | 0.897***<br>(2.96)            | 0.368***<br>(3.68)            | 0.959***<br>(3.72)                                          |
| <i>Div/Asset</i>            | 0.026**<br>(2.25)           | 0.020<br>(1.63)             | 0.074***<br>(10.78) | 0.023<br>(1.31)      | 0.023<br>(1.63)      | 0.024**<br>(2.06)             | 0.011*<br>(1.80)              | 0.026<br>(1.54)                                             |
| <i>Sales Growth</i>         | 0.001***<br>(2.96)          | 0.002***<br>(3.02)          | 0.097**<br>(2.29)   | 0.003***<br>(2.93)   | 0.002***<br>(3.04)   | 0.001***<br>(2.96)            | -0.000<br>(-0.30)             | 0.002***<br>(3.10)                                          |
| <i>Stock Returns</i>        | -0.000<br>(-1.00)           | -0.000<br>(-1.21)           | -0.000**<br>(-2.39) | -0.000<br>(-1.14)    | -0.000<br>(-1.54)    | -0.000<br>(-1.01)             | 0.000<br>(1.58)               | -0.000<br>(-1.34)                                           |
| <i>Market-to-book Ratio</i> | -0.000<br>(-0.24)           | -0.000<br>(-0.55)           | 0.001<br>(0.39)     | -0.004***<br>(-8.41) | -0.004***<br>(-5.30) | 0.000<br>(0.41)               | -0.004***<br>(-2.97)          | -0.001**<br>(-2.76)                                         |
| <i>SD (Cashflow)</i>        | -0.060***                   | -0.091***                   | -0.532***           | -0.053***            | -0.056***            | -0.055***                     | -0.037                        | -0.073***                                                   |

|                                               |           |           |           |           |           |           |         |           |
|-----------------------------------------------|-----------|-----------|-----------|-----------|-----------|-----------|---------|-----------|
|                                               | (-4.64)   | (-6.72)   | (-6.91)   | (-3.52)   | (-4.21)   | (-5.03)   | (-1.10) | (-5.72)   |
| <i>WW Index</i>                               | -0.012*** | -0.032*** | -1.447**  | -0.040*** | -0.024*** | -0.023*** | 0.002   | -0.031*** |
|                                               | (-2.98)   | (-3.11)   | (-2.32)   | (-3.06)   | (-3.28)   | (-3.11)   | (0.17)  | (-3.27)   |
| <i>HHI</i>                                    | -0.088    | -0.100    | -0.061    | -0.315    | -0.213    | -0.105    | -0.006  | -0.146    |
|                                               | (-1.29)   | (-1.18)   | (-0.80)   | (-1.68)   | (-0.87)   | (-1.33)   | (-0.11) | (-1.01)   |
| <i>GDP Growth</i>                             | 0.024*    | 0.022*    | 0.038***  | 0.018     | 0.023*    | 0.024**   | -0.002  | 0.026*    |
|                                               | (1.81)    | (1.78)    | (7.13)    | (1.44)    | (1.71)    | (2.07)    | (-0.69) | (1.95)    |
| <i>CPI</i>                                    | 0.000     | 0.000     | -0.048*** | -0.021    | -0.047**  | 0.000*    | -0.000  | 0.000     |
|                                               | (0.53)    | (1.09)    | (-5.89)   | (-1.60)   | (-2.15)   | (1.86)    | (-0.55) | (1.49)    |
| <i>Stk Mkt<br/>Return</i>                     | 0.002     | 0.003*    | 0.011***  | 0.004     | 0.003*    | 0.002     | -0.000  | 0.004**   |
|                                               | (1.65)    | (1.82)    | (17.41)   | (1.63)    | (1.93)    | (1.63)    | (-0.29) | (2.08)    |
| <i>Interest Rate</i>                          | 0.060**   | 0.048**   | 0.119***  | 0.014     | 0.024     | 0.054**   | -0.002  | 0.066**   |
|                                               | (2.36)    | (2.17)    | (16.48)   | (0.76)    | (1.28)    | (2.15)    | (-0.21) | (2.77)    |
| Constant                                      | -0.118    | -0.062    | -5.469*** | 0.319**   | 0.285**   | -0.124    | 0.151** | -0.124    |
|                                               | (-0.48)   | (-0.24)   | (-6.68)   | (2.32)    | (2.11)    | (-0.44)   | (2.25)  | (-0.51)   |
| Cohort ×<br>Firm                              | Yes       | Yes       | No        | Yes       | Yes       | Yes       | Yes     | Yes       |
| Cohort ×<br>Year                              | Yes       | Yes       | No        | Yes       | Yes       | Yes       | Yes     | Yes       |
| Year                                          | No        | No        | Yes       | No        | No        | No        | No      | No        |
| Industry                                      | No        | No        | Yes       | No        | No        | No        | No      | No        |
| Industry-Year                                 | No        | Yes       | No        | No        | No        | No        | No      | No        |
| Country                                       | No        | No        | Yes       | No        | No        | No        | No      | No        |
| Stacked<br>Obs./Obs.                          | 478261    | 477452    | 131513    | 305931    | 386431    | 852519    | 310974  | 429718    |
| Adj-R <sup>2</sup> /<br>Pseudo-R <sup>2</sup> | 0.393     | 0.369     | 0.136     | 0.389     | 0.391     | 0.329     | 0.178   | 0.362     |

**TABLE 6**  
**Robustness: Alternative Staggered DiD Estimators**

This table reports regression results on the impact of board reforms on share repurchases, using alternative staggered DiD estimators. Columns 1 and 2 report static effects estimated from Callaway and Sant'Anna (2021), while Columns 3 and 4 report those estimated from Borusyak et al. (2024). Columns 2 and 4 include the same control variables as in the baseline model, while Columns 1 and 3 do not. Standard errors are clustered at the country level. *z*-statistics are reported in parentheses, \*\*\*, \*\*, and \* represent statistical significance at the 1%, 5%, and 10% levels, respectively.

| Dependent Variable: | <i>Rep/Asset</i> |                   |                    |                    |
|---------------------|------------------|-------------------|--------------------|--------------------|
| Models:             | CS DiD           |                   | Imputation DiD     |                    |
|                     | 1                | 2                 | 3                  | 4                  |
| ATT                 | 0.109<br>(1.61)  | 0.120**<br>(2.20) | 0.211***<br>(2.87) | 0.135***<br>(2.73) |
| Controls            | No               | Yes               | No                 | Yes                |
| Obs.                | 111566           | 86841             | 131740             | 102603             |

**TABLE 7**  
**Investment Opportunities and Financial Flexibility**

This table presents regression results on the impact of board reforms on share repurchases across subsamples defined by investment opportunities and financial flexibility. Columns 1 and 2 report results for firms with low and high investment opportunities, respectively. Columns 3 and 4 report results for financially unconstrained and financially constrained firms, respectively. Columns 5 and 6 report results for subsamples combining investment opportunities and financial flexibility. Variables are defined in the Appendix. All firm-level continuous variables are winsorized at the 1% and 99% levels. Standard errors are clustered at the country level. Stacked Obs. denotes the number of cohort-firm-year observations in the stacked sample constructed for the stacked DiD approach. *t*-statistics are reported in parentheses, \*\*\*, \*\*, and \* represent statistical significance at the 1%, 5%, and 10% levels, respectively.

| Dependent Variable:         | <i>Rep/Asset</i>   |                      |                      |                      |                      |                      |
|-----------------------------|--------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
|                             | Q≤1                | Q>1                  | WW<br>Index≤P67      | WW<br>Index>P67      | Q>1& WW<br>Index>P67 | Q≤1& WW<br>Index≤P67 |
|                             | 1                  | 2                    | 3                    | 4                    | 5                    | 6                    |
| <i>Board Reform</i>         | 0.157***<br>(4.21) | 0.106<br>(1.49)      | 0.145***<br>(3.50)   | -0.015<br>(-0.22)    | -0.046<br>(-0.48)    | 0.181***<br>(4.10)   |
| <i>EBIT/Asset</i>           | 0.083<br>(1.18)    | 0.088***<br>(3.99)   | 0.076***<br>(5.89)   | 0.076*<br>(1.99)     | 0.081***<br>(2.81)   | 0.147<br>(1.49)      |
| <i>PPE/Asset</i>            | -0.018<br>(-0.24)  | 0.020<br>(0.29)      | -0.059<br>(-1.61)    | -0.109***<br>(-3.22) | -0.097*<br>(-1.90)   | 0.064<br>(1.13)      |
| <i>Cash/Asset</i>           | 1.214***<br>(3.23) | 0.824***<br>(3.30)   | 1.421***<br>(3.00)   | 0.370*<br>(1.93)     | 0.353**<br>(2.62)    | 1.404***<br>(3.14)   |
| <i>Div/Asset</i>            | -0.017<br>(-1.37)  | 0.034<br>(1.37)      | 0.022<br>(1.36)      | 0.018<br>(1.33)      | 0.020<br>(1.09)      | -0.027<br>(-1.55)    |
| <i>Sales Growth</i>         | 0.007<br>(1.37)    | 0.001***<br>(2.98)   | 0.001<br>(0.92)      | 0.004***<br>(10.38)  | -0.000<br>(-0.54)    | 0.000<br>(0.15)      |
| <i>Stock Returns</i>        | -0.000<br>(-0.17)  | -0.000**<br>(-2.55)  | 0.000***<br>(3.39)   | -0.001*<br>(-1.90)   | -0.001**<br>(-2.22)  | 0.000**<br>(2.08)    |
| <i>Market-to-book Ratio</i> | 0.019***<br>(3.58) | -0.000<br>(-0.15)    | 0.005<br>(1.56)      | -0.003***<br>(-3.69) | -0.003***<br>(-3.15) | 0.039**<br>(2.28)    |
| <i>SD (Cashflow)</i>        | -0.154<br>(-1.61)  | -0.039***<br>(-2.91) | -0.130***<br>(-4.25) | 0.042<br>(1.14)      | -0.064***<br>(-4.30) | -0.165<br>(-0.96)    |
| <i>WW Index</i>             | -0.110<br>(-1.41)  | -0.010***<br>(-3.48) | -0.011<br>(-0.78)    | -0.066***<br>(-9.47) | -0.002<br>(-0.48)    | -0.002<br>(-0.08)    |
| <i>HHI</i>                  | 0.104<br>(0.85)    | -0.425<br>(-1.46)    | -0.153<br>(-1.52)    | 0.011<br>(0.06)      | 0.064<br>(0.29)      | -0.045<br>(-0.24)    |
| <i>GDP Growth</i>           | 0.006<br>(0.62)    | 0.027**<br>(2.19)    | 0.026**<br>(2.09)    | 0.005<br>(0.48)      | 0.003<br>(0.23)      | 0.009<br>(0.73)      |
| <i>CPI</i>                  | -0.000<br>(-0.84)  | 0.000**<br>(2.25)    | 0.000<br>(0.32)      | 0.000<br>(0.87)      | -0.000<br>(-0.18)    | -0.000<br>(-1.24)    |
| <i>Stk Mkt Return</i>       | 0.003<br>(1.28)    | 0.004**<br>(2.45)    | 0.003<br>(1.52)      | 0.002**<br>(2.08)    | 0.002*<br>(1.82)     | 0.003<br>(1.21)      |
| <i>Interest Rate</i>        | -0.012<br>(-0.93)  | 0.083**<br>(2.61)    | 0.045*<br>(1.97)     | 0.050**<br>(2.38)    | 0.063***<br>(2.85)   | -0.011<br>(-0.69)    |

|                    |                 |                   |                   |                   |                   |                 |
|--------------------|-----------------|-------------------|-------------------|-------------------|-------------------|-----------------|
| Constant           | 0.028<br>(0.22) | -0.053<br>(-0.16) | -0.013<br>(-0.05) | -0.096<br>(-0.49) | -0.069<br>(-0.35) | 0.075<br>(0.53) |
| Cohort ×<br>Firm   | Yes             | Yes               | Yes               | Yes               | Yes               | Yes             |
| Cohort ×<br>Year   | Yes             | Yes               | Yes               | Yes               | Yes               | Yes             |
| Stacked Obs.       | 132959          | 318523            | 314311            | 116992            | 86267             | 95693           |
| Adj-R <sup>2</sup> | 0.258           | 0.387             | 0.396             | 0.267             | 0.287             | 0.242           |

**TABLE 8**  
**Investment Intensity and Investment Efficiency**

This table presents regression results on the impact of board reforms and share repurchases on firms' investment expenditures and investment efficiency. Columns 1 and 2 report the regression results for investment expenditures on the interaction terms of board reform and share repurchase dummy. Columns 3 and 4 report the regression results for investment inefficiency on the interaction terms of board reform and share repurchase dummy. Variables are defined in the Appendix. All firm-level continuous variables are winsorized at the 1% and 99% levels. Standard errors are clustered at the country level. Stacked Obs. denotes the number of cohort-firm-year observations in the stacked sample constructed for the stacked DiD approach. *t*-statistics are reported in parentheses, \*\*\*, \*\*, and \* represent statistical significance at the 1%, 5%, and 10% levels, respectively.

| Dependent Variables:                   | <i>Capex/Asset</i> | <i>RD/Asset</i> | <i>Investment Inefficiency</i><br><i>(Richardson 2006)</i> | <i>Investment Inefficiency</i><br><i>(Biddle et al. 2009)</i> |
|----------------------------------------|--------------------|-----------------|------------------------------------------------------------|---------------------------------------------------------------|
|                                        | 1                  | 2               | 3                                                          | 4                                                             |
| <i>Board Reform</i> × <i>Rep Dummy</i> | -0.007             | 0.029           | -0.169***                                                  | -0.126***                                                     |
|                                        | (-1.37)            | (1.20)          | (-4.26)                                                    | (-3.94)                                                       |
| <i>Board Reform</i>                    | 0.006*             | 0.026           | 0.012                                                      | 0.046*                                                        |
|                                        | (1.92)             | (1.27)          | (0.44)                                                     | (1.89)                                                        |
| <i>Rep Dummy</i>                       | 0.002***           | 0.003           | 0.215**                                                    | 0.154**                                                       |
|                                        | (2.75)             | (0.37)          | (2.30)                                                     | (2.24)                                                        |
| <i>EBIT/Asset</i>                      | -0.007             | 0.039           | -0.214***                                                  | -0.016                                                        |
|                                        | (-0.60)            | (0.86)          | (-8.41)                                                    | (-0.34)                                                       |
| <i>PPE/Asset</i>                       | -0.005             | 0.755*          | 1.127*                                                     | 0.646*                                                        |
|                                        | (-0.35)            | (1.79)          | (1.89)                                                     | (1.90)                                                        |
| <i>Cash/Asset</i>                      | 0.023***           | -0.967**        | -0.864**                                                   | -0.799**                                                      |
|                                        | (4.68)             | (-2.07)         | (-2.19)                                                    | (-2.07)                                                       |
| <i>Div/Asset</i>                       | 0.001***           | 0.006**         | 0.012**                                                    | 0.010**                                                       |
|                                        | (3.82)             | (2.72)          | (3.25)                                                     | (2.57)                                                        |
| <i>Sales Growth</i>                    | 0.000              | 0.001***        | 0.023***                                                   | 0.002***                                                      |
|                                        | (0.26)             | (14.85)         | (3.98)                                                     | (13.58)                                                       |
| <i>Stock Returns</i>                   | 0.000***           | 0.000           | -0.000                                                     | 0.000*                                                        |
|                                        | (5.85)             | (1.19)          | (-1.01)                                                    | (1.78)                                                        |
| <i>Market-to-book Ratio</i>            | 0.000              | 0.002           | 0.002                                                      | 0.001                                                         |
|                                        | (1.66)             | (1.44)          | (0.87)                                                     | (1.14)                                                        |
| <i>SD (Cashflow)</i>                   | -0.023             | 0.099***        | 0.479***                                                   | 0.029                                                         |
|                                        | (-1.13)            | (5.01)          | (3.49)                                                     | (0.63)                                                        |
| <i>WW Index</i>                        | -0.000             | -0.025***       | -0.349***                                                  | -0.028***                                                     |
|                                        | (-0.23)            | (-7.65)         | (-3.96)                                                    | (-10.54)                                                      |
| <i>HHI</i>                             | 0.001              | -0.035          | 0.091                                                      | -0.039                                                        |
|                                        | (0.14)             | (-1.19)         | (0.69)                                                     | (-1.22)                                                       |
| <i>GDP Growth</i>                      | 0.001***           | 0.004           | 0.000                                                      | 0.002                                                         |
|                                        | (4.87)             | (1.46)          | (0.05)                                                     | (1.26)                                                        |
| <i>CPI</i>                             | -0.000             | 0.000           | 0.000***                                                   | 0.000**                                                       |
|                                        | (-1.63)            | (1.09)          | (3.22)                                                     | (2.55)                                                        |
| <i>Stk Mkt Return</i>                  | 0.000              | -0.001*         | -0.000                                                     | -0.001                                                        |
|                                        | (0.30)             | (-1.71)         | (-1.19)                                                    | (-1.40)                                                       |
| <i>Interest Rate</i>                   | 0.000              | 0.017*          | 0.011                                                      | 0.013*                                                        |
|                                        | (0.34)             | (1.88)          | (1.43)                                                     | (1.92)                                                        |
| Constant                               | 0.050***           | -0.388          | -0.851*                                                    | -0.271                                                        |
|                                        | (4.95)             | (-1.55)         | (-1.86)                                                    | (-1.34)                                                       |

|                      |        |        |        |        |
|----------------------|--------|--------|--------|--------|
| Cohort $\times$ Firm | Yes    | Yes    | Yes    | Yes    |
| Cohort $\times$ Year | Yes    | Yes    | Yes    | Yes    |
| Stacked Obs.         | 449736 | 458983 | 475473 | 475473 |
| Adj-R <sup>2</sup>   | -0.063 | 0.306  | 0.230  | 0.292  |

**TABLE 9**  
**Characteristics of Board Reforms**

This table reports regression results on the impact of board reforms on share repurchases, based on different reform components and types. Variables are defined in the Appendix. All firm-level continuous variables are winsorized at the 1% and 99% levels. Standard errors are clustered at the country level. Stacked Obs. denotes the number of cohort-firm-year observations in the stacked sample constructed for the stacked DiD approach. *t*-statistics are reported in parentheses, \*\*\*, \*\*, and \* represent statistical significance at the 1%, 5%, and 10% levels, respectively.

| Dependent Variable:         | <i>Rep/Asset</i>   |                                          |                             |                   |            |
|-----------------------------|--------------------|------------------------------------------|-----------------------------|-------------------|------------|
|                             | Board Independence | Audit Committee and Auditor Independence | Chairman and CEO Separation | Comply-or-explain | Rule-based |
|                             | 1                  | 2                                        | 3                           | 4                 | 5          |
| <i>Board Reform</i>         | 0.065*             | 0.094***                                 | 0.115**                     | 0.064             | 0.212***   |
|                             | (1.95)             | (3.16)                                   | (2.31)                      | (1.34)            | (3.66)     |
| <i>EBIT/Asset</i>           | 0.062***           | 0.062***                                 | 0.036                       | 0.040             | 0.064***   |
|                             | (7.34)             | (7.47)                                   | (1.41)                      | (1.21)            | (17.16)    |
| <i>PPE/Asset</i>            | -0.056**           | -0.060***                                | -0.099                      | -0.061            | -0.064***  |
|                             | (-2.50)            | (-2.89)                                  | (-1.60)                     | (-1.33)           | (-3.19)    |
| <i>Cash/Asset</i>           | 0.934***           | 0.901***                                 | 0.336***                    | 0.460**           | 1.073***   |
|                             | (3.47)             | (3.31)                                   | (4.02)                      | (2.74)            | (4.37)     |
| <i>Div/Asset</i>            | 0.023              | 0.022                                    | 0.017                       | 0.019**           | 0.029      |
|                             | (1.58)             | (1.57)                                   | (1.66)                      | (2.67)            | (0.84)     |
| <i>Sales Growth</i>         | 0.002**            | 0.002***                                 | -0.001                      | -0.000            | 0.003***   |
|                             | (2.94)             | (3.13)                                   | (-0.70)                     | (-0.57)           | (35.50)    |
| <i>Stock Returns</i>        | -0.000             | -0.000                                   | 0.000**                     | 0.000**           | -0.000**   |
|                             | (-1.23)            | (-1.19)                                  | (2.34)                      | (2.37)            | (-2.56)    |
| <i>Market-to-book Ratio</i> | -0.002***          | -0.001**                                 | -0.007***                   | -0.006***         | -0.001     |
|                             | (-2.89)            | (-2.37)                                  | (-5.37)                     | (-3.73)           | (-0.85)    |
| <i>SD (Cashflow)</i>        | -0.086***          | -0.075***                                | -0.083**                    | -0.113***         | -0.055**   |
|                             | (-7.75)            | (-5.98)                                  | (-2.53)                     | (-3.09)           | (-2.87)    |
| <i>WW Index</i>             | -0.031***          | -0.031***                                | 0.006                       | 0.005             | -0.040***  |
|                             | (-3.06)            | (-3.27)                                  | (0.62)                      | (0.46)            | (-24.95)   |
| <i>HHI</i>                  | -0.117             | -0.128                                   | 0.112                       | -0.021            | -0.186     |
|                             | (-0.99)            | (-1.11)                                  | (1.21)                      | (-0.29)           | (-0.78)    |
| <i>GDP Growth</i>           | 0.017*             | 0.022*                                   | -0.004                      | -0.004            | 0.031      |
|                             | (1.89)             | (1.91)                                   | (-0.56)                     | (-0.90)           | (1.71)     |
| <i>CPI</i>                  | 0.001              | 0.001                                    | 0.011                       | 0.010             | 0.000      |
|                             | (0.16)             | (0.24)                                   | (1.30)                      | (1.69)            | (1.39)     |
| <i>Stk Mkt Return</i>       | 0.003**            | 0.004**                                  | 0.001                       | 0.001             | 0.005**    |
|                             | (2.05)             | (2.05)                                   | (0.82)                      | (0.79)            | (2.38)     |
| <i>Interest Rate</i>        | 0.033*             | 0.051**                                  | -0.015                      | -0.006            | 0.080***   |
|                             | (1.98)             | (2.18)                                   | (-0.85)                     | (-0.56)           | (3.15)     |
| Constant                    | 0.164              | -0.064                                   | 0.279**                     | 0.180*            | -0.224     |
|                             | (0.84)             | (-0.26)                                  | (2.33)                      | (2.04)            | (-0.87)    |

|                    |        |        |        |        |        |
|--------------------|--------|--------|--------|--------|--------|
| Cohort ×<br>Firm   | Yes    | Yes    | Yes    | Yes    | Yes    |
| Cohort ×<br>Year   | Yes    | Yes    | Yes    | Yes    | Yes    |
| Stacked Obs.       | 360724 | 469631 | 110470 | 138928 | 339333 |
| Adj-R <sup>2</sup> | 0.353  | 0.362  | 0.142  | 0.126  | 0.385  |

**TABLE 10**  
**Characteristics of Board Reforms, Share Repurchases, and Investment**

This table reports regression results on the impact of board reforms on share repurchases, based on different reform components and types, as well as investment opportunities. Variables are defined in the Appendix. All firm-level continuous variables are winsorized at the 1% and 99% levels. Standard errors are clustered at the country level. Stacked Obs. denotes the number of cohort-firm-year observations in the stacked sample constructed for the stacked DiD approach. *t*-statistics are reported in parentheses, \*\*\*, \*\*, and \* represent statistical significance at the 1%, 5%, and 10% levels, respectively.

| Dependent Variable:         | <i>Rep/Asset</i>   |          |                                          |           |                             |           |                   |          |            |           |
|-----------------------------|--------------------|----------|------------------------------------------|-----------|-----------------------------|-----------|-------------------|----------|------------|-----------|
|                             | Board independence |          | Audit committee and auditor independence |           | Chairman and CEO separation |           | Comply-or-explain |          | Rule-based |           |
|                             | Q≤1                | Q>1      | Q≤1                                      | Q>1       | Q≤1                         | Q>1       | Q≤1               | Q>1      | Q≤1        | Q>1       |
|                             | 1                  | 2        | 3                                        | 4         | 5                           | 6         | 7                 | 8        | 9          | 10        |
| <i>Board Reform</i>         | 0.137***           | 0.052    | 0.161***                                 | 0.073*    | 0.266***                    | 0.049     | 0.124**           | 0.043    | 0.196**    | 0.233***  |
|                             | (4.69)             | (1.12)   | (4.55)                                   | (1.82)    | (3.12)                      | (1.18)    | (2.19)            | (0.85)   | (2.99)     | (3.30)    |
| <i>EBIT/Asset</i>           | 0.058              | 0.083*** | 0.078                                    | 0.081***  | 0.234*                      | 0.007     | 0.229*            | 0.007    | 0.035      | 0.098***  |
|                             | (0.94)             | (3.62)   | (1.15)                                   | (3.50)    | (2.08)                      | (0.48)    | (1.94)            | (0.49)   | (0.70)     | (6.90)    |
| <i>PPE/Asset</i>            | -0.054             | -0.045   | -0.032                                   | -0.052    | 0.020                       | -0.181**  | -0.032            | -0.097   | -0.024     | -0.034    |
|                             | (-0.68)            | (-0.83)  | (-0.42)                                  | (-1.00)   | (0.21)                      | (-2.56)   | (-0.42)           | (-1.64)  | (-0.20)    | (-0.59)   |
| <i>Cash/Asset</i>           | 1.210***           | 0.847*** | 1.175***                                 | 0.823***  | 0.799                       | 0.192**   | 0.844             | 0.247**  | 1.424***   | 1.004***  |
|                             | (3.04)             | (3.15)   | (3.06)                                   | (3.06)    | (1.50)                      | (2.92)    | (1.70)            | (2.54)   | (3.83)     | (4.36)    |
| <i>Div/Asset</i>            | -0.017             | 0.035    | -0.018                                   | 0.034     | -0.004                      | 0.025*    | 0.003             | 0.026**  | -0.045*    | 0.050     |
|                             | (-1.32)            | (1.59)   | (-1.38)                                  | (1.62)    | (-0.28)                     | (2.03)    | (0.39)            | (2.71)   | (-1.99)    | (1.01)    |
| <i>Sales Growth</i>         | 0.007              | 0.001**  | 0.007                                    | 0.001***  | -0.001                      | -0.000    | -0.002            | -0.000   | 0.014***   | 0.001***  |
|                             | (1.38)             | (2.25)   | (1.38)                                   | (2.86)    | (-1.07)                     | (-0.13)   | (-1.26)           | (-0.21)  | (68.14)    | (6.70)    |
| <i>Stock Returns</i>        | -0.000             | -0.000   | -0.000                                   | -0.000    | 0.001***                    | 0.000*    | 0.001             | 0.000**  | -0.000     | -0.000*** |
|                             | (-0.10)            | (-1.34)  | (-0.19)                                  | (-1.28)   | (4.52)                      | (2.10)    | (1.33)            | (2.54)   | (-1.03)    | (-3.30)   |
| <i>Market-to-book Ratio</i> | 0.020***           | -        | 0.020***                                 | -0.002*** | -0.014                      | -0.005*** | -0.009            | -        | 0.021***   | -0.002    |
|                             |                    | 0.002*** |                                          |           |                             |           |                   | 0.004*** |            |           |
|                             | (4.88)             | (-5.62)  | (3.86)                                   | (-3.98)   | (-0.87)                     | (-3.72)   | (-0.70)           | (-2.82)  | (7.55)     | (-1.70)   |
| <i>WW Index</i>             | -0.110             | -0.008** | -0.111                                   | -0.009*** | 0.020                       | 0.000     | 0.022             | 0.001    | -0.210***  | -0.011*** |
|                             | (-1.41)            | (-2.71)  | (-1.41)                                  | (-3.46)   | (1.42)                      | (0.01)    | (1.50)            | (0.08)   | (-153.69)  | (-6.12)   |
| <i>HHI</i>                  | 0.072              | -0.242   | 0.117                                    | -0.265    | 0.391                       | 0.024     | 0.205             | -0.105   | 0.046      | -0.348    |
|                             | (0.52)             | (-1.26)  | (0.96)                                   | (-1.43)   | (1.66)                      | (0.14)    | (1.14)            | (-1.03)  | (0.27)     | (-0.90)   |

|                       |                     |                   |                   |                   |                      |                    |                     |                   |                   |                    |
|-----------------------|---------------------|-------------------|-------------------|-------------------|----------------------|--------------------|---------------------|-------------------|-------------------|--------------------|
| <i>GDP Growth</i>     | 0.002<br>(0.14)     | 0.019**<br>(2.33) | 0.002<br>(0.16)   | 0.026**<br>(2.28) | -0.032***<br>(-3.10) | 0.002<br>(0.25)    | -0.017**<br>(-2.48) | -0.004<br>(-0.81) | 0.021<br>(1.16)   | 0.029<br>(1.57)    |
| <i>CPI</i>            | -0.010<br>(-1.31)   | 0.003<br>(0.81)   | -0.008<br>(-1.13) | 0.004<br>(0.79)   | 0.014<br>(0.83)      | 0.002<br>(0.20)    | 0.005<br>(0.54)     | -0.002<br>(-0.22) | 0.000<br>(0.16)   | 0.000<br>(1.54)    |
| <i>Stk Mkt Return</i> | 0.003*<br>(2.02)    | 0.003*<br>(2.00)  | 0.004<br>(1.56)   | 0.004**<br>(2.29) | 0.003<br>(1.14)      | 0.001<br>(0.41)    | 0.001<br>(1.00)     | 0.001<br>(0.60)   | 0.006<br>(1.52)   | 0.005***<br>(3.16) |
| <i>Interest Rate</i>  | -0.027**<br>(-2.12) | 0.053**<br>(2.53) | -0.010<br>(-0.81) | 0.072**<br>(2.53) | -0.046<br>(-1.09)    | -0.008<br>(-0.60)  | -0.023*<br>(-1.76)  | 0.000<br>(0.01)   | -0.014<br>(-0.59) | 0.113***<br>(4.24) |
| Constant              | 0.370**<br>(2.52)   | 0.151<br>(0.62)   | 0.048<br>(0.37)   | -0.084<br>(-0.28) | 0.368<br>(1.17)      | 0.331***<br>(3.71) | 0.219*<br>(1.85)    | 0.242**<br>(2.63) | -0.069<br>(-0.44) | -0.298<br>(-1.05)  |
| Cohort × Firm         | Yes                 | Yes               | Yes               | Yes               | Yes                  | Yes                | Yes                 | Yes               | Yes               | Yes                |
| Cohort × Year         | Yes                 | Yes               | Yes               | Yes               | Yes                  | Yes                | Yes                 | Yes               | Yes               | Yes                |
| Stacked Obs.          | 89971               | 249344            | 130901            | 312297            | 28383                | 75180              | 40942               | 89697             | 92015             | 228826             |
| Adj-R2                | 0.260               | 0.379             | 0.263             | 0.388             | 0.138                | 0.149              | 0.130               | 0.143             | 0.289             | 0.408              |

TABLE 11

**Additional Test on Characteristics of Board Reforms, Share Repurchases, and Investment**

This table reports regression results on the impact of board reforms on share repurchases, based on “Audit committee and auditor independence” and “Rule-based”, as well as investment opportunities and financial flexibility. Variables are defined in the Appendix. All firm-level continuous variables are winsorized at the 1% and 99% levels. Standard errors are clustered at the country level. Stacked Obs. denotes the number of cohort-firm-year observations in the stacked sample constructed for the stacked DiD approach. *t*-statistics are reported in parentheses, \*\*\*, \*\*, and \* represent statistical significance at the 1%, 5%, and 10% levels, respectively.

| Dependent Variable:         | <i>Rep/Asset</i>                         |                      |                       |                      |
|-----------------------------|------------------------------------------|----------------------|-----------------------|----------------------|
|                             | Audit Committee and Auditor Independence |                      | Rule-based            |                      |
|                             | Q>1& WW<br>Index≤P67                     | Q>1& WW<br>Index>P67 | Q>1& WW<br>Index≤P67  | Q>1& WW<br>Index>P67 |
|                             | 1                                        | 2                    | 3                     | 4                    |
| <i>Board Reform</i>         | 0.129**<br>(2.64)                        | -0.074<br>(-0.80)    | 0.300**<br>(2.84)     | 0.081<br>(0.80)      |
| <i>EBIT/Asset</i>           | 0.059***<br>(3.46)                       | 0.081**<br>(2.73)    | 0.063***<br>(4.86)    | 0.110***<br>(11.30)  |
| <i>PPE/Asset</i>            | -0.091<br>(-1.61)                        | -0.084*<br>(-1.80)   | -0.086<br>(-1.30)     | -0.090<br>(-1.25)    |
| <i>Cash/Asset</i>           | 1.319**<br>(2.56)                        | 0.364***<br>(2.78)   | 1.657***<br>(3.43)    | 0.421***<br>(3.12)   |
| <i>Div/Asset</i>            | 0.041<br>(1.41)                          | 0.020<br>(1.03)      | 0.080<br>(1.27)       | -0.009<br>(-0.50)    |
| <i>Sales Growth</i>         | 0.002***<br>(4.33)                       | -0.000<br>(-0.43)    | 0.003***<br>(20.21)   | -0.000<br>(-0.34)    |
| <i>Stock Returns</i>        | 0.000***<br>(2.82)                       | -0.001**<br>(-2.12)  | 0.000<br>(1.15)       | -0.001**<br>(-2.60)  |
| <i>Market-to-book Ratio</i> | 0.003<br>(1.33)                          | -0.004***<br>(-4.39) | 0.005***<br>(6.07)    | -0.004***<br>(-6.34) |
| <i>SD (Cashflow)</i>        | -0.125***<br>(-5.18)                     | -0.068***<br>(-5.18) | -0.105***<br>(-3.45)  | -0.057**<br>(-2.83)  |
| <i>WW Index</i>             | -0.030***<br>(-5.37)                     | -0.002<br>(-0.60)    | -0.035***<br>(-12.37) | -0.003<br>(-0.87)    |
| <i>HHI</i>                  | -0.285*<br>(-1.72)                       | 0.076<br>(0.33)      | -0.350<br>(-1.13)     | -0.005<br>(-0.01)    |
| <i>GDP Growth</i>           | 0.036**<br>(2.46)                        | 0.007<br>(0.65)      | 0.046*<br>(2.11)      | 0.002<br>(0.09)      |
| <i>CPI</i>                  | 0.003<br>(0.49)                          | 0.005<br>(0.90)      | 0.000<br>(0.59)       | 0.000<br>(0.30)      |
| <i>Stk Mkt Return</i>       | 0.004**<br>(2.25)                        | 0.003**<br>(2.07)    | 0.006***<br>(3.30)    | 0.004***<br>(3.46)   |
| <i>Interest Rate</i>        | 0.075**<br>(2.62)                        | 0.062***<br>(2.86)   | 0.114***<br>(4.60)    | 0.087***<br>(3.47)   |
| Constant                    | -0.081<br>(-0.22)                        | -0.090<br>(-0.48)    | -0.333<br>(-0.97)     | -0.132<br>(-0.64)    |
| Cohort × Firm               | Yes                                      | Yes                  | Yes                   | Yes                  |
| Cohort × Year               | Yes                                      | Yes                  | Yes                   | Yes                  |
| Stacked Obs.                | 191720                                   | 84517                | 140264                | 63681                |

Adj-R<sup>2</sup>

0.424

0.289

0.444

0.306

---

**Table 12**  
**Board Reforms, Corporate Governance, and Share Repurchases**

This table reports regression results on the impact of board reforms on share repurchases, conditional on the country-level corporate governance characteristics. Variables are defined in the Appendix. All firm-level continuous variables are winsorized at the 1% and 99% levels. Standard errors are clustered at the country level. Stacked Obs. denotes the number of cohort-firm-year observations in the stacked sample constructed for the stacked DiD approach. *t*-statistics are reported in parentheses, \*\*\*, \*\*, and \* represent statistical significance at the 1%, 5%, and 10% levels, respectively.

| Dependent Variable:                    | <i>Rep/Asset</i>      |                           |                    |                            |                                |
|----------------------------------------|-----------------------|---------------------------|--------------------|----------------------------|--------------------------------|
| Country-level CGs:                     | <i>Common Law = 1</i> | <i>Regulatory Quality</i> | <i>Rule of Law</i> | <i>Anti-director Index</i> | <i>Anti-self-dealing Index</i> |
|                                        | 1                     | 2                         | 3                  | 4                          | 5                              |
| <i>Board Reform</i> × Country-level CG | -0.126**              | -0.032*                   | -0.160             | -0.041*                    | -0.506**                       |
|                                        | (-2.29)               | (-1.93)                   | (-1.30)            | (-1.99)                    | (-2.66)                        |
| <i>Board Reform</i>                    | 0.180***              | 2.733**                   | 13.488             | 0.267***                   | 0.433***                       |
|                                        | (4.24)                | (2.03)                    | (1.31)             | (2.93)                     | (3.44)                         |
| <i>EBIT/Asset</i>                      | 0.064***              | 0.064***                  | 0.064***           | 0.065***                   | 0.064***                       |
|                                        | (7.91)                | (7.94)                    | (7.93)             | (7.89)                     | (7.86)                         |
| <i>PPE/Asset</i>                       | -0.065***             | -0.065***                 | -0.065***          | -0.061**                   | -0.065***                      |
|                                        | (-2.95)               | (-2.93)                   | (-2.91)            | (-2.78)                    | (-2.93)                        |
| <i>Cash/Asset</i>                      | 0.916***              | 0.914***                  | 0.914***           | 0.913***                   | 0.918***                       |
|                                        | (3.48)                | (3.46)                    | (3.45)             | (3.42)                     | (3.48)                         |
| <i>Div/Asset</i>                       | 0.022                 | 0.022                     | 0.022              | 0.022                      | 0.022                          |
|                                        | (1.62)                | (1.63)                    | (1.63)             | (1.57)                     | (1.64)                         |
| <i>Sales Growth</i>                    | 0.002***              | 0.002***                  | 0.002***           | 0.002***                   | 0.002***                       |
|                                        | (3.05)                | (3.04)                    | (3.05)             | (3.12)                     | (3.05)                         |
| <i>Stock Returns</i>                   | -0.000                | -0.000                    | -0.000             | -0.000                     | -0.000                         |
|                                        | (-1.17)               | (-1.14)                   | (-1.15)            | (-1.22)                    | (-1.16)                        |
| <i>Market-to-book Ratio</i>            | -0.001**              | -0.001**                  | -0.001**           | -0.001**                   | -0.001**                       |
|                                        | (-2.28)               | (-2.31)                   | (-2.31)            | (-2.30)                    | (-2.31)                        |
| <i>SD (Cashflow)</i>                   | -0.075***             | -0.075***                 | -0.075***          | -0.076***                  | -0.076***                      |
|                                        | (-5.89)               | (-5.90)                   | (-5.90)            | (-5.91)                    | (-5.88)                        |
| <i>WW Index</i>                        | -0.031***             | -0.031***                 | -0.031***          | -0.031***                  | -0.031***                      |
|                                        | (-3.20)               | (-3.19)                   | (-3.20)            | (-3.26)                    | (-3.20)                        |
| <i>HHI</i>                             | -0.136                | -0.131                    | -0.133             | -0.121                     | -0.143                         |
|                                        | (-1.20)               | (-1.15)                   | (-1.17)            | (-1.06)                    | (-1.23)                        |
| <i>GDP Growth</i>                      | 0.021*                | 0.021*                    | 0.021*             | 0.022*                     | 0.022*                         |
|                                        | (1.88)                | (1.88)                    | (1.87)             | (1.98)                     | (1.94)                         |
| <i>CPI</i>                             | 0.000                 | 0.000                     | 0.000              | 0.000                      | 0.000                          |
|                                        | (1.33)                | (1.33)                    | (1.32)             | (1.33)                     | (1.34)                         |
| <i>Stk Mkt Return</i>                  | 0.003*                | 0.003                     | 0.003*             | 0.003                      | 0.003*                         |
|                                        | (1.69)                | (1.66)                    | (1.69)             | (1.64)                     | (1.70)                         |
| <i>Interest Rate</i>                   | 0.046*                | 0.049**                   | 0.049**            | 0.055**                    | 0.048**                        |
|                                        | (2.00)                | (2.09)                    | (2.08)             | (2.40)                     | (2.08)                         |
| Constant                               | -0.027                | -0.038                    | -0.042             | -0.086                     | -0.038                         |
|                                        | (-0.11)               | (-0.16)                   | (-0.17)            | (-0.36)                    | (-0.16)                        |
| Cohort × Firm                          | Yes                   | Yes                       | Yes                | Yes                        | Yes                            |

| Cohort $\times$ Year | Yes    | Yes    | Yes    | Yes    | Yes    |
|----------------------|--------|--------|--------|--------|--------|
| Stacked Obs.         | 478261 | 478261 | 478261 | 473313 | 476938 |
| Adj-R <sup>2</sup>   | 0.360  | 0.360  | 0.360  | 0.362  | 0.360  |

## Appendix

**TABLE A1**  
**Variable Definitions and Data Sources**

| Variables                                        | Definitions                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Sources                                   |
|--------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|
| <b>Variable of Interest</b>                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                           |
| <i>Board Reform</i>                              | A dummy variable that takes the value of 1 for periods after the board reform and 0 for periods before the reform                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Fauver et al. (2017), Ahmad et al. (2024) |
| <b>Variables for Share Repurchases</b>           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                           |
| <i>Rep/Asset (%)</i>                             | Share repurchases scaled by total assets. Share repurchases represent funds used to decrease the outstanding shares of common and/or preferred stock.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | LSEG<br>Datastream                        |
| <i>Rep/MktCap (%)</i>                            | Share repurchases scaled by market capitalization.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | LSEG<br>Datastream                        |
| <i>Rep/Equity (%)</i>                            | Share repurchases scaled by equity.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | LSEG<br>Datastream                        |
| <i>Rep/Sales (%)</i>                             | Share repurchases scaled by total sales.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | LSEG<br>Datastream                        |
| <i>Rep/Cashflow (%)</i>                          | Share repurchases scaled by cash flow.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | LSEG<br>Datastream                        |
| <i>ln(1+Rep/Asset)</i>                           | The natural logarithm of the sum of <i>Rep/Asset (%)</i> and 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | LSEG<br>Datastream                        |
| <i>Rep Dummy</i>                                 | A dummy variable that takes the value of 1 if the amount of share repurchases is larger than zero and 0 otherwise.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | LSEG<br>Datastream                        |
| <b>Variables for Investment</b>                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                           |
| <i>Capex/Asset</i>                               | Capital expenditures scaled by total assets.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | LSEG<br>Datastream                        |
| <i>RD/Asset</i>                                  | Research and development expenditures scaled by total assets.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | LSEG<br>Datastream                        |
| <i>Investment Inefficiency (Richardson 2006)</i> | Following Richardson (2006), residuals are estimated by industry-year using the one-digit SIC industry classification, and the absolute value of the residuals is used as the measure of investment inefficiency. The estimation model is specified as follows:<br>$\begin{aligned} & \text{New Investment}_{i,t} \\ &= \beta_0 + \beta_1 \text{Tobin } Q_{i,t-1} + \beta_2 \text{Leverage}_{i,t-1} \\ &+ \beta_3 \text{Age}_{i,t-1} + \beta_4 \text{Total Asset}_{i,t-1} \\ &+ \beta_5 \text{Stock Returns}_{i,t-1} \\ &+ \beta_6 \text{New Investment}_{i,t-1} + \varepsilon_{it} \end{aligned}$ where <i>Tobin Q</i> represents Tobin's Q, <i>Leverage</i> denotes the ratio of total liabilities to total assets, <i>Age</i> refers to the log of the number of years the firm has been listed, <i>Stock Returns</i> refers | LSEG<br>Datastream                        |

to the year-over-year stock price change rate, and *New Investment* indicates new investment expenditures. *New investment* is defined as the sum of capital expenditures, research and development expenditures, and net assets from acquisitions, minus disposal of fixed assets, and depreciation and amortization, scaled by total assets.

*Investment Inefficiency* (Biddle et al. 2009)

Following Biddle et al. (2009), residuals are estimated by industry-year using the one-digit SIC industry classification, and the absolute value of the residuals is used as the measure of investment inefficiency. The estimation model is specified as follows:

$$Investment_{i,t} = \beta_0 + \beta_1 Sales\ Growth_{i,t-1} + \varepsilon_{it}$$

where *Investment* represents total investment expenditures scaled by total assets, and *Sales Growth* denotes the firm's sales growth rate. Total investment expenditures are defined as the sum of capital expenditures, research and development expenditures, and net assets from acquisitions.

LSEG  
Datastream

### Firm-level Control Variables

|                             |                                                                                                                                                                                                                                                               |                    |
|-----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|
| <i>EBIT/Asset</i>           | Earnings before interest and taxes scaled by total assets.                                                                                                                                                                                                    | LSEG<br>Datastream |
| <i>PPE/Asset</i>            | Property, plant, and equipment scaled by total assets.                                                                                                                                                                                                        | LSEG<br>Datastream |
| <i>Cash/Asset</i>           | The sum of cash, cash equivalents, and short-term investments scaled by total assets.                                                                                                                                                                         | LSEG<br>Datastream |
| <i>Div/Asset</i>            | Total cash common dividends paid on the company's common stock (including extra and special dividends) scaled by total assets.                                                                                                                                | LSEG<br>Datastream |
| <i>Sales Growth</i>         | Yearly change rate for total sales.                                                                                                                                                                                                                           | LSEG<br>Datastream |
| <i>Stock Returns</i>        | The year-over-year stock price change rate.                                                                                                                                                                                                                   | LSEG<br>Datastream |
| <i>Market-to-book Ratio</i> | The ratio of market capitalization to common equity.                                                                                                                                                                                                          | LSEG<br>Datastream |
| <i>SD (Cashflow)</i>        | Standard deviation of cashflow in past three years. Cashflow is the sum of net income before extraordinary items and depreciation scaled by total assets.                                                                                                     | LSEG<br>Datastream |
| <i>WW Index</i>             | Following Whited and Wu (2006), the WW index is calculated by the following equation:<br>$WW\ Index = -0.091 * \frac{CF}{Asset} - 0.062 * Div\ dummy + 0.021 * \frac{LTDebt}{Asset} - 0.044 * Ln(Asset) + 0.102 * Ind\ Sales\ Growth - 0.035 * Sales\ Growth$ | LSEG<br>Datastream |

where  $CF$  denotes the sum of net income before extraordinary items and depreciation;  $Div\ dummy$  is an indicator equal to one if the firm pays dividends, and zero otherwise;  $LTDebt$  denotes long-term debt, and  $Ind\ Sales\ Growth$  denotes the industry median of  $Sales\ Growth$ .

|     |                                                                                              |                    |
|-----|----------------------------------------------------------------------------------------------|--------------------|
| $Q$ | Tobin's $Q$ , the sum of market capitalization and total liabilities scaled by total assets. | LSEG<br>Datastream |
|-----|----------------------------------------------------------------------------------------------|--------------------|

### Industry-level Control Variables

|       |                                                                                            |                    |
|-------|--------------------------------------------------------------------------------------------|--------------------|
| $HHI$ | Herfindahl-Hirschman Index, computed at the two-digit SIC industry level using sales data. | LSEG<br>Datastream |
|-------|--------------------------------------------------------------------------------------------|--------------------|

### Country-level Control Variables

|                                          |                                                                                                                                                                                                                                                                                                             |                                                                    |
|------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------|
| $GDP\ Growth$                            | The annual percentage change in gross domestic product.                                                                                                                                                                                                                                                     | World Bank<br>DataBank                                             |
| $CPI$                                    | Consumer price index.                                                                                                                                                                                                                                                                                       | World Bank<br>DataBank                                             |
| $Stk\ Mkt\ Return$                       | The growth rate of annual average stock market index.                                                                                                                                                                                                                                                       | World Bank<br>DataBank                                             |
| $Interest\ Rate$                         | Lending interest rate. The bank rate that usually meets the short- and medium-term financing needs of the private sector. For countries for which the lending rate is not available from the World Bank or the IMF (Denmark, New Zealand, Poland, and Spain), the IMF government bond rate is used instead. | World Bank<br>DataBank,<br>International<br>Monetary Fund          |
| $Common\ Law$                            | A dummy variable that takes the value of 1 for common law countries and 0 for civil law countries.                                                                                                                                                                                                          | Djankov et al.<br>(2008)                                           |
| $Regulatory\ Quality$                    | An indicator that captures perceptions of the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development.                                                                                                                       | Worldwide<br>Governance<br>Indicators of<br>World Bank<br>DataBank |
| $Rule\ of\ Law$                          | An indicator that captures perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence.                             | Worldwide<br>Governance<br>Indicators of<br>World Bank<br>DataBank |
| $(Revised)\ Anti\text{-}director\ Index$ | An indicator that captures how strongly the legal system favors minority shareholders against managers and/or dominant shareholders.                                                                                                                                                                        | Djankov et al.<br>(2008)                                           |
| $Anti\text{-}self\text{-}dealing\ Index$ | An indicator that captures how effectively a country's legal framework protects minority shareholders when a company's controlling shareholder or manager engages in transactions that could benefit themselves at the expense of outside investors.                                                        | Djankov et al.<br>(2008)                                           |

**TABLE A2**  
**Literature Samples and Sample Filtering in This Paper**

| <b>Samples</b>                                                                    | <b>Constituents</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <b>No. of Countries / Territories</b> |
|-----------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|
| <b>Literature</b>                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                       |
| Wang et al. (2021)                                                                | <u>Australia</u> , <u>Austria</u> , <u>Belgium</u> , <u>Brazil</u> , <u>Bulgaria</u> , <u>Canada</u> , <u>Chile</u> , <u>China</u> , <u>Denmark</u> , <u>Egypt</u> , <u>Finland</u> , <u>France</u> , <u>Germany</u> , <u>Greece</u> , <u>Hong Kong</u> , <u>India</u> , <u>Indonesia</u> , <u>Ireland</u> , <u>Israel</u> , <u>Italy</u> , <u>Japan</u> , Jordan, <u>Kuwait</u> , <u>Malaysia</u> , <u>Mexico</u> , <u>Netherlands</u> , <u>New Zealand</u> , <u>Norway</u> , <u>Peru</u> , <u>Poland</u> , <u>Russia</u> , <u>Singapore</u> , <u>South Africa</u> , <u>South Korea</u> , <u>Spain</u> , Sri Lanka, <u>Sweden</u> , <u>Switzerland</u> , <u>Taiwan</u> , <u>Thailand</u> , <u>Turkey</u> , <u>United Kingdom</u> , <u>United States</u> , Vietnam | 44                                    |
| Fauver et al. (2017)                                                              | Argentina, <u>Australia</u> , <u>Austria</u> , <u>Belgium</u> , <u>Brazil</u> , <u>Canada</u> , <u>Chile</u> , <u>China</u> , Colombia, Czech Republic, <u>Denmark</u> , <u>Egypt</u> , <u>Finland</u> , <u>France</u> , <u>Germany</u> , <u>Greece</u> , <u>Hong Kong</u> , Hungary, <u>India</u> , <u>Indonesia</u> , <u>Israel</u> , <u>Italy</u> , <u>Japan</u> , <u>Malaysia</u> , <u>Mexico</u> , <u>Netherlands</u> , <u>Norway</u> , Pakistan, <u>Peru</u> , Philippines, <u>Poland</u> , Portugal, <u>Singapore</u> , <u>South Korea</u> , <u>Spain</u> , <u>Sweden</u> , <u>Switzerland</u> , <u>Thailand</u> , <u>Turkey</u> , <u>United States</u> , <u>United Kingdom</u> .                                                                           | 41                                    |
| Ahmad et al. (2024)                                                               | Fauver et al. (2017) + <u>Bulgaria</u> , Croatia, Cyprus, Iceland, <u>Ireland</u> , Kazakhstan, Kenya, <u>Kuwait</u> , Luxembourg, <u>New Zealand</u> , Nigeria, Romania, <u>Russia</u> , Saudi Arabia, Slovakia, <u>South Africa</u> , <u>Taiwan</u> , Tunisia, UAE, Ukraine                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 61                                    |
| <b>This Paper</b>                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                       |
| Intersection of Wang et al. (2021), Fauver et al. (2017), and Ahmad et al. (2024) | Australia, Austria, Belgium, Brazil, Bulgaria, Canada, Chile, China, Denmark, Egypt, Finland, France, Germany, Greece, Hong Kong, India, Indonesia, Ireland, Israel, Italy, Japan, Kuwait, Malaysia, Mexico, Netherlands, New Zealand, Norway, Peru, Poland, Russia, Singapore, South Africa, South Korea, Spain, Sweden, Switzerland, Taiwan, Thailand, Turkey, United Kingdom, United States (Countries/territories underlined above)                                                                                                                                                                                                                                                                                                                            | +41                                   |
| Share repurchase legalized after board reform                                     | China, Greece, Turkey                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | -3                                    |
| With missing macro data                                                           | Russia, Taiwan                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | -2                                    |
| Final sample                                                                      | Australia, Austria, Belgium, Brazil, Bulgaria, Canada, Chile, Denmark, Egypt, Finland, France, Germany, Hong Kong, India, Indonesia, Ireland, Israel, Italy, Japan, Kuwait, Malaysia, Mexico, Netherlands, New Zealand, Norway, Peru, Poland, Singapore, South Africa, South Korea, Spain, Sweden, Switzerland, Thailand, United Kingdom, United States                                                                                                                                                                                                                                                                                                                                                                                                            | 36                                    |

**FIGURE A1**  
**Covariate Balance Before and After PSM**

This figure presents the standardized percentage bias across all covariates before and after PSM for Column 4 of Table 5. The solid circles represent the standardized mean differences between treated and control (not-yet-treated) firms before matching, while the cross marks represent those after matching. All covariates are included as control variables in the baseline analysis. The definitions and data sources of the covariates are provided in Table A1 in the Appendix.

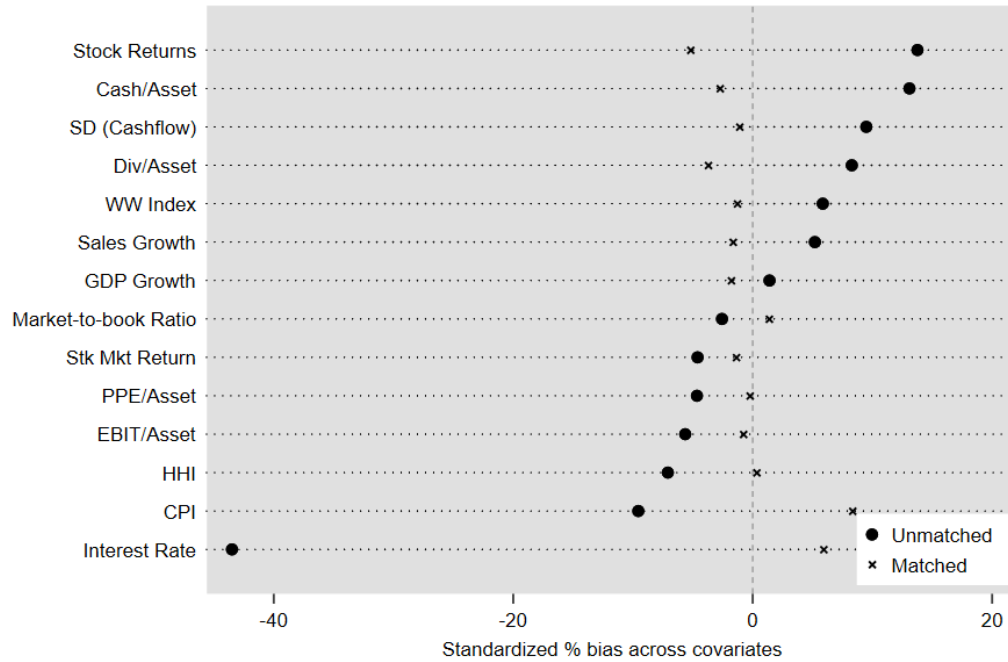


**FIGURE A2**  
**Propensity Score Distributions**

This figure shows the kernel density distributions of estimated propensity scores for treated and control firms. The propensity scores are obtained from the PSM applied in Column 4 of Table 5, using all control variables as covariates. The top panel presents the distributions for the full sample, while the bottom panel presents the distributions for the matched sample.

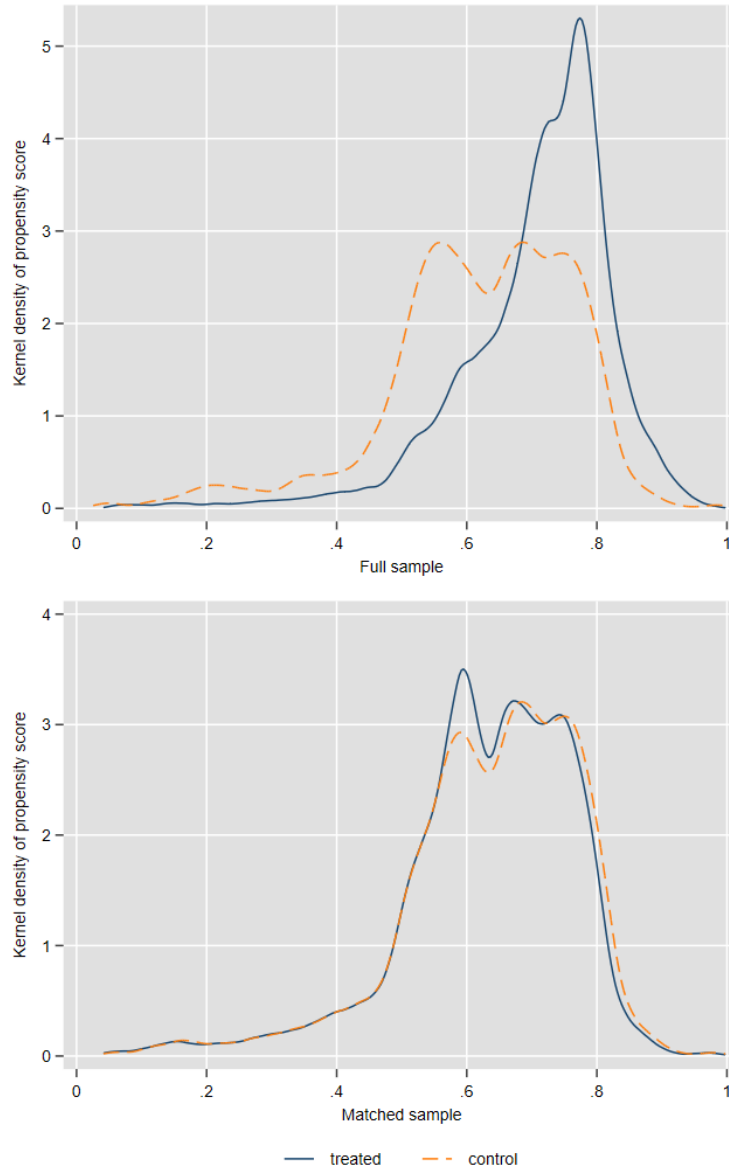


**FIGURE A3**  
**Event Study from CS DiD**

This figure reports the dynamic average treatment effects on the treated, along with the 95% confidence intervals, for relative-time periods ranging from five years before to five years after the year of board reform, as estimated using the CS DiD estimator.

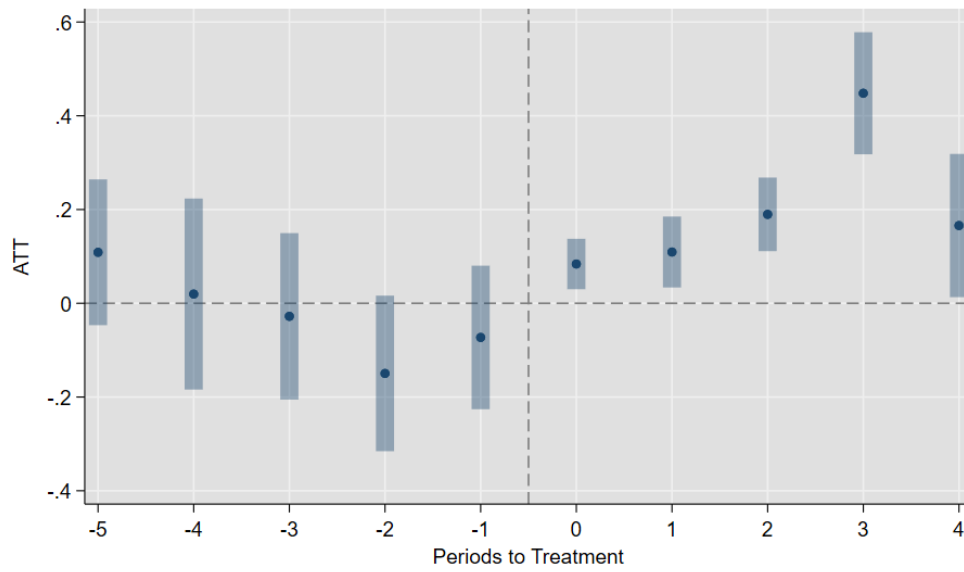


**FIGURE A4**  
**Event Study from Imputation DiD**

This figure reports the dynamic average treatment effects on the treated, along with the 95% confidence intervals, for relative-time periods ranging from five years before to five years after the year of board reform, as estimated using the imputation DiD estimator.

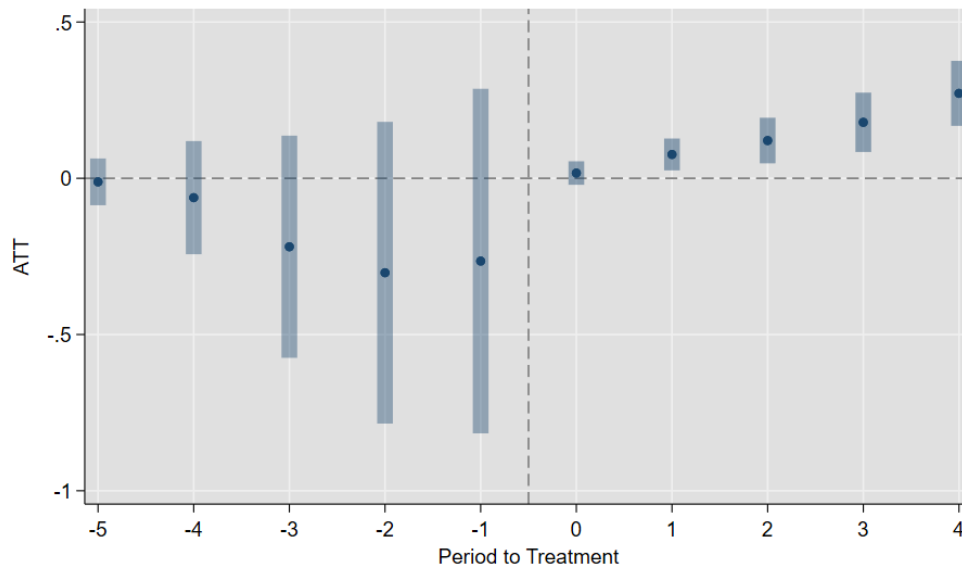


**TABLE A3**  
**Entropy Balancing Results**

This table presents the descriptive statistics for the covariates in the treated and control (not-yet-treated) groups, both before and after entropy balancing. The balancing process targets the mean, variance, and skewness of these variables. We use a tolerance level for convergence of 0.15. Variables are defined in Table A1 in the Appendix. All firm-level continuous variables are winsorized at the 1% and 99% levels.

|                             | Mean   |         |        | Variance |          |          | Skewness |         |        |
|-----------------------------|--------|---------|--------|----------|----------|----------|----------|---------|--------|
|                             | Treat  | Control |        | Treat    | Control  |          | Treat    | Control |        |
|                             |        | Pre     | Post   |          | Pre      | Post     |          | Pre     | Post   |
| <i>EBIT/Asset</i>           | -0.118 | -0.083  | -0.118 | 0.435    | 0.335    | 0.435    | -4.654   | -5.158  | -4.654 |
| <i>PPE/Asset</i>            | 0.560  | 0.579   | 0.560  | 0.181    | 0.157    | 0.181    | 0.976    | 0.970   | 0.976  |
| <i>Cash/Asset</i>           | 0.185  | 0.160   | 0.185  | 0.042    | 0.034    | 0.042    | 1.737    | 1.952   | 1.737  |
| <i>Div/Asset</i>            | 1.224  | 1.037   | 1.224  | 6.059    | 4.143    | 6.060    | 3.279    | 3.654   | 3.279  |
| <i>Sales Growth</i>         | 25.900 | 21.370  | 25.900 | 8488.000 | 6735.000 | 8488.000 | 4.650    | 5.076   | 4.650  |
| <i>Stock Returns</i>        | 18.070 | 7.687   | 18.070 | 6082.000 | 5308.000 | 6082.000 | 2.301    | 2.537   | 2.301  |
| <i>Market-to-book Ratio</i> | 2.346  | 2.476   | 2.346  | 25.710   | 25.800   | 25.710   | 2.428    | 2.712   | 2.428  |
| <i>SD (Cashflow)</i>        | 0.140  | 0.105   | 0.140  | 0.166    | 0.104    | 0.166    | 5.196    | 6.445   | 5.196  |
| <i>WW Index</i>             | 0.967  | 0.615   | 0.967  | 40.590   | 31.810   | 40.590   | 4.696    | 5.171   | 4.696  |
| <i>HHI</i>                  | 0.221  | 0.237   | 0.221  | 0.053    | 0.056    | 0.053    | 1.798    | 1.695   | 1.798  |
| <i>GDP Growth</i>           | 3.016  | 2.983   | 3.016  | 5.735    | 5.786    | 5.735    | 0.461    | -0.575  | 0.461  |
| <i>CPI</i>                  | 2.063  | 2.295   | 2.063  | 3.183    | 8.636    | 3.184    | 1.408    | 3.437   | 1.408  |
| <i>Stk Mkt Return</i>       | 6.924  | 7.760   | 6.924  | 301.800  | 357.300  | 301.800  | -0.244   | -0.107  | -0.244 |
| <i>Interest Rate</i>        | 5.599  | 7.043   | 5.599  | 8.867    | 13.160   | 8.868    | 1.218    | 0.943   | 1.218  |

**TABLE A4**  
**Alternative Cutoffs of Investment Opportunities**

This table presents regression results on the impact of board reforms on share repurchases across subsamples defined by investment opportunities, using alternative cutoffs based on quintiles of Tobin's Q. Investment opportunities are measured by Tobin's Q. Columns 1 to 5 report results for the five quintile subgroups, from the lowest (1st) to the highest (5th). Variables are defined in the Appendix. All firm-level continuous variables are winsorized at the 1% and 99% levels. Standard errors are clustered at the country level. Stacked Obs. denotes the number of cohort-firm-year observations in the stacked sample constructed for the stacked DiD approach. *t*-statistics are reported in parentheses, \*\*\*, \*\*, and \* represent statistical significance at the 1%, 5%, and 10% levels, respectively.

| Dependent Variables:        | <i>Rep/Asset</i>     |                    |                     |                   |                      |
|-----------------------------|----------------------|--------------------|---------------------|-------------------|----------------------|
| <i>Q</i> Quintiles:         | 1st                  | 2nd                | 3rd                 | 4th               | 5th                  |
|                             | 1                    | 2                  | 3                   | 4                 | 5                    |
| <i>Board Reform</i>         | 0.139***<br>(4.64)   | 0.185***<br>(3.60) | 0.124<br>(1.62)     | 0.069<br>(0.85)   | 0.124<br>(1.00)      |
| <i>EBIT/Asset</i>           | 0.086**<br>(2.03)    | 0.285**<br>(2.69)  | 0.263*<br>(1.72)    | 0.301*<br>(1.91)  | 0.060***<br>(4.35)   |
| <i>PPE/Asset</i>            | 0.078<br>(0.52)      | -0.039<br>(-0.82)  | -0.109<br>(-1.42)   | 0.199<br>(1.37)   | 0.013<br>(0.56)      |
| <i>Cash/Asset</i>           | 0.870*<br>(1.86)     | 1.525**<br>(2.38)  | 0.976**<br>(2.11)   | 1.743**<br>(2.61) | 0.739***<br>(3.89)   |
| <i>Div/Asset</i>            | -0.005<br>(-0.81)    | -0.029<br>(-1.68)  | 0.038*<br>(2.69)    | 0.031<br>(1.14)   | 0.040<br>(1.51)      |
| <i>Sales Growth</i>         | 0.013***<br>(7.55)   | 0.017<br>(0.68)    | -0.003<br>(-0.66)   | 0.002<br>(0.43)   | 0.001***<br>(4.24)   |
| <i>Stock Returns</i>        | -0.000<br>(-0.23)    | 0.000<br>(0.08)    | 0.000<br>(1.20)     | 0.000<br>(1.33)   | -0.000***<br>(-3.67) |
| <i>Market-to-book Ratio</i> | 0.026***<br>(7.91)   | 0.029<br>(1.09)    | 0.005<br>(1.16)     | 0.005**<br>(2.48) | 0.001<br>(1.49)      |
| <i>SD (Cashflow)</i>        | -0.146<br>(-1.60)    | -0.026<br>(-0.25)  | 0.003<br>(0.04)     | 0.026<br>(0.20)   | -0.064***<br>(-9.40) |
| <i>WW Index</i>             | -0.197***<br>(-7.32) | -0.259<br>(-0.69)  | 0.055<br>(0.72)     | -0.022<br>(-0.43) | -0.014***<br>(-4.93) |
| <i>HHI</i>                  | 0.080<br>(0.41)      | 0.044<br>(0.26)    | 0.000<br>(0.00)     | -0.362<br>(-1.48) | -0.459<br>(-1.07)    |
| <i>GDP Growth</i>           | -0.002<br>(-0.18)    | 0.015*<br>(1.71)   | 0.021<br>(1.65)     | 0.030<br>(1.67)   | 0.020**<br>(2.12)    |
| <i>CPI</i>                  | 0.000<br>(0.93)      | -0.000<br>(-0.52)  | -0.000**<br>(-2.54) | 0.000**<br>(2.53) | 0.000*<br>(1.99)     |
| <i>Stk Mkt Return</i>       | 0.006*<br>(2.00)     | 0.002<br>(1.03)    | 0.002<br>(1.64)     | 0.005**<br>(2.61) | 0.004*<br>(2.01)     |
| <i>Interest Rate</i>        | -0.012<br>(-0.95)    | -0.004<br>(-0.41)  | 0.046*<br>(2.02)    | 0.076**<br>(2.07) | 0.091***<br>(3.18)   |
| Constant                    | -0.050<br>(-0.43)    | -0.217<br>(-0.51)  | -0.089<br>(-0.41)   | -0.360<br>(-0.78) | 0.043<br>(0.18)      |
| Cohort × Firm               | Yes                  | Yes                | Yes                 | Yes               | Yes                  |
| Cohort × Year               | Yes                  | Yes                | Yes                 | Yes               | Yes                  |
| Stacked Obs.                | 79113                | 83368              | 73262               | 82787             | 85006                |
| Adj-R <sup>2</sup>          | 0.295                | 0.267              | 0.341               | 0.340             | 0.488                |

**TABLE A5**  
**Alternative Cutoffs of Financial Constraints**

This table presents regression results on the impact of board reforms on share repurchases across subsamples defined by financial constraints, using alternative cutoffs based on quintiles of WW index. Financial constraints are measured by WW index. Columns 1 to 5 report results for the five quintile subgroups, from the lowest (1st) to the highest (5th). Variables are defined in the Appendix. All firm-level continuous variables are winsorized at the 1% and 99% levels. Standard errors are clustered at the country level. Stacked Obs. denotes the number of cohort-firm-year observations in the stacked sample constructed for the stacked DiD approach. *t*-statistics are reported in parentheses, \*\*\*, \*\*, and \* represent statistical significance at the 1%, 5%, and 10% levels, respectively.

| Dependent Variables:        | <i>Rep/Asset</i>     |                    |                      |                      |                       |
|-----------------------------|----------------------|--------------------|----------------------|----------------------|-----------------------|
| <i>WW Index</i> Quintiles:  | 1st                  | 2nd                | 3rd                  | 4th                  | 5th                   |
|                             | 1                    | 2                  | 3                    | 4                    | 5                     |
| <i>Board Reform</i>         | 0.139**<br>(2.45)    | 0.318***<br>(3.02) | 0.050<br>(0.94)      | 0.071<br>(0.93)      | -0.032<br>(-0.53)     |
| <i>EBIT/Asset</i>           | -0.040<br>(-0.70)    | 0.321***<br>(4.72) | 0.016<br>(0.28)      | 0.278**<br>(2.28)    | 0.111***<br>(3.62)    |
| <i>PPE/Asset</i>            | -0.197**<br>(-2.14)  | -0.033<br>(-0.80)  | 0.084<br>(0.65)      | 0.001<br>(0.01)      | -0.107***<br>(-2.86)  |
| <i>Cash/Asset</i>           | 0.902**<br>(2.48)    | 1.610**<br>(2.22)  | 1.794***<br>(3.08)   | 1.289***<br>(3.54)   | 0.113<br>(0.82)       |
| <i>Div/Asset</i>            | 0.027**<br>(2.55)    | 0.029<br>(1.13)    | 0.006<br>(0.39)      | 0.029<br>(1.22)      | 0.003<br>(0.36)       |
| <i>Sales Growth</i>         | 0.001<br>(1.03)      | -0.003<br>(-0.70)  | 0.004**<br>(2.70)    | -0.004***<br>(-4.08) | 0.005***<br>(14.15)   |
| <i>Stock Returns</i>        | 0.001**<br>(2.39)    | 0.000<br>(0.74)    | 0.000<br>(1.65)      | -0.000***<br>(-2.93) | -0.000<br>(-1.63)     |
| <i>Market-to-book Ratio</i> | 0.001<br>(0.54)      | 0.019*<br>(1.72)   | 0.011*<br>(1.72)     | 0.008**<br>(2.38)    | -0.006***<br>(-4.24)  |
| <i>SD (Cashflow)</i>        | -0.360***<br>(-3.61) | -0.033<br>(-0.59)  | -0.140<br>(-1.66)    | 0.088<br>(0.76)      | 0.007<br>(0.46)       |
| <i>WW Index</i>             | -0.012<br>(-0.75)    | 0.030<br>(0.61)    | -0.062***<br>(-2.98) | 0.058***<br>(3.94)   | -0.070***<br>(-13.80) |
| <i>HHI</i>                  | -0.055<br>(-0.32)    | -0.126<br>(-1.31)  | -0.269**<br>(-2.07)  | 0.108<br>(0.64)      | -0.145<br>(-0.64)     |
| <i>GDP Growth</i>           | 0.012<br>(1.50)      | 0.033**<br>(2.24)  | 0.040**<br>(2.26)    | 0.001<br>(0.05)      | 0.005<br>(0.60)       |
| <i>CPI</i>                  | -0.000<br>(-1.31)    | 0.000<br>(0.53)    | 0.000<br>(0.55)      | -0.001***<br>(-4.99) | -0.000**<br>(-2.39)   |
| <i>Stk Mkt Return</i>       | 0.004<br>(1.36)      | 0.004*<br>(1.73)   | 0.003*<br>(1.77)     | 0.002**<br>(2.58)    | 0.002<br>(1.68)       |
| <i>Interest Rate</i>        | 0.005<br>(0.28)      | 0.050**<br>(2.34)  | 0.072***<br>(2.75)   | 0.049*<br>(1.80)     | 0.052**<br>(2.35)     |
| Constant                    | 0.296<br>(1.54)      | -0.025<br>(-0.08)  | -0.226<br>(-0.62)    | -0.059<br>(-0.17)    | -0.071<br>(-0.46)     |
| Cohort × Firm               | Yes                  | Yes                | Yes                  | Yes                  | Yes                   |
| Cohort × Year               | Yes                  | Yes                | Yes                  | Yes                  | Yes                   |
| Stacked Obs.                | 69461                | 70884              | 70239                | 74944                | 65601                 |
| Adj-R <sup>2</sup>          | 0.292                | 0.424              | 0.446                | 0.404                | 0.178                 |

TABLE A6

**Alternative Measures of Investment Opportunities and Financial Constraints**

This table presents regression results on the impact of board reforms on share repurchases across subsamples defined by investment opportunities and financial flexibility. Investment opportunities are measured by sales growth, while financial constraints are measured by EBIT. Firms with sales growth above the median are classified as having high investment opportunities, whereas firms with EBIT less than zero are classified as facing high financial constraints. Variables are defined in the Appendix. All firm-level continuous variables are winsorized at the 1% and 99% levels. Standard errors are clustered at country level. Stacked Obs. denotes the number of cohort-firm-year observations in the stacked sample constructed for the stacked DiD approach. *t*-statistics are reported in parentheses, \*\*\*, \*\*, and \* represent statistical significance at the 1%, 5%, and 10% levels, respectively.

| Dependent Variable:         | <i>Rep/Asset</i>     |                     |                    |                    |                           |                           |
|-----------------------------|----------------------|---------------------|--------------------|--------------------|---------------------------|---------------------------|
|                             | Sales Growth≤P50     | Sales Growth>P50    | EBIT>0             | EBIT≤0             | Sales Growth≤P50 & EBIT>0 | Sales Growth>P50 & EBIT≤0 |
|                             | 1                    | 2                   | 3                  | 4                  | 5                         | 6                         |
| <i>Board Reform</i>         | 0.163***<br>(3.28)   | 0.045<br>(0.94)     | 0.017<br>(0.49)    | 0.143***<br>(3.33) | 0.219***<br>(2.75)        | -0.005<br>(-0.09)         |
| <i>EBIT/Asset</i>           | 0.025<br>(0.96)      | 0.103**<br>(2.25)   | -0.004<br>(-0.29)  | 0.556**<br>(2.27)  | 0.518**<br>(2.11)         | 0.051<br>(1.20)           |
| <i>PPE/Asset</i>            | -0.097***<br>(-4.58) | -0.038<br>(-0.50)   | -0.075*<br>(-1.71) | -0.056<br>(-0.70)  | -0.155**<br>(-2.38)       | -0.023<br>(-0.50)         |
| <i>Cash/Asset</i>           | 1.183***<br>(3.36)   | 0.692**<br>(2.62)   | 0.498***<br>(3.60) | 1.495**<br>(2.30)  | 2.207*<br>(1.98)          | 0.076<br>(0.58)           |
| <i>Div/Asset</i>            | 0.021<br>(1.46)      | 0.019<br>(1.60)     | 0.014<br>(0.96)    | 0.014<br>(1.34)    | 0.011<br>(1.10)           | 0.012***<br>(2.94)        |
| <i>Sales Growth</i>         | 0.003**<br>(2.65)    | -0.001<br>(-0.81)   | 0.002***<br>(3.68) | -0.001<br>(-0.43)  | -0.000<br>(-0.07)         | -0.001***<br>(-3.63)      |
| <i>Stock Returns</i>        | 0.000**<br>(2.66)    | -0.000<br>(-1.58)   | -<br>(-5.94)       | -0.000<br>(-1.06)  | 0.000<br>(1.22)           | -0.000**<br>(-2.48)       |
| <i>Market-to-book Ratio</i> | 0.004<br>(1.56)      | -0.002**<br>(-2.69) | -<br>(-6.62)       | 0.001<br>(0.69)    | 0.020<br>(1.60)           | -0.001**<br>(-2.14)       |
| <i>SD (Cashflow)</i>        | -0.099***<br>(-5.34) | -0.003<br>(-0.09)   | -<br>(-6.07)       | -0.068<br>(-1.12)  | -0.299<br>(-1.48)         | 0.047<br>(1.48)           |
| <i>WW Index</i>             | -0.043***<br>(-2.78) | 0.010<br>(0.71)     | -<br>(-4.06)       | 0.011<br>(0.31)    | 0.003<br>(0.04)           | 0.019***<br>(3.81)        |
| <i>HHI</i>                  | -0.155<br>(-1.41)    | -0.112<br>(-0.85)   | -0.274<br>(-0.99)  | -0.093<br>(-0.80)  | -0.129<br>(-0.97)         | -0.829<br>(-1.21)         |
| <i>GDP Growth</i>           | 0.023*<br>(1.76)     | 0.018<br>(1.49)     | 0.010**<br>(2.30)  | 0.024<br>(1.64)    | 0.030<br>(1.60)           | 0.009<br>(0.70)           |
| <i>CPI</i>                  | 0.000<br>(0.44)      | -0.000<br>(-0.35)   | 0.000<br>(0.97)    | 0.000<br>(1.23)    | 0.000<br>(1.24)           | 0.004<br>(0.59)           |
| <i>Stk Mkt</i>              | 0.004<br>(0.44)      | 0.002*<br>(1.49)    | 0.002*<br>(0.97)   | 0.003<br>(1.23)    | 0.004<br>(1.24)           | 0.004***<br>(3.81)        |

|                    |         |         |         |         |         |        |
|--------------------|---------|---------|---------|---------|---------|--------|
| <i>Return</i>      |         |         |         |         |         |        |
|                    | (1.62)  | (1.86)  | (1.79)  | (1.58)  | (1.50)  | (2.88) |
| <i>Interest</i>    | 0.043*  | 0.058** | 0.029** | 0.059** | 0.063** | 0.021  |
| <i>Rate</i>        |         |         |         |         |         |        |
|                    | (1.85)  | (2.21)  | (2.50)  | (2.06)  | (2.05)  | (0.66) |
| Constant           | -0.023  | -0.052  | 0.005   | -0.118  | -0.128  | 0.244  |
|                    | (-0.09) | (-0.19) | (0.05)  | (-0.34) | (-0.33) | (0.93) |
| Cohort             | Yes     | Yes     | Yes     | Yes     | Yes     | Yes    |
| ×Firm              |         |         |         |         |         |        |
| Cohort ×           | Yes     | Yes     | Yes     | Yes     | Yes     | Yes    |
| Year               |         |         |         |         |         |        |
| Stacked            | 221867  | 208686  | 106585  | 344187  | 139325  | 24709  |
| Obs.               |         |         |         |         |         |        |
| Adj-R <sup>2</sup> | 0.368   | 0.372   | 0.135   | 0.408   | 0.422   | 0.102  |