



Relaxed managerial fiduciary duties and corporate payout policy

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Abstract

We examine the effect of corporate opportunity waiver (COW) laws on corporate payout policies across nine U.S. states. Using a difference-in-differences approach, we document a significant decline in payouts following the adoption of COW laws. This reduction is more pronounced in firms where managers face greater conflicts of interest with shareholders and in firms reliant on external financing, particularly equity. Our results align with two non-mutually exclusive hypotheses: (1) the resource diversion hypothesis, where COW laws incentivize self-dealing managers to cut payouts and reallocate resources to alternative uses, and (2) the reduced signaling incentive hypothesis, where COW laws diminish managers' motivation to use payouts as a tool to mitigate free-cash-flow agency problems. Further supporting the resource diversion channel, we find that affected firms experience deteriorating corporate performance and higher equity financing costs. These results suggest that managerial opportunism plays a dominant role in explaining the payout decline.

Keywords Corporate opportunity waivers (COW) · Corporate payout policy · Disloyal managers · Signaling effect

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1 Introduction

Managers and directors have a fiduciary duty to subordinate their personal interests to those of shareholders; for example, corporate insiders should not take new business opportunities for themselves rather than giving them to the corporation. However, starting in 2000 with Delaware, various states in the U.S. have changed the law, allowing boards to waive the so-called “duty of loyalty” (Talley 1998; Rauterberg and Talley 2017). These corporate opportunity waivers (COW) allow managers to ignore the duty of loyalty in the course of their employment and explore new opportunities for themselves without first offering them to their employers. Agency conflicts may arise when managers’ interests diverge from those of shareholders. In this study, we conduct an empirical analysis to examine how the passage of corporate opportunity waiver laws changes firms’ distribution policy, because COW laws alter the incentives of managers and directors in diverse ways and dividend payouts are the primary tool used to mitigate the conflict of interest between external investors and corporate insiders.

In perfect and complete financial markets, firms’ value is not affected by the dividend policy. However, if markets are less than perfect, dividend payouts can mitigate the discount in value resulting from conflicts of interest between external shareholders and corporate insiders (Miller and Modigliani 1961; Myers and Majluf 1984; Miller and Rock 1985). The effect of COW laws on corporate payouts can be twofold. On the one hand, COW laws can motivate managers to distribute more to shareholders. When corporate distribution is viewed favorably by investors, managers and directors can adopt a policy of high payouts (i.e. pay out more dividends and/or repurchase more shares) to “repair” their reputation for being disloyal when COWs allow them to prioritize their personal benefits over those of their current employer. In this case, corporate payouts not only serve to signal firms’ (strong) future performance, but also reflect managers’ willingness to commit internal resources to shareholders and thus mitigate shareholders’ concerns about managers’ incentives for self-dealing (Myers and Majluf 1984; Miller and Rock 1985; Jensen 1986; La Porta et al. 2000) (the “reputation repairment hypothesis”).

On the other hand, managers and directors affected by COW laws may distribute less to shareholders. When managers and board members are entitled to pursue their own external business opportunities, they can make fewer stock repurchases and even reduce cash dividends, diverting internal resources to alternative uses for their own benefit. At the same time, when managers are distracted by external opportunities, they may not manage the focal firms effectively and generate lower firms’ profits, resulting in a lowered incentive to distribute payouts to shareholders. We call it the “resource diversion hypothesis”.

Despite introducing potential conflicts of interest, one important motivation for COW laws is to enhance the flexibility of contracts for both firms and investors, leveraging firms’ need for capital and fostering a more efficient corporate ecosystem. In this regard, Eldar and Grennan (2024) show that COWs enhance venture capital investment and common director presence on boards, enabling startups to raise capital, exit successfully, and minimize failures. Geng et al. (2023) find that board overlap, facilitated by COWs, promotes coordination between firms, leading to greater product differentiation and increased productivity. The contract flexibility resulting from COW laws reduces the pressure on managers to communicate private information through costly dividend payouts to obtain external financing (in particular, equity financing). Therefore, firms can distribute less after the passage of COW

laws because managers' incentives to signal are less. We label this alternative interpretation of the reduced distribution as "reduced signaling incentive hypothesis".

We test the above predictions empirically and examine whether corporate payouts increase or decrease after an exogenous shock to the fiduciary officers' duty of loyalty. To do so, we construct a data set with dividend payment information for firms for the 2000–2022 period. We find that firms distribute less to shareholders after the duty of loyalty of fiduciary officers is relaxed, and the decline in distribution is manifested in both stock repurchase and cash dividend. The results survive a series of robustness checks, including a stacked difference-in-differences approach, the use of alternative matching methods and different fixed effects, the inclusion of additional legislative events and additional firm-level control variables, and the separation of Delaware-incorporated firms and non-Delaware-incorporated firms.

While the decrease in payouts does not support the "reputation repairment hypothesis", the finding can be interpreted by both the "resource diversion hypothesis" and "reduced signaling incentive hypothesis". In particular, the "resource diversion hypothesis" suggests that COWs should result in a greater reduction of distribution in firms with more conflicts of interest between external shareholders and insiders. In our cross-sectional analysis, we find that the decline in distribution is larger in firms where fiduciary officers have less monitoring (proxied by lower long-term institutional investors), have more external opportunities (proxied by higher industry Tobin's Q) and/or CEOs have longer tenure and are thus more entrenched. Meanwhile, the "reduced signaling incentive hypothesis" suggests that if COW laws enhance contracting flexibility, enabling firms to obtain external financing without using dividend payouts as a signal, then COW laws should result in a greater reduction of distribution in firms that rely more on external financing, especially equity financing (La Porta et al. 2000; Hail et al. 2014). We find evidence consistent with this conjecture as well.

To better understand the benefits and costs associated with COW laws, in the remaining analysis, we conduct additional tests to gauge the relative importance of the two competing hypotheses in explaining the change in corporate payout policy. To do so, we investigate how the COW laws change the corporate performance and the firms' cost of equity capital.¹ If COW laws induce firms to reduce payouts because they improve firms' financial contractability and facilitate managers and directors to coordinate resources when they can simultaneously serve multiple firms, they should be associated with an increase in firms' financial performance and a decrease in the cost of equity capital. On the contrary, if COW laws motivate managers and board members to reduce distributions to shareholders for self-serving purposes (i.e. retaining resources for personal projects rather than compensating shareholders), we should observe a poorer financial performance and an increase in the cost of capital after COW laws pass. Empirically, we find a decrease in firms' financial performance and an increase in the cost of equity capital² after the passage of COW laws. These findings suggest that on average, COWs do not improve firms' financing capacity signifi-

¹ The cost of equity capital is a direct benchmark for managers making corporate investment and financing decisions, summarizing investors' trade-off between risk and return in their decisions about resource allocation. A series of studies in agency theory (Jensen and Meckling 1976) suggest that investors demand a higher rate of return for reasons such as a greater systematic risk resulting from overinvestment, inefficient merger and acquisition decisions, higher monitoring cost, and more severe information asymmetry, etc., when conflicts of interest between managers and shareholders are more severe.

² We estimate the implied cost of firms' equity capital using analysts' earnings forecasts (Gebhardt et al. 2001; Claus and Thomas 2001; Easton 2004; Ohlson and Juettner-Nauroth 2005; Pástor et al. 2008).

cantly, and the resource diversion hypothesis may play a more important role in explaining the reduced corporate payouts.

This study contributes to the line of research that investigates the relationship between managerial incentive and corporate payout policy. An influential paper by La Porta et al. (2000) proposes that dividends are the *outcome* of effectively protected shareholder rights. That is, firms whose fiduciary officers treat their shareholders favorably pay higher dividends. Alternatively, dividends can be a *substitute* for poorly governed managers. In other words, firms pay dividends to establish a reputation for treating outside shareholders fairly, with the aim of ensuring that future equities are floated at a favorable price. Our findings are consistent with the outcome model (see also Bae et al. 2021).

More importantly, our findings contribute to the literature on the economic consequences of COW laws by revealing their multifaceted effects. While prior studies have examined the real-world impact of COW laws on corporate behavior (Wang 2022; Fich et al. 2023; Hu et al. 2023; Boyd et al. 2025; Eldar and Grennan 2024; Geng et al. 2023), they have largely focused on singular dimensions—either beneficial or adverse. In contrast, we demonstrate that COW laws negatively influence payouts through two distinct channels: (1) by enhancing firms' financing capacity and (2) by exacerbating manager-shareholder interest conflicts, leading to reduced dividend payouts. This suggests that COW laws can produce concomitant—and potentially offsetting—economic effects. Thus, we extend the research on the real effect of COW laws by investigating the impact of (relaxed) fiduciary liabilities on corporate payout policy, which lies at the heart of the wealth transfer between shareholders and insiders.

2 Institutional background and hypothesis development

2.1 Institutional background of COW laws

A foundational part of the duty of loyalty owed by corporate managers to shareholders is the corporate opportunities doctrine. The corporate opportunity doctrine prohibits directors and officers from deriving personal benefits from, or transferring such benefits to another individual or entity, opportunities that rightfully belong to the corporation. Consequently, the corporate opportunity doctrine effectively endows the corporations with an implied right of first refusal regarding any opportunities identified by (or attributed to) its fiduciaries.³ This can be a concern for representatives of private equity or venture capital investors who are appointed to such investor's portfolio companies. If these investors have to bear the risk that their subsequent investments in any related firms can be perceived to usurp opportunities from the first company in which they invested, they will refrain from committing their capital from the beginning, which can severely restrict national economic development. Companies should be willing to waive the corporate opportunity doctrine to attract capital.

³ Courts usually analyze several factors to determine whether something is a corporate opportunity. In Delaware, these factors include (1) whether the corporation would be financially able to take the opportunity, (2) whether the opportunity is in the same line of business as the corporation, (3) whether the corporation has an interest or expectancy in the opportunity, (4) whether taking the opportunity would create a conflict of interest or be a breach of fiduciary duties for the officer or director.

Since 2000, the Delaware General Corporation Law (DGCL) addressed this concern by expressly granting Delaware corporations the power to include a corporate opportunity waiver in the certificate of incorporation or by action of the corporation's board of directors. The corporate opportunity waivers refer to waiving the fiduciary duty of loyalty when seizing new business opportunities, a duty governed by the corporate opportunity doctrine. As a result, managers covered by corporate opportunity waiver laws could legally pursue and develop new business projects for their personal benefit without the obligation to offer them to their firms. The COW laws have now been adopted by nine U.S. states. Appendix 1 Table 12 reports the states and the dates when firms were first permitted to adopt the COWs.

As illustrated in Appendix 1 Table 12, Delaware emerged as the unambiguous pioneer in statutorily authorizing corporate opportunity waivers. Following Delaware's legislative reforms, a sequential pattern of adoption emerged across other U.S. states, with subsequent adoptions occurring at relatively evenly spaced intervals spanning two decades (2000–2020). Notably, no two states enacted their waiver statutes within the same calendar year, suggesting deliberate legislative caution in policy emulation.

While the statutory frameworks of follower states broadly mirror Delaware's paradigm, variations exist in both procedural requirements and substantive scope. Oklahoma, Kansas, New Jersey, and Maryland have provisions that closely track section 122(17) (the implementing statute in Delaware) in all respects. However, several states introduced substantive modifications that either expand or constrain corporate flexibility compared to the Delaware model. For example, Missouri extends the scope of waivers to cover any agent or employee beyond officers, directors, and dominant shareholders.⁴ At the same time, when Washington allows COWs to cover "any other person" beyond the usual suspects, its statute is more restrictive in at least two ways, (1) the waivers must be part of a charter provision and cannot be adopted by action of the board, and (2) as a COW reaches officers and dominant shareholders, the statute requires specific board approval when a business opportunity arises that the officer or dominant shareholder wishes to pursue (Rauterberg and Talley 2017). These structural divergences underscore the nuanced evolution of COW statutes across jurisdictions, reflecting varying policy balances between corporate autonomy and fiduciary safeguards.

In practice, numerous companies, regardless of size, have granted waivers from fiduciary duties to their board members and management. The staggered adoption of COW laws changes managerial incentives and corporate governance. For instance, Fich et al. (2023) show that public firms covered by waiver laws invest less in R&D, produce fewer and less valuable patents, and exhibit abnormally high departures by inventors. Wang (2022) finds that shareholders are less likely to vote for directors that are potentially protected by the COW law, indicating a concern about the weakened fiduciary duty. Boyd et al. (2025) demonstrated a significant decrease in corporate social responsibility following the adoption of the COW law. And Hu et al. (2023) showed that the adoption of the COW laws leads to weaker corporate culture, supporting the notion that waiving the fiduciary duty of loyalty worsens the agency issue and intensifies the conflict of interest between managers and external investors.

⁴ One needs be cautious in interpreting these seemingly more expansive provisions, particularly in light of the fact that nonmanagerial employees, independent contractors, and other non-fiduciaries generally owe weaker (if any) fiduciary duties to the corporation as principal. Moreover, such employees may be protected by other statutory mandates that help ensure their rights to compete with the principal.

2.2 Hypothesis development

When discussing managers' incentives (or the governance the managers and directors are subject to) as a determinant of corporate payouts, La Porta et al. (2000) make two opposing predictions, namely the substitute model and the outcome model. The substitute model suggests that dividends are a substitute for managers' agency incentive. Firms pay dividends to establish a reputation for treating outside shareholders fairly, with the aim of ensuring that future equities are priced favorably. Dividend payouts are used to reduce the agency costs of free cash flows and reassure external shareholders about managers' ongoing commitment to make diligent use of firms' resources (Myers and Majluf 1984; Jensen 1986). Thus, to mitigate the moral hazard to insiders and adverse selection by external shareholders, managers and directors that are perceived to have more agency conflicts with shareholders pay higher dividends. When COWs allow corporate insiders to take external opportunities without obtaining approval from their current employers, the managers and directors can increase dividend payouts as a commitment to shareholders and repair their reputation for being disloyal (i.e. the "reputation repairment hypothesis").

On the other hand, the outcome model suggests that dividends are the outcome of managers' incentives, affected by the strength of governance that the managers are subject to. In other words, firms that prioritize their shareholders' rights pay higher dividends. When COWs allow managers and directors to explore external opportunities, the officers have stronger incentives to grow their own interest on top of that of the shareholders of the current company. The managers and directors can divert resources from within the current company to their personal projects that are unrelated to their employer company, rather than distributing the internal funds to shareholders. For example, officers and directors can transfer major assets across firms, such as remove significant, productive assets from the employing firms for less than fair value for the benefit of insiders or add overpriced assets to the employing firms. And such self-dealing transfers can be with both tangible or intangible assets (Atanasov et al. 2011). Transfers out of (into) the firm may also affect the profitability of the firm's other assets if the transferred assets have positive (negative) synergy with the firm's other assets. As a result, the dividend payouts will decline after the COW laws pass. We call this the "resource diversion hypothesis". Beyond that, the external businesses can be distracting and managers and directors therefore fail to improve the performance of the current company, resulting in poor financial performance and a lower assets value for shareholders, leading to lower payouts as well.

At the same time, COW laws are enacted to enhance contract flexibility, especially for smaller and emerging firms, thus creating an opportunity to increase the availability of equity financing to companies. In the startup context, Eldar and Grennan (2024) find that COW enhances venture capital investment and the presence of common directors on boards, enabling portfolio startups to raise capital, exit successfully, and minimize failures. According to these studies, the implementation of COW laws expands the financing channels available to corporations, helping them seek funding from individuals or venture capitalists who might have overlapping duties of loyalty to various firms. The flexibility in contracting allowed by the COW laws reduces the pressure on managers and directors to demonstrate commitment and use dividend payouts as a signal to communicate with shareholders. Thus, given the availability of alternative financing options, managers and directors are expected

to pay fewer dividends after COW laws pass (the “reduced signaling incentive hypothesis”). In addition, Geng et al. (2023) find that COWs facilitate board overlap and promote coordination between firms, leading to increased productivity, greater product differentiation, and ultimately benefiting firm profitability. Thus, the availability of internal funds can also reduce the use of dividends to attract external investors.

Based on the arguments above, the effect of waiving officers’ duty of loyalty on corporate payouts is ambiguous. Thus, we state our main hypothesis in null form as follows,

Hypothesis 1: *The passage of COW laws has no effect on corporate payouts.*

3 Research design and data

3.1 Sample

To examine the relationship between COW and payouts empirically, we collect COW enactment years from Rauterberg and Talley (2017). We extract firm-level financial data from Compustat spanning 2000–2022, and we obtain CEO data from Execucomp and institutional investor data from Thomson 13 f. The initial sample is refined by (1) eliminating observations lacking state registration information or registered outside U.S. jurisdictions, (2) excluding financial institutions (SIC codes 6000–6999) and regulated utilities (SIC codes 4900–4999) to mitigate industry-specific regulatory confounding, and (3) eliminating observations for missing values in either dependent variables or key covariates. Our final sample contains 75,030 observations representing 7,710 U.S. firms from 2000 to 2022. Details about how we select and prepare the sample are listed in Appendix 2 Table 13.

3.2 Regression model

To test the effect of COW on payouts, we follow prior studies (e.g., Boyd et al. 2025; Fich et al. 2023) by conducting a difference-in-difference (DID) analysis with the following specification:

$$Payouts_{i,t} = \beta_0 + \beta_1 COW_{s,t} + \beta_2 X_{i,t-1} + \beta_3 Firm FE_i + \beta_4 State \times Year FE_{h,t} + \beta_5 Industry \times Year FE_{j,t} + \varepsilon_{i,t} \quad (1)$$

where i represents the firm, s represents the state of incorporation, t represents the year, h represents the headquarter state, and j represents the industry based on the 3-digit SIC. $Payouts_{i,t}$ is the total payouts by firm i , including both the cash dividend and stock buy-back decisions in year t . $COW_{s,t}$ indicates that the firm-year’s state of incorporation has adopted COW law. β_1 is the DID estimator. The treatment (control) group includes firms incorporated in states that have (not) adopted COW. $X_{i,t-1}$ is a vector of control variables. Firm, headquarter state-year, and industry-year fixed effects are included to control for firm-invariant omitted factors, state-level economic conditions, and industry conditions, respectively. All standard errors are clustered at the state of incorporation level.

3.3 Variables

3.3.1 COW variables

We follow Fich et al. (2023) when constructing the *COW* dummy. This indicates that the firm's state of incorporation has enacted a corporate opportunity waiver law that allows managers to waive the duty of loyalty to subordinate their own interests to shareholders' when faced with new business opportunities. This dummy variable is set to one if the focal firm-year's state of incorporation has enacted a COW law, and zero otherwise.

3.3.2 Payout variables

We follow Bae et al. (2021) in constructing the payout variables. We measure total payouts by *Totpay*, the natural logarithm of cash dividends declared on common shares (*DVC*) plus share repurchases; *Totpay_Sales*, one hundred times the ratio of cash dividends declared on common shares (*DVC*) plus share repurchases to total sales (*SALE*). We further decompose the total payouts into dividend payout and repurchase payout: *Div*, the natural logarithm of aggregate dividend dollars; *Div_Sales*, the ratio of cash dividends declared on common/ordinary shares (*DVC*) to total sales (*SALE*); *Repur*, the natural logarithm of aggregate share repurchases dollars; *Repur_Sales*, the ratio of share repurchases to total sales (*SALE*).

3.3.3 Control variables

Following prior literature (Brockman and Unlu 2009; Bae et al. 2021; He et al. 2020), we select the following set of firm-level control variables: firm size (*SIZE*), the natural logarithm of total assets (*AT*) in millions of U.S. dollars; leverage ratio (*LEV*), defined as the book value of long-term debt (*DLTT*) divided by the book value of total assets (*AT*); profitability (*ROA*), the ratio of net income before extraordinary items (*IB*) to total assets (*AT*); retained earnings (*REA*), the ratio of retained earnings (*RE*) to total assets (*AT*); sales growth (*SGR*), the natural logarithm of sales growth computed as $\log(\text{SALE}_t/\text{SALE}_{t-1})$; cash holdings (*CHA*), the ratio of cash and short-term investments (*CHE*) to total assets (*AT*); and R&D investment (*RDE*), the ratio of R&D expenditure (*XRD*) to sales revenue (*SALE*). To disentangle the pandemic's confounding effects on corporate payout policies, we also incorporate *COVID19*, a dummy variable set to one if the year is during the pandemic, and zero otherwise. Appendix 3 Table 14 provides detailed definitions and data sources for all variables. All continuous variables are winsorized at the 1% and 99% levels to mitigate the effect of outliers.

4 Main results

4.1 Summary statistics

Table 1 summarizes the sample distribution by fiscal year and by state of incorporation. Panel A displays the sample distribution by fiscal year for all states, and the number of observations in each year is presented alongside its corresponding percentage relative to

Table 1 Sample distribution

Panel A. By year

All sample			Nine treatment states			Remaining states		
Year	Obs.	%	Year	Obs.	%	Year	Obs.	%
2000	4,399	5.86	2000	3,172	5.47	2000	1,227	7.20
2001	4,707	6.27	2001	3,423	5.90	2001	1,284	7.54
2002	4,460	5.94	2002	3,276	5.65	2002	1,184	6.95
2003	4,184	5.58	2003	3,083	5.32	2003	1,101	6.46
2004	4,020	5.36	2004	2,985	5.15	2004	1,035	6.08
2005	3,921	5.23	2005	2,948	5.08	2005	973	5.71
2006	3,777	5.03	2006	2,876	4.96	2006	901	5.29
2007	3,572	4.76	2007	2,737	4.72	2007	835	4.90
2008	3,387	4.51	2008	2,607	4.50	2008	780	4.58
2009	3,255	4.34	2009	2,506	4.32	2009	749	4.40
2010	3,086	4.11	2010	2,375	4.10	2010	711	4.17
2011	2,963	3.95	2011	2,298	3.96	2011	665	3.90
2012	2,871	3.83	2012	2,252	3.88	2012	619	3.63
2013	2,805	3.74	2013	2,213	3.82	2013	592	3.47
2014	2,845	3.79	2014	2,272	3.92	2014	573	3.36
2015	2,827	3.77	2015	2,282	3.93	2015	545	3.20
2016	2,725	3.63	2016	2,211	3.81	2016	514	3.02
2017	2,638	3.52	2017	2,144	3.70	2017	494	2.90
2018	2,574	3.43	2018	2,099	3.62	2018	475	2.79
2019	2,536	3.38	2019	2,078	3.58	2019	458	2.69
2020	2,497	3.33	2020	2,045	3.53	2020	452	2.65
2021	2,564	3.42	2021	2,117	3.65	2021	447	2.62
2022	2,417	3.22	2022	1,995	3.44	2022	422	2.48
Total	75,030	100	Total	57,994	100	Total	17,036	100

Panel B. By state

All Sample					
State	Obs.	%	State	Obs.	%
Alabama	14	0.02	Montana	45	0.06
Alaska	18	0.02	Nebraska	54	0.07
Arizona	79	0.11	Nevada	4,235	5.64
Arkansas	23	0.03	New Hampshire	4	0.01
California	1,359	1.81	New Jersey	760	1.01
Colorado	833	1.11	New Mexico	25	0.03
Connecticut	175	0.23	New York	1,825	2.43
Delaware	49,588	66.09	North Carolina	390	0.52
District of Columbia	2	0.00	North Dakota	19	0.03
Florida	1,636	2.18	Ohio	1,252	1.67
Georgia	619	0.83	Oklahoma	203	0.27
Hawaii	25	0.03	Oregon	504	0.67
Idaho	26	0.03	Pennsylvania	1,169	1.56
Illinois	232	0.31	Rhode Island	67	0.09
Indiana	608	0.81	South Carolina	114	0.15
Iowa	130	0.17	South Dakota	44	0.06
Kansas	107	0.14	Tennessee	387	0.52
Kentucky	65	0.09	Texas	1,103	1.47

Table 1 (continued)

Louisiana	154	0.21	Utah	423	0.56			
Maine	2	0.00	Vermont	11	0.01			
Maryland	799	1.06	Virginia	811	1.08			
Massachusetts	921	1.23	Washington	849	1.13			
Michigan	604	0.81	West Virginia	22	0.03			
Minnesota	1,558	2.08	Wisconsin	717	0.96			
Mississippi	29	0.04	Wyoming	41	0.05			
Missouri	350	0.47	Total	75,030	100			
Nine treatment states			Remaining states					
State	Obs.	%	State	Obs.	%	State	Obs.	%
Delaware	49,588	85.51	Alabama	14	0.08	Montana	45	0.26
Kansas	107	0.18	Alaska	18	0.11	Nebraska	54	0.32
Maryland	799	1.38	Arizona	79	0.46	New Hampshire	4	0.02
Missouri	350	0.60	Arkansas	23	0.14	New Mexico	25	0.15
Nevada	4,235	7.30	California	1,359	7.98	New York	1,825	10.71
New Jersey	760	1.31	Colorado	833	4.89	North Carolina	390	2.29
Oklahoma	203	0.35	Connecticut	175	1.03	North Dakota	19	0.11
Texas	1,103	1.90	District of Columbia	2	0.01	Ohio	1,252	7.35
Washington	849	1.46	Florida	1,636	9.60	Oregon	504	2.96
Total	57,994	100	Georgia	619	3.63	Pennsylvania	1,169	6.86
			Hawaii	25	0.15	Rhode Island	67	0.39
			Idaho	26	0.15	South Carolina	114	0.67
			Illinois	232	1.36	South Dakota	44	0.26
			Indiana	608	3.57	Tennessee	387	2.27
			Iowa	130	0.76	Utah	423	2.48
			Kentucky	65	0.38	Vermont	11	0.06
			Louisiana	154	0.90	Virginia	811	4.76
			Maine	2	0.01	West Virginia	22	0.13
			Massachusetts	921	5.41	Wisconsin	717	4.21
			Michigan	604	3.55	Wyoming	41	0.24
			Minnesota	1,558	9.15			
			Mississippi	29	0.17	Total	17,036	100

Table 1 presents the sample distributions by fiscal year (Panel A) and by state of incorporation (Panel B). Each panel includes the sample distribution across the all states, the nine treatment states, and the remaining states. The all sample is comprised of 75,030 firm-year observations over the 2000–2022 period

the number of total sample firms. In the same panel, we also split the full sample into two groups, one for nine treatment states and another for the remaining never-treated states, and display the sample distribution by year for each of these two groups. We note a decline of observations over time, consistent with the reduced listing propensity in the U.S. capital market (Doidge et al. 2017).

Panel B presents the sample distribution of firms according to their state of incorporation. As expected, around two thirds of sample firms are incorporated in Delaware, while some states, such as District of Columbia, Maine, and New Hampshire have less than 10 observations each. And Delaware firms constitute a significant portion of the sample, which calls for cautious empirical tests to mitigate the concern that the treatment effect, if any, can be driven by the firms from this single state.

Table 2 presents the descriptive statistics. Panel A provides summary statistics for the variables used in our baseline OLS analysis, including *COW*, total payouts, dividend payouts, repurchase, and the control variables mentioned above. The mean of *COW* is 0.72, suggesting that more than half the firm-years in our sample are covered by the waiver. The average Total payout (measured by *Totpay*) is 1.60, with a standard deviation of 2.25. The average cash dividend (measured by *Div*) is 0.91 with a standard deviation of 1.80. The average repurchase (measured by *Repur*) is 1.21 with a standard deviation of 2.03. These payout proxies, when scaled by sales, exhibit comparable characteristics. Regarding the control variables, an average firm has book assets of \$2.28 billion, a leverage ratio of 16%, *ROA* of 7%, retained earnings to assets ratio of -44%, sale growth ratio of 10%, cash holding to assets ratio of 22%, and R&D to sales ratio of 50%. In our sample, around 10% of the observations fall within the COVID-19 pandemic period.

Panel B presents the correlation matrix for our main regression variables. We find mixed evidence about the relationship between *COW* and payouts. There is a negative correlation between dividend payouts and *COW*, while the correlation coefficients between total payouts (and repurchase) and *COW* are positive. Therefore, the impact of COW laws on payouts requires further examination. We also observe that the correlation coefficients between different payout measures are mostly above 0.5, indicating that the metrics we use to measure corporation payouts have a high level of correlation.

4.2 COW and payouts: baseline results

Table 3 examines the relationship between the passage of corporate opportunity waiver laws and corporate payouts. The dependent variables in columns (1)–(2) are *Totpay*, defined as the natural logarithm of total payouts. The dependent variables in columns (3)–(4) are *Totpay_Sales*, defined as one hundred times the ratio of cash dividends declared on common shares plus share repurchases to total sales. The coefficients of *COW* in four columns are all negative and statistically significant at the 1% level, suggesting a significant decrease in corporation payouts after the adoption of COW laws. We demonstrate the economic significance with the result from column (4) as an example. The coefficient on *COW* in column (4) is -0.794. With the sample average of sales-scaled total payout ratio being 3.16, the result indicates that in the post-COW period, the reduction in sales-scaled total payouts (*Totpay_Sales*) made by firms covered by COW laws relative to those made by firms not-covered by COW laws amounts to 25.1% ($= -0.794/3.16$) of the average total payout ratio. With respect to the control variables, we find that *SIZE*, *ROA*, and *CHA* are positively associated with corporation payouts, while *LEV*, *REA*, and *SGR* are negatively associated with corporation payouts, consistent with the notion that firms that are more profitable, hold more cash, have fewer growth opportunities, or have lower leverage pay higher dividends (Bae et al. 2021; He et al. 2020). We note a negative relationship between research and development expenditures on payouts while the impact of COVID-19 is not statistically reliable. Overall, columns (1) to (4) suggest that there is a negative relationship between COW and total payouts, with the magnitude of the effect depending on the specific measures of payouts used.

Columns (5) to (8) explore the impact of corporate opportunity waivers on dividend payouts and stock repurchases, focusing on the components of total payments. These columns

Table 2 Summary statistics and correlation matrix

Panel A: Summary statistics

Variable	N	mean	sd	p5	p25	p50	p75	p95							
COW	75,030	0.72	0.45	0	0	1	1	1							
Toipay	75,030	1.60	2.25	0	0	0.04	2.98	6.40							
Toipay_Sales	75,030	3.16	7.22	0	0	0.03	2.75	16.82							
Div	75,030	0.91	1.80	0	0	0	0.69	5.24							
Div_Sales	75,030	0.86	2.38	0	0	0	0.24	4.98							
Repur	75,030	1.21	2.03	0	0	0	1.79	5.95							
Repur_Sales	75,030	2.14	5.79	0	0	0	1.06	12.44							
SIZE	75,030	5.43	2.51	1.11	3.74	5.55	7.21	9.45							
LEV	75,030	0.16	0.18	0	0.01	0.10	0.25	0.55							
ROA	75,030	0.07	0.18	-0.29	0.05	0.10	0.15	0.26							
REA	75,030	-0.44	1.58	-2.87	-0.56	-0.02	0.29	0.67							
SGR	75,030	0.10	0.46	-0.50	-0.04	0.07	0.21	0.81							
CHA	75,030	0.22	0.24	0	0.04	0.13	0.33	0.75							
RDE	75,030	0.50	2.49	0	0	0	0.11	1.45							
COVID19	75,030	0.10	0.30	0	0	0	0	1							

Panel B: Correlation coefficients matrix

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
(1)	1														
(2)	0.00	1													
(3)	0.02	0.58	1												
(4)	-0.05	0.79	0.37	1											
(5)	-0.06	0.48	0.53	0.65	1										
(6)	0.03	0.89	0.57	0.56	0.26	1									
(7)	0.05	0.50	0.89	0.16	0.14	0.60	1								
(8)	0.10	0.68	0.26	0.56	0.25	0.59	0.22	1							
(9)	0.01	-0.03	-0.11	0.01	-0.06	-0.05	-0.10	0.17	1						
(10)	-0.10	0.31	0.15	0.25	0.19	0.26	0.11	0.26	0.10	1					

Table 2 reports the descriptive statistics for main variables. Panel A reports the summary statistics. Panel B reports correlation coefficients among main variables. The correlation coefficients in bold font are statistically significant at least at 10% level. Variable definitions are provided in Appendix 3 Table 14. All continuous variables are winsorized at the 1% and 99% levels

[illegible]

Table 3 COW and payouts: main evidence

	Totpay		Totpay_Sales		Div	Div_Sales	Repur	Repur_Sales
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<i>COW</i>	-0.343*** (-4.52)	-0.294*** (-5.80)	-0.858*** (-2.81)	-0.794*** (-2.91)	-0.164*** (-3.44)	-0.224*** (-4.27)	-0.254*** (-4.87)	-0.434*** (-2.42)
<i>SIZE</i>		0.405*** (10.18)		0.793*** (9.82)	0.148*** (7.53)	0.081** (2.54)	0.351*** (8.01)	0.692*** (6.62)
<i>LEV</i>		-1.093*** (-8.02)		-2.917*** (-6.99)	-0.453*** (-12.09)	-0.778*** (-10.92)	-1.033*** (-6.50)	-2.034*** (-4.68)
<i>ROA</i>		0.773*** (10.68)		2.918*** (14.54)	0.238*** (5.47)	0.479*** (11.59)	0.735*** (10.42)	2.165*** (9.76)
<i>REA</i>		-0.019*** (-3.62)		-0.048** (-2.28)	-0.002 (-0.50)	0.008 (0.96)	-0.018*** (-3.20)	-0.051*** (-2.31)
<i>SGR</i>		-0.063*** (-4.86)		-0.560*** (-4.79)	-0.006 (-1.54)	-0.043*** (-3.12)	-0.062*** (-4.90)	-0.414*** (-5.08)
<i>CHA</i>		0.203*** (4.48)		3.902*** (10.84)	0.110*** (3.20)	0.693*** (8.99)	0.180*** (4.23)	2.607*** (8.40)
<i>RDE</i>		0.001 (1.14)		-0.062*** (-2.95)	-0.003*** (-5.68)	-0.003*** (-3.23)	0.001 (0.64)	-0.051*** (-3.01)
<i>COVID19</i>		0.020 (1.12)		-0.458*** (-2.76)	-0.000 (-0.02)	0.005 (0.13)	0.008 (0.20)	-0.560*** (-3.01)
<i>CONSTANT</i>	1.853*** (33.70)	-0.307 (-1.46)	3.782*** (17.09)	-1.191** (-2.62)	0.259*** (2.15)	0.525*** (2.85)	-0.435* (-1.87)	-1.750*** (-2.90)
Firm FE	YES	YES	YES	YES	YES	YES	YES	YES
State×Year FE	YES	YES	YES	YES	YES	YES	YES	YES
Industry×Year FE	YES	YES	YES	YES	YES	YES	YES	YES

Table 3 (continued)

	Totalpay (1)	(2)	Totalpay_Sales (3)	(4)	Div (5)	Div_Sales (6)	Repur (7)	Repur_Sales (8)
Observations	75,030	75,030	75,030	75,030	75,030	75,030	75,030	75,030
Adj R-squared	0.762	0.776	0.365	0.378	0.811	0.567	0.653	0.320

Table 3 reports the results of the corporate payouts regressed on corporate opportunity waivers (COW). The dependent variable is *Totalpay_Sales*; *Div*; *Div_Sales*; *Repur*; *Repur_Sales*. The main variable of interest is *COW*, which equals one if a firm's state of incorporation has enacted the COW law and zero otherwise. *SIZE* is the firm size, *LEV* is the leverage ratio, *ROA* is return on assets, *SGR* is the sales growth ratio, *CHA* is the cash holding, *RDE* is the R&D expenditures, and *COVID19* is the dummy variable, set to 1 if it is during the pandemic. See Appendix 3 Table 14 for detailed definitions of variables. All continuous variables are winsorized at the 1% and 99% levels. All regressions include firm fixed effects, headquarter state $\times$ year fixed effects, and industry $\times$ year fixed effects. The reported t-statistics are based on robust standard errors clustered by state of incorporation. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively

present the results of four separate regressions, where the dependent variables are dividend (*Div*), dividend-to-sales ratio (*Div_Sales*), stock repurchase (*Repur*), and stock repurchase-to-sales ratio (*Repur_Sales*). From these results, we can see that COW has a negative and statistically significant association with all four dependent variables at least at the 5% level, implying that firms operating under COW laws make lower dividend payouts and stock repurchases. The effects of COWs on the different payout components vary in magnitude, with the coefficients ranging from -16.4% to -43.4% . Overall, these results suggest that COWs have a negative impact on both dividend payouts and stock repurchases. The findings are not consistent with the reputation repairment hypothesis that predicts an increase in dividend payouts in post-COW period.

4.3 COW and payouts: control for endogeneity concerns

In this section, we carry out a few robustness checks to mitigate the concerns that our baseline findings can be driven by confounding events unrelated to the passage of COW laws.

4.3.1 Parallel trend tests

The fundamental assumption of the difference-in-differences method is the parallel trend assumption, also known as the common trend assumption. It posits that if the treatment individuals have not been subject to the event or intervention, the trends of their outcomes would be the same as those of the control samples. Specifically, there should not be significant difference between the firms whose state of incorporation has passed corporate opportunity waiver laws by the fiscal year and those that have not before the implementation of COWs. To validate the parallel trends assumption in our research scenario, we follow Beck et al. (2010) by examining the dynamic effects of COW on payouts. Specifically, we re-estimate our main model by incorporating leads and lags of the year indicators: *COW* (-5 and earlier), *COW* (-4), *COW* (-3), *COW* (-2), *COW* (-1), *COW* ($+1$), *COW* ($+2$), *COW* ($+3$), *COW* ($+4$), and *COW* ($+5$ and beyond). The dependent variables are payouts, including *Totpay*, *Totpay_Sales*, *Div*, *Div_Sales*, *Repur*, and *Repur_Sales*. After de-trending and centering the estimates on the year of implementation (year 0), Fig. 1 plots the coefficients on *COW* over time and the 95% confidence intervals of the coefficient estimators.

In Fig. 1, the horizontal axis represents the years relative to the enactment of COW laws, with negative values denoting years before and positive values representing years after the implementation, while the vertical axis represents the payout level computed by *Totpay*, *Totpay_Sales*, *Div*, *Div_Sales*, *Repur*, and *Repur_Sales*, respectively. The solid black line measures the difference of payout level between the firms from treatment states and the control firms, and the dashed lines represent 95% confidence intervals.

As shown, the coefficients on the COW dummy variables are insignificantly different from zero for all years before implementation, with no trends in payouts level before the COW laws. Nevertheless, payouts fall upon the implementation, such that the coefficient of *COW* ($+1$) is negative and significant at the 5% level. Afterwards, the effect tends to stabilize. In sum, changes in payouts do not precede COW and the implementation of COW has a negative impact on payouts, but does not have a trend.

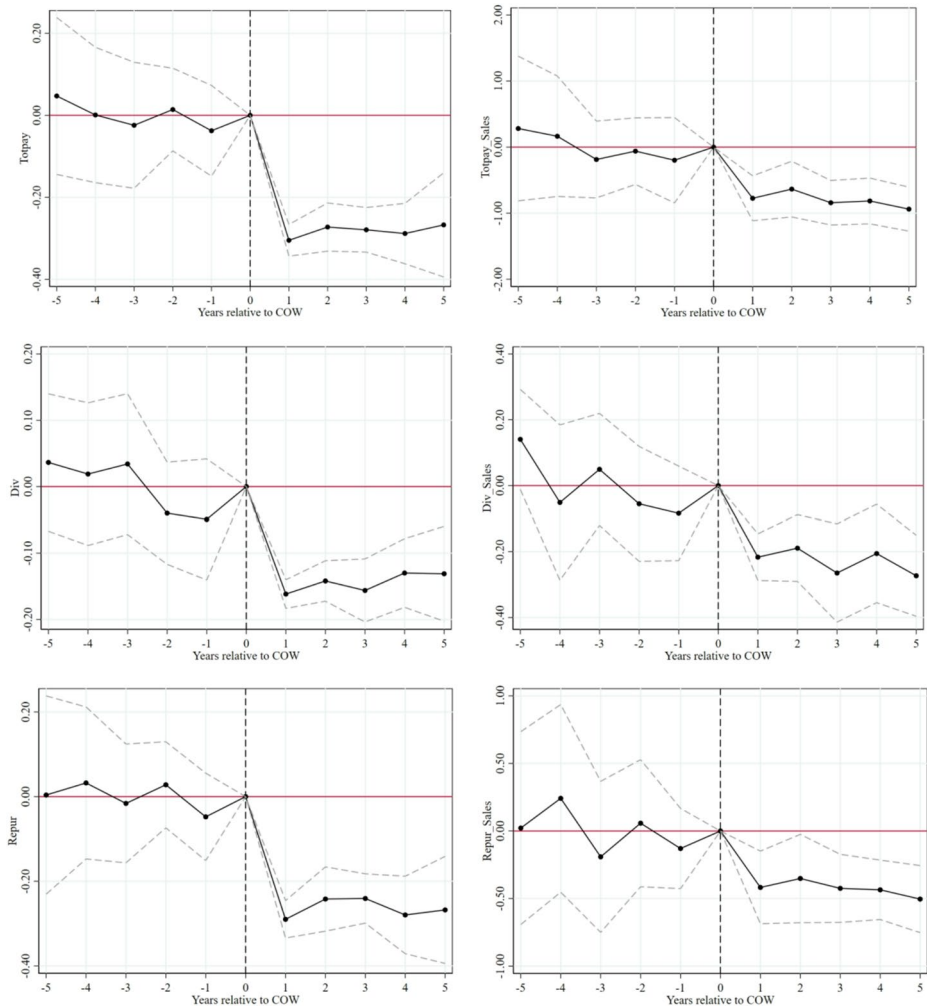


Fig. 1 Parallel trend tests. The figure shows the dynamic impact of COW on the payout decisions of firms from treatment states relative to control firms. We re-estimate our main model by incorporating leads and lags of the treatment indicators: *COW* (−5 and earlier), *COW* (−4), *COW* (−3), *COW* (−2), *COW* (−1), *COW* (+1), *COW* (+2), *COW* (+3), *COW* (+4), and *COW* (+5 and beyond). In Fig. 1, the horizontal axis represents the years relative to the enactment of COW laws, with negative values denoting years before the implementation and positive values representing years after the implementation. The vertical axis depicts the payout level, which is proxied by *Total Payout*, *Total Sales*, *Dividends*, *Div Sales*, *Repurchase*, and *Repurchase Sales*. The solid black line measures the difference of payout level between the firms from treatment states and the control firms. The dashed lines represent 95% confidence intervals

4.3.2 Placebo tests

We conduct placebo tests to assess the robustness of the previous findings regarding the impact of COW laws on corporate payout policies. We randomly assign hypothetical COW adoption years to firms in the treatment states and run the same regression as in the previ-

ous tables, replacing the actual COW adoption year with the randomly generated timing of placebo COW laws. We repeat this process 1,000 times, and report the distribution of the estimated coefficients and t-statistics (with respect to all the payout variables) from the 1000 estimations at different percentiles (5%, 10%, 25%, 50%, 75%, 90%, 95%). In Panel A, Table 4, we compare the coefficients and t-statistics in the actual column with those in the other columns. The results suggest that the estimated coefficients and t-statistics in the actual column are significantly lower and more negative than those in the other columns. For example, with dependent variable being *Totpay*, the mean value of the coefficients on *COW* is 0.06, unrealizably different from zero, but significantly different from the actual coefficient value (−0.29) obtained in our baseline regression. This suggests that our main results are not driven by unobserved confounding factors, and we have more confidence to attribute the change in payouts to COW laws.

4.3.3 Entropy balancing method

We further employ an entropy-balancing approach to improve our confidence that the baseline results are not driven by potential covariate imbalance between treatment and control firms (Hainmueller 2012).⁵ Specifically, we first select covariates from our baseline specification that require balancing (e.g., firm size, leverage, profitability). Then we quantify imbalances by comparing the empirical distributions of these covariates between treatment and control firms. We generate entropy-balanced weights and enforce exact balance on the first, second, and cross moments of the covariate distributions (e.g., means, variances, and correlations). We re-estimate the treatment effects using the weighted sample.

The results are presented in Panel B, Table 4. This table shows that the estimated coefficients and t-statistics on *COW* remain negative and significant, indicating that COW laws continue to have a negative impact on corporate payout policies, after controlling for selection bias through entropy balancing.

4.3.4 The stacked DID approach

Baker et al. (2022) argue that in conventional staggered DID designs, two-way fixed-effects (TWFE) estimators can produce biased results when treatment effects are heterogeneous, as they may assign negative weights to certain treatment cohorts (see also Cengiz et al. 2019). They propose that the stacked DID approach circumvents this issue by constructing separate analysis samples for each treatment cohort, where each treated unit is matched with a clean control group consisting of either never-treated units or units not yet treated. This ensures all comparisons are valid and prevents contamination from early-treated units. Thus, we implement a stacked event study approach as a robustness check for the main results.

Specifically, we construct a cohort for each event in which one state passes COW laws. The treatment sample of the cohort includes the observations of firms incorporated in the COW state and the control sample in this cohort includes the observations of all firms located in states that have not implemented COW laws by the end of our sample period. We then

⁵ Specifically, the entropy-balancing approach assigns a weight to each sample observation such that moments of the regression variables for the reweighted control group are equal to the treatment group, creating a covariate balanced sample for the subsequent estimation of the treatment effect. With this approach, the effect of potential misspecifications (e.g., omitted variables) in the estimation of treatment effects is mitigated.

Table 4 COW and payouts: robustness checks on endogeneity concerns

Panel A: Placebo test									
<i>Totpay</i>	Actual	Mean	5%	10%	25%	50%	75%	90%	95%
Coefficient	-0.29	0.04	-0.19	-0.09	0.01	0.06	0.10	0.14	0.16
t-statistic	-5.80	1.13	-2.72	-1.54	0.19	1.39	2.62	3.37	3.82
<i>Totpay_Sales</i>	Actual	Mean	5%	10%	25%	50%	75%	90%	95%
Coefficient	-0.79	0.04	-0.41	-0.24	-0.09	0.06	0.22	0.31	0.36
t-statistic	-2.91	0.40	-1.96	-1.55	-0.64	0.44	1.53	2.18	2.45
<i>Div</i>	Actual	Mean	5%	10%	25%	50%	75%	90%	95%
Coefficient	-0.16	0.00	-0.08	-0.04	-0.01	0.01	0.02	0.04	0.05
t-statistic	-3.44	0.07	-1.85	-1.27	-0.31	0.28	0.71	1.14	1.38
<i>Div_Sales</i>	Actual	Mean	5%	10%	25%	50%	75%	90%	95%
Coefficient	-0.22	-0.05	-0.13	-0.11	-0.07	-0.05	-0.03	0.00	0.01
t-statistic	-4.27	-1.07	-2.64	-2.26	-1.64	-1.00	-0.43	-0.03	0.22
<i>Repur</i>	Actual	Mean	5%	10%	25%	50%	75%	90%	95%
Coefficient	-0.25	0.03	-0.19	-0.08	0.01	0.05	0.09	0.12	0.15
t-statistic	-4.87	0.88	-2.58	-1.36	0.11	1.13	2.13	2.72	3.00
<i>Repur_Sales</i>	Actual	Mean	5%	10%	25%	50%	75%	90%	95%
Coefficient	-0.43	0.12	-0.23	-0.10	0.00	0.14	0.29	0.36	0.38
t-statistic	-2.42	1.19	-1.33	-0.77	0.04	1.03	2.45	3.16	3.67
Panel B: Entropy balancing method									
	<i>Totpay</i>	<i>Totpay_Sales</i>	<i>Div</i>	<i>Div_Sales</i>	<i>Repur</i>	<i>Repur_Sales</i>			
	(1)	(2)	(3)	(4)	(5)	(6)			
<i>COW</i>	-0.282*** (-4.64)	-0.779** (-2.21)	-0.172*** (-2.92)	-0.216** (-2.60)	-0.242*** (-3.98)	-0.446* (-1.84)			
<i>CONSTANT</i>	-0.383** (-2.19)	-1.537** (-2.53)	0.253* (1.83)	0.562** (2.61)	-0.511*** (-2.75)	-2.103*** (-4.29)			
Control variables	YES	YES	YES	YES	YES	YES			
Firm FE	YES	YES	YES	YES	YES	YES			
State×Year FE	YES	YES	YES	YES	YES	YES			
Industry×Year FE	YES	YES	YES	YES	YES	YES			
Observations	75,030	75,030	75,030	75,030	75,030	75,030			
Adj R-squared	0.801	0.414	0.838	0.626	0.682	0.338			
Panel C: Stacked DID approach									
	<i>Totpay</i>	<i>Totpay_Sales</i>	<i>Div</i>	<i>Div_Sales</i>	<i>Repur</i>	<i>Repur_Sales</i>			
	(1)	(2)	(3)	(4)	(5)	(6)			
<i>COW</i>	-0.254*** (-3.55)	-0.521* (-1.86)	-0.155** (-2.32)	-0.180** (-2.11)	-0.268*** (-3.37)	-0.242 (-1.43)			
<i>CONSTANT</i>	-0.562*** (-2.76)	-0.984 (-1.46)	0.103 (0.66)	0.447** (2.19)	-0.621*** (-3.22)	-1.387** (-2.40)			
Control variables	YES	YES	YES	YES	YES	YES			
Firm×Cohort FE	YES	YES	YES	YES	YES	YES			
State×Cohort FE	YES	YES	YES	YES	YES	YES			
Industry×Cohort FE	YES	YES	YES	YES	YES	YES			

Table 4 (continued)

Year×Cohort FE	YES	YES	YES	YES	YES	YES
Observations	211,318	211,318	211,318	211,318	211,318	211,318
Adj R-squared	0.790	0.416	0.824	0.591	0.636	0.329

Table 4 reports results from various robustness tests to mitigate endogeneity concerns. panel A reports the results of placebo tests, panel B reports the results of entropy balancing method and panel C reports the results from a stacked DID approach. Variable definitions are provided in Appendix 3 Table 14. All continuous variables are winsorized at the 1% and 99% levels. All regressions include firm-level control variables in specification (1), together with firm fixed effects, headquarter state × year fixed effects, and industry × year fixed effects. The reported t-statistics are based on robust standard errors clustered by the state of incorporation

stack these cohorts and estimate the baseline regression model, together with firm×cohort fixed effects, state×cohort fixed effects, industry×cohort fixed effects and year×cohort fixed effects.

The results with the stacked DID method are presented in Panel C, Table 4. This table shows that the estimated coefficient on *COW* remains negative and significant in most columns (except column (6) with dependent variable being *Repur_Sales*), indicating that the baseline findings continue to hold after accounting for potential biases introduced by heterogeneous treatment effects in the staggered difference-in-differences framework.

4.4 COW and payouts: other robustness tests

4.4.1 Alternative fixed effects

Our analysis of the effects of COW laws employs difference-in-differences models (Eq. (1)) with headquarter state-by-year and industry-by-year fixed effects. However, concerns arise that these fixed effects might not mitigate biases arising from the uneven geographical dispersion of industries sufficiently. Specifically, the period encompassing the dot-com bubble burst witnessed substantial fluctuations in industries' distributions across states, influenced by cyclical economic changes. This fluctuation constitutes a potential confounding effect. In addition, the geographic distribution of industries that typically exhibit high payout practices might shift across states, possibly introducing a spurious connection between payout policies and COW implementation. Therefore, we carry out further tests to ensure the validity of our results. In Panel A of Table 5, we include headquarter state-industry-year fixed effects. And in Panel B of Table 5, we add back firm fixed effects, together with the headquarter state-industry-year fixed effects. With these modifications in models, we continue to observe significantly negative coefficients for most payout variables, indicating that our results are not driven by a shift in the distribution of payout-sensitive industries.

4.4.2 Additional controls

Confounding events and other omitted time-varying covariates may prevent our DID research design from identifying accurately the effects of COW on corporate payout policy. To mitigate the potential influence of confounding factors, we control the adoption of other state-level laws and several earnings-related variables in the model. Specifically, we construct law dummy variables: (1) universal demand laws (*UD*), which impose extra procedural burdens on shareholders to file derivative lawsuits against the incumbent management

Table 5 COW and payouts: alternative fixed effects

Panel A: State-Industry-Year FE

	<i>Totpay</i>	<i>Totpay_Sales</i>	<i>Div</i>	<i>Div_Sales</i>	<i>Repur</i>	<i>Repur_Sales</i>
	(1)	(2)	(3)	(4)	(5)	(6)
<i>COW</i>	-0.266***	-0.486***	-0.306***	-0.357***	-0.176***	-0.128
	(-4.46)	(-2.95)	(-5.76)	(-5.36)	(-3.55)	(-1.05)
<i>CONSTANT</i>	-1.160***	-2.279***	-0.608***	-0.074	-1.066***	-2.141***
	(-6.29)	(-5.73)	(-5.37)	(-0.78)	(-6.34)	(-5.00)
Control variables	YES	YES	YES	YES	YES	YES
Firm FE	NO	NO	NO	NO	NO	NO
State×Year FE	NO	NO	NO	NO	NO	NO
Industry×Year FE	NO	NO	NO	NO	NO	NO
State×Industry×Year FE	YES	YES	YES	YES	YES	YES
Observations	53,144	53,144	53,144	53,144	53,144	53,144
Adj R-squared	0.529	0.108	0.394	0.163	0.435	0.072

Panel B: Firm FE and State-Industry-Year FE

	<i>Totpay</i>	<i>Totpay_Sales</i>	<i>Div</i>	<i>Div_Sales</i>	<i>Repur</i>	<i>Repur_Sales</i>
	(1)	(2)	(3)	(4)	(5)	(6)
<i>COW</i>	-0.212***	-0.686*	-0.152**	-0.199**	-0.184***	-0.426
	(-4.40)	(-1.89)	(-2.46)	(-2.32)	(-2.82)	(-1.29)
<i>CONSTANT</i>	-0.372**	-1.545**	0.267***	0.586***	-0.499**	-2.145***
	(-2.08)	(-2.46)	(2.93)	(3.25)	(-2.18)	(-3.04)
Control variables	YES	YES	YES	YES	YES	YES
Firm FE	YES	YES	YES	YES	YES	YES
State×Year FE	NO	NO	NO	NO	NO	NO
Industry×Year FE	NO	NO	NO	NO	NO	NO
State×Industry×Year FE	YES	YES	YES	YES	YES	YES
Observations	53,063	53,063	53,063	53,063	53,063	53,063
Adj R-squared	0.771	0.354	0.805	0.551	0.663	0.301

Table 5 reports regression results using alternative fixed effects models. Panel A reports the regression result with state × industry × year fixed effect. Panel B reports the regression result with firm fixed effect and state × industry × year fixed effect. Variable definitions are provided in Appendix 3 Table 14. All continuous variables are winsorized at the 1% and 99% levels. All regressions include firm-level control variables in specification (1). The reported t-statistics are based on robust standard errors clustered by state of incorporation. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively

(Freund et al. 2023); (2) anti-recharacterization laws (*AR*), which protect collateral value for creditors in the bankruptcy process (Attig 2024); (3) constituency statutes (*CS*), which encourage directors to cater to the interest of all stakeholders (Sun et al. 2023); and (4) poison pill laws (*PP*), which make firms less attractive takeover targets and deter hostile acquisitions (Karpoff and Wittry 2018). Also, following Skinner and Soltes (2011) and He et al. (2020), we add variables to control for the level of a firm's sustainable earnings and earnings uncertainty: special items (*NEGSI*), an indicator for losses (*LOSS*), and the standard deviation of *ROA* over year t-3 to year t (*ROAVOL*). We re-estimate the baseline regression by including law control variables and firm control variables individually. The results are presented in Table 6.

Panel A of Table 6 examines the effect of COW laws on corporate payouts after adding additional controls for other state-level laws. As we can see, the relationship between COW and payouts persists in Panel A, despite the introduction of potential confounding

Table 6 COW and payouts: additional controls

Panel A: Additional law controls

	<i>Totpay</i>	<i>Totpay_Sales</i>	<i>Div</i>	<i>Div_Sales</i>	<i>Repur</i>	<i>Repur_Sales</i>
	(1)	(2)	(3)	(4)	(5)	(6)
<i>COW</i>	-0.342*** (-7.64)	-0.909*** (-3.00)	-0.185*** (-3.17)	-0.261*** (-3.39)	-0.276*** (-5.10)	-0.484** (-2.49)
<i>UD</i>	0.033 (0.76)	0.082 (0.62)	0.040 (0.86)	-0.045 (-0.59)	0.050 (1.30)	0.156 (1.24)
<i>AR</i>	-0.138* (-1.81)	0.016 (0.08)	0.071 (0.99)	0.216 (1.30)	-0.307*** (-4.67)	-0.306 (-1.50)
<i>CS</i>	-0.185 (-0.76)	0.444 (0.67)	-0.076 (-0.26)	0.372 (0.59)	-0.578** (-2.07)	-0.132 (-0.24)
<i>PP</i>	0.421* (1.87)	0.337 (0.64)	0.284 (1.08)	-0.029 (-0.07)	0.558** (2.50)	0.339 (0.95)
<i>CONSTANT</i>	-0.401* (-1.88)	-1.298*** (-2.81)	0.169 (1.64)	0.564** (2.47)	-0.567** (-2.38)	-1.915*** (-3.00)
Other control variables	YES	YES	YES	YES	YES	YES
Firm FE	YES	YES	YES	YES	YES	YES
State×Year FE	YES	YES	YES	YES	YES	YES
Industry×Year FE	YES	YES	YES	YES	YES	YES
Observations	75,030	75,030	75,030	75,030	75,030	75,030
Adj R-squared	0.776	0.378	0.811	0.567	0.653	0.320

Panel B: Additional firm controls

	<i>Totpay</i>	<i>Totpay_Sales</i>	<i>Div</i>	<i>Div_Sales</i>	<i>Repur</i>	<i>Repur_Sales</i>
	(1)	(2)	(3)	(4)	(5)	(6)
<i>COW</i>	-0.288*** (-5.56)	-0.771*** (-2.75)	-0.161*** (-3.34)	-0.216*** (-4.17)	-0.244*** (-4.43)	-0.424** (-2.23)
<i>NEGSI</i>	-0.323*** (-3.92)	-1.068*** (-7.65)	0.017 (0.82)	0.062 (1.23)	-0.359*** (-5.19)	-1.102*** (-10.02)
<i>LOSS</i>	-0.175*** (-12.43)	-0.469*** (-11.04)	-0.081*** (-8.61)	-0.139*** (-4.66)	-0.130*** (-6.27)	-0.288*** (-6.81)
<i>ROAVol</i>	0.120*** (8.21)	0.302*** (2.69)	0.051*** (11.08)	0.019 (1.48)	0.107*** (6.11)	0.251** (2.53)
<i>CONSTANT</i>	-0.311 (-1.46)	-1.215** (-2.26)	0.249** (2.11)	0.569*** (3.62)	-0.455* (-1.93)	-1.809*** (-2.71)
Other control variables	YES	YES	YES	YES	YES	YES
Firm FE	YES	YES	YES	YES	YES	YES
State×Year FE	YES	YES	YES	YES	YES	YES
Industry×Year FE	YES	YES	YES	YES	YES	YES
Observations	74,061	74,061	74,061	74,061	74,061	74,061
Adj R-squared	0.776	0.377	0.810	0.567	0.653	0.319

Table 6 reports regression results using alternative fixed effects models. Panel A reports the regression result with state × industry × year fixed effect. Panel B reports the regression result with firm fixed effect and state × industry × year fixed effect. Variable definitions are provided in Appendix 3 Table 14. All continuous variables are winsorized at the 1% and 99% levels. All regressions include firm-level control variables in specification (1). The reported t-statistics are based on robust standard errors clustered by state of incorporation. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively

variables from other state-level regulations. Panel B of Table 6 investigates the impact of COW laws on corporate payouts after incorporating additional controls. As shown in both columns, there is a significant, negative relation between COW and payouts. This relation between COW and payouts is not subsumed by other conventional economic variables used to explain a firm's payout policy.

In summary, Table 6 presents regression results for the impact of COW laws on corporate payouts, considering additional controls for other state-level laws and firm-level factors. The results show that COW laws still have a negative and significant impact on corporate payouts, even after accounting for these additional controls.

4.4.3 Sub-period analysis

Our sample period spans 2000–2022, encompassing three major economic disruptions: the internet bubble burst (2000–2001), the global financial crisis (2007–2009), and the COVID-19 pandemic (2020–2022). Firms may reduce dividend payouts because of the economic downturns, which negatively affect firms' earnings, rather than the incentive changes caused by the COW laws. Such period-specific effect may not be fully captured by year-fixed effects. To address this concern, we conduct two sub-period analyses to test the robustness of our findings.

In Panel A of Table 7, we re-estimate our main regression after excluding years associated with major economic disruptions: the internet bubble burst (2000–2001) and the global financial crisis (2007–2009). This approach allows us to isolate the effect of COW on corporate payouts from confounding shocks during these turbulent periods. The results suggest a statistically significant negative relationship between COW and corporate payouts, consistent with our baseline findings.

Recognizing the unique economic pressures during the COVID-19 pandemic, which may lead to widespread dividend cuts, we re-estimate our regression after excluding pandemic years (i.e. 2020–2022). The results are listed in Panel B of Table 7. After removing the COVID-19 period, the coefficient on *COW* remains negative and statistically significant, reinforcing that our core conclusion is not driven by pandemic-related anomalies.

4.4.4 State of incorporation: DE and NonDE

In our sample, two thirds of sample firms are incorporated in Delaware, a pattern consistent with prior findings (Fich et al. 2023). This concentration raises concerns that observed changes in corporate payouts may reflect Delaware-specific institutional characteristics rather than broader trends associated with COW laws. Firms predominantly incorporate in Delaware due to its specialized court system and legal provisions that protect directors and officers. Consequently, any modifications to Delaware's corporate governance framework—distinct from changes in COW laws—could influence payout policies, potentially confounding our results.

To alleviate this concern, we first adopt the approach of Boyd et al. (2025) and introduce two binary variables: *COW_DE* and *COW_NONDE*. By substituting *COW* with these two dummy indicators in our regression models, we isolate the distinct effects of

Table 7 COW and payouts: sub-period analysis

Panel A: Exclude sample periods of economic downturns

	<i>Totpay</i>	<i>Totpay_Sales</i>	<i>Div</i>	<i>Div_Sales</i>	<i>Repur</i>	<i>Repur_Sales</i>
	(1)	(2)	(3)	(4)	(5)	(6)
<i>COW</i>	-0.335***	-0.786**	-0.197***	-0.252***	-0.283***	-0.378*
	(-6.37)	(-2.61)	(-4.22)	(-5.54)	(-4.05)	(-1.91)
<i>CONSTANT</i>	-0.272	-1.102**	0.308*	0.580**	-0.389	-1.691**
	(-1.01)	(-2.18)	(2.00)	(2.30)	(-1.31)	(-2.65)
Control variables	YES	YES	YES	YES	YES	YES
Firm FE	YES	YES	YES	YES	YES	YES
State×Year FE	YES	YES	YES	YES	YES	YES
Industry×Year FE	YES	YES	YES	YES	YES	YES
Observations	55,200	55,200	55,200	55,200	55,200	55,200
Adj R-squared	0.792	0.407	0.819	0.586	0.680	0.346

Panel B: Exclude sample periods of COVID-19

	<i>Totpay</i>	<i>Totpay_Sales</i>	<i>Div</i>	<i>Div_Sales</i>	<i>Repur</i>	<i>Repur_Sales</i>
	(1)	(2)	(3)	(4)	(5)	(6)
<i>COW</i>	-0.266***	-0.626***	-0.150***	-0.187***	-0.231***	-0.333*
	(-5.57)	(-2.69)	(-3.07)	(-3.17)	(-5.00)	(-1.85)
<i>CONSTANT</i>	-0.301	-1.125**	0.251**	0.480**	-0.422**	-1.668**
	(-1.64)	(-2.26)	(2.11)	(2.12)	(-2.05)	(-2.34)
Control variables	YES	YES	YES	YES	YES	YES
Firm FE	YES	YES	YES	YES	YES	YES
State×Year FE	YES	YES	YES	YES	YES	YES
Industry×Year FE	YES	YES	YES	YES	YES	YES
Observations	67,415	67,415	67,415	67,415	67,415	67,415
Adj R-squared	0.774	0.374	0.817	0.568	0.644	0.317

Table 7 reports the results of sub-period analysis. In panel A, we re-estimate the main regression by excluding years 2000–2001 (internet bubble burst) and 2007–2009 (global financial crisis). In panel B, we re-estimate the main regression by excluding years 2020–2022 (COVID-19). Variable definitions are provided in Appendix 3 Table 14. All continuous variables are winsorized at the 1% and 99% levels. All regressions include firm-level control variables in specification (1), together with firm fixed effects, headquarter state × year fixed effects, and industry × year fixed effects. The reported t-statistics are based on robust standard errors clustered by the state of incorporation. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively

COW adoption both within Delaware and beyond its jurisdiction. To further strengthen the validity of our analysis, we conduct another supplementary regression analysis by excluding corporations registered in Delaware. This exclusionary approach helps verify that our empirical findings remain robust when restricting the sample to non-Delaware jurisdictions, thereby addressing concerns about the disproportionate influence of Delaware-incorporated entities.

The results are reported in Table 8. As shown in Panel A of Table 8, the coefficients of *COW_DE* and *COW_NonDE* are almost negative and statistically significant, although the coefficients of *COW_DE* are greater than those of *COW_NONDE*. Panel B of Table 8 demonstrates that *COW* remains to have a statistically significant negative effect on corporate payouts (except in column (4) with dependent variable being *Div_Sales*), with coefficient magnitude and directional consistency aligning with our baseline estimates.

Table 8 COW and payouts: DE and NonDE

Panel A: COW effect in Delaware and other states

	<i>Topay</i>	<i>Topay_Sales</i>	<i>Div</i>	<i>Div_Sales</i>	<i>Repur</i>	<i>Repur_Sales</i>
	(1)	(2)	(3)	(4)	(5)	(6)
<i>COW_DE</i>	-2.064*** (-4.76)	-1.458* (-1.99)	-2.004*** (-4.83)	-1.459*** (-4.36)	-1.103*** (-4.37)	-0.068 (-0.15)
<i>COW_NONDE</i>	-0.282*** (-5.50)	-0.789*** (-2.88)	-0.152*** (-3.49)	-0.216*** (-4.38)	-0.249*** (-4.55)	-0.437** (-2.42)
<i>CONSTANT</i>	0.861*** (5.16)	-0.753* (-2.00)	1.473*** (6.12)	1.340*** (5.35)	0.125 (1.00)	-1.992*** (-5.03)
Control variables	YES	YES	YES	YES	YES	YES
Firm FE	YES	YES	YES	YES	YES	YES
State×Year FE	YES	YES	YES	YES	YES	YES
Industry×Year FE	YES	YES	YES	YES	YES	YES
Observations	75,030	75,030	75,030	75,030	75,030	75,030
Adj R-squared	0.816	0.487	0.845	0.643	0.714	0.440

Panel B: Exclude corporations registered in Delaware

	<i>Topay</i>	<i>Topay_Sales</i>	<i>Div</i>	<i>Div_Sales</i>	<i>Repur</i>	<i>Repur_Sales</i>
	(1)	(2)	(3)	(4)	(5)	(6)
<i>COW</i>	-0.196*** (-3.69)	-0.596* (-1.87)	-0.101* (-1.82)	-0.110 (-1.13)	-0.194*** (-3.83)	-0.442** (-2.06)
<i>CONSTANT</i>	-0.088 (-0.21)	-1.213 (-1.12)	0.198 (0.87)	0.161 (0.59)	-0.159 (-0.47)	-1.015 (-1.41)
Control variables	YES	YES	YES	YES	YES	YES
Firm FE	YES	YES	YES	YES	YES	YES
State×Year FE	YES	YES	YES	YES	YES	YES
Industry×Year FE	YES	YES	YES	YES	YES	YES
Observations	22,597	22,597	22,597	22,597	22,597	22,597
Adj R-squared	0.865	0.582	0.885	0.710	0.775	0.514

Table 8 reports the impact of COW on payouts for firms registered in different regions. Specifically, in panel A, we substitute *COW* with two binary variables: *COW_DE* and *COW_NONDE*, where *COW_DE* (*COW_NONDE*) indicates that a firm's state of incorporation is (not) delaware. and that the state has enacted COW. in panel B, we re-estimate the main regression by excluding corporations registered in delaware. Variable definitions are provided in Appendix 3 Table 14. All continuous variables are winsorized at the 1% and 99% levels. All regressions include firm-level control variables in specification (1), together with firm fixed effects, headquarter state × year fixed effects, and industry × year fixed effects. The reported t-statistics are based on robust standard errors clustered by state of incorporation. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively

These results further support the notion that COW laws indeed affect corporate payout decisions, regardless of the location of the firms' registration.

5 Cross-sectional analysis

Based on the analysis from the previous discussion, it is evident that the implementation of the COW has resulted in a significant reduction in firms' payouts, in terms of both cash dividend and share repurchase. In this section, we explore the underlying reasons

that account for this negative association between the passage of COW laws and payouts. According to the resource diversion hypothesis, firms that allow managers to waive their fiduciary duty of loyalty can legally enable those managers to pursue new investment opportunities for their own personal interest, without requiring approval from the shareholders. This misaligns the incentives of managers and shareholders, as managers are no longer obliged to prioritize increasing shareholders' wealth. In addition, if the company's profitability is impaired by the managers' self-dealing purpose, managers may consider reducing payouts. On the other hand, according to the mitigated signaling incentive hypothesis, the implementation of the COW laws may expand the financing channels available to corporations, helping them seek financing from individuals or venture capitalists who may have varied business interests and therefore overlapping duties of loyalty. The contract flexibility arising from the COWs reduces the pressure on managers to communicate private information through costly payouts to obtain external equity financing. Thus, because of the availability of alternative financing options, firms are expected to pay fewer dividends following the passage of COW laws.

To clarify the specific underlying mechanism, we conduct cross-sectional analyses using the following specification:

$$Payouts_{i,t} = \beta_0 + \beta_1 COW_{s,t} + \beta_2 INTER + \beta_3 COW_{s,t} \times INTER + \beta_4 X_{i,t-1} + \beta_5 Firm\ FE_i + \beta_6 State \times Year\ FE_{h,t} + \beta_7 Industry \times Year\ FE_{j,t} \varepsilon_{i,t} \quad (2)$$

In this equation, *INTER* refers to the interactive variable of interest. The coefficient of interest, β_3 , is the interaction term between *COW* and *INTER*. Other variables are defined as in Eq. (1). We also include firm, headquarter state×year and industry×year fixed effects in the model to control for time-invariant firm-level factors and economic conditions common to the state and industry at different times.

5.1 Resource diversion hypothesis

To verify the resource diversion channel, we examined the interaction between *INTER* and *COW* in three dimensions: investor horizons, CEO power, and external opportunities. Specifically, the monitoring role of institutional investors is widely recognized in literature (Shleifer and Vishny 1986). Institutional investors can effectively constrain management's resource diversion behavior. The power of discipline is stronger among long-term institutional investors who are better able to maximize long-term firm value (Harford et al. 2018). Hence, we expect firms with more long-term institutional investors to experience less negative impact of COW on payouts because of effective monitoring. We use the investor churn rates calculated based on quarterly portfolio turnovers as a proxy for institutional investor horizon (Gaspar et al. 2005; Yan and Zhang 2009; Erhemjams and Huang 2019). The result is presented in Panel A of Table 9. Consistent with our expectations, five out of six interaction coefficients are positive and statistically significant, suggesting that the negative effect of COW is weaker for firms with more long-term institutional investors.

A CEO with substantial influence might shape the board's composition and decision-making processes in their favor (Göx and Hemmer 2020). A powerful CEO can influence board decisions by adopting corporate opportunity waivers. This dynamic amplifies agency conflicts by redirecting corporate resources toward benefiting individ-

Table 9 Cross-sectional tests: resource diversion hypothesis

Panel A INTER = Long-term institutional ownership						
	<i>Totpay</i> (1)	<i>Totpay_Sales</i> (2)	<i>Div</i> (3)	<i>Div_Sales</i> (4)	<i>Repur</i> (5)	<i>Repur_Sales</i> (6)
<i>COW</i>	-0.428*** (-7.15)	-1.151*** (-3.41)	-0.236*** (-4.44)	-0.281*** (-3.58)	-0.382*** (-7.37)	-0.754*** (-4.42)
<i>INTER</i>	-0.019*** (-3.73)	-0.044** (-2.03)	-0.017*** (-3.78)	-0.011 (-1.37)	-0.017*** (-3.54)	-0.036*** (-2.88)
<i>COW</i> × <i>INTER</i>	0.020*** (4.35)	0.052** (2.64)	0.010** (2.25)	0.008 (0.89)	0.019*** (4.49)	0.047*** (4.89)
<i>CONSTANT</i>	-0.170 (-0.90)	-0.873** (-2.06)	0.380*** (3.07)	0.608*** (2.98)	-0.311 (-1.52)	-1.491*** (-2.80)
Control variables	YES	YES	YES	YES	YES	YES
FE	YES	YES	YES	YES	YES	YES
Observations	75,030	75,030	75,030	75,030	75,030	75,030
Adj R-squared	0.777	0.378	0.812	0.567	0.653	0.320
Panel B INTER = CEO tenure						
	<i>Totpay</i> (1)	<i>Totpay_Sales</i> (2)	<i>Div</i> (3)	<i>Div_Sales</i> (4)	<i>Repur</i> (5)	<i>Repur_Sales</i> (6)
<i>COW</i>	-0.100 (-0.58)	0.491 (0.78)	-0.070 (-0.44)	0.083 (0.58)	-0.083 (-0.47)	0.481 (0.73)
<i>INTER</i>	0.096*** (3.70)	0.356*** (3.29)	0.043 (1.37)	0.052 (1.52)	0.131*** (4.80)	0.293*** (3.27)
<i>COW</i> × <i>INTER</i>	-0.066** (-2.55)	-0.478*** (-3.55)	-0.044 (-1.45)	-0.128*** (-2.96)	-0.082*** (-2.99)	-0.313*** (-3.15)
<i>CONSTANT</i>	-3.749*** (-10.92)	-8.034*** (-9.14)	-0.753 (-1.52)	0.830** (2.10)	-3.745*** (-17.89)	-8.687*** (-11.06)
Control variables	YES	YES	YES	YES	YES	YES
FE	YES	YES	YES	YES	YES	YES
Observations	29,050	29,050	29,050	29,050	29,050	29,050
Adj R-squared	0.744	0.440	0.810	0.650	0.615	0.368
Panel C INTER = Industry Q						
	<i>Totpay</i> (1)	<i>Totpay_Sales</i> (2)	<i>Div</i> (3)	<i>Div_Sales</i> (4)	<i>Repur</i> (5)	<i>Repur_Sales</i> (6)
<i>COW</i>	-0.261*** (-4.51)	-0.675** (-2.11)	-0.140*** (-2.75)	-0.154** (-2.10)	-0.245*** (-3.94)	-0.415** (-2.01)
<i>INTER</i>	0.046 (1.54)	0.095 (0.52)	-0.009 (-0.38)	0.084 (1.53)	0.027 (0.77)	-0.005 (-0.04)
<i>COW</i> × <i>INTER</i>	-0.064* (-1.74)	-0.228 (-1.29)	-0.047* (-1.65)	-0.135** (-2.24)	-0.017 (-0.42)	-0.038 (-0.32)
<i>CONSTANT</i>	-0.329 (-1.57)	-1.232** (-2.58)	0.266** (2.15)	0.486** (2.48)	-0.448* (-1.92)	-1.746*** (-2.87)
Control variables	YES	YES	YES	YES	YES	YES
FE	YES	YES	YES	YES	YES	YES
Observations	75,030	75,030	75,030	75,030	75,030	75,030
Adj R-squared	0.776	0.378	0.811	0.567	0.653	0.320

Table 9 reports the regression results with corporate governance proxies and their interaction with *COW*. Specifically, the interactive variables in panel A to panel C are: (1) *Long-term institutional Ownership*, the natural logarithm of one plus shares held by long-term institutional shareholders; (2) *CEO tenure*, which is the natural logarithm of years an individual serve as CEO; (3) *industry Q*, average tobin's Q for each industry. Variable definitions are provided in Appendix 3 Table 14. All continuous variables are winsorized at the 1% and 99% levels. All regressions include firm-level control variables in specification (1), together with firm fixed effects, headquarter state × year fixed effects, and industry × year fixed effects. The reported t-statistics are based on robust standard errors clustered by the state of incorporation. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively

uals or interest groups, rather than supporting the firm's long-term value creation, which can lead to lower payouts, as managerial self-interest takes precedence over shareholder returns. Hence, we expect COW laws to have a greater negative effect on payouts in firms with more powerful CEOs. We use the natural logarithm of the number of years the CEO has served as CEO as a proxy for CEO power. Panel B of Table 9 reports the regression results based on CEO power. Except the one regression with *Div*, the coefficients of $COW \times INTER$ are all negative and statistically significant at the 5% level, which implies that the negative effect of COW is more pronounced when the CEO has longer tenure. This result supports the conjecture that the decline in payouts following COW enactment is concentrated in firms with more powerful CEOs.

In the context of COWs, corporate managers frequently encounter external business prospects. Managers endowed with a rich array of external opportunities are prone to prioritize personal pursuits over shareholder interests, particularly within the framework of COW regimes. Should the resource diversion mechanism indeed influence the consequences of COW adoption on distribution policies, we posit that enterprises operating within sectors abundant in external prospects will witness a greater reduction in distributions post-COW implementation. To test it empirically, we use *Industry Q*, defined as the industry-wide average *Tobin's Q*, as a proxy for the external opportunities available to managers in the industry (Boyd et al. 2025). Turning to the analysis in Panel C of Table 9, we augment our baseline model to include this proxy for external opportunities and an interaction term between *COW* and *Industry Q*. We find negative and significant coefficients on the interactive term $COW \times INTER$ when dependent variables are total payouts and dividend payouts (although the findings are not statistically reliable when dependent variables are repurchases). The findings are by and large consistent with the conjecture that firms reduce payouts to a greater extent in industries with more external opportunities proxied by higher average *Tobin's Q*.

5.2 Reduced signaling incentive hypothesis

To verify the reduced signaling incentive hypothesis, we examine whether the impact of COWs on payouts is amplified in firms that rely more heavily on external financing, particularly external equity financing. As mentioned above, COW laws expand firms' quest for capital from individual investors or venture capitalists who previously faced conflicting loyalty obligations arising from their involvement in diverse businesses, which means firms no longer need to keep a high payout policy to attract investors. Hence, we expect firms that rely more heavily on external financing to show a greater decline in payouts in post-COW period due to reduced signaling incentive.

To test this conjecture, we use three variables as proxies for external financing needs, (1) *Dependence on External Financing*, one minus the ratio of cash flow to capital expenditure (Klapper et al. 2006); (2) *Dependence on External Equity Financing*, the ratio of the net amount of equity issued to capital expenditure (Rajan and Zingales 1998; Autore et al. 2014); (3) *Dependence on External Debt Financing*, the ratio of the net amount of debt issued to capital expenditure. We rerun our baseline specification with external financing needs proxies and its interactive term with COW. The result is presented in Table 10. Consistent with our expectation, the interaction coefficients are mostly negative and statistically significant in Panel A and Panel B, while the interaction coefficient is not statistically

Table 10 Cross-sectional tests: reduced signaling incentive hypothesis

Panel A INTER = Dependence on external financing

	<i>Totpay</i> (1)	<i>Totpay_Sales</i> (2)	<i>Div</i> (3)	<i>Div_Sales</i> (4)	<i>Repur</i> (5)	<i>Repur_Sales</i> (6)
<i>COW</i>	-0.234*** (-4.68)	-0.466* (-1.73)	-0.152*** (-3.07)	-0.173*** (-3.43)	-0.221*** (-4.17)	-0.193 (-0.99)
<i>INTER</i>	-0.143*** (-5.07)	-0.839*** (-4.95)	0.049*** (3.38)	0.170*** (5.26)	-0.306*** (-9.33)	-1.092*** (-6.84)
<i>COW</i> × <i>INTER</i>	-0.090*** (-3.26)	-0.497*** (-2.97)	-0.020 (-1.44)	-0.079*** (-2.68)	-0.049 (-1.50)	-0.363** (-2.32)
<i>CONSTANT</i>	-0.126 (-0.64)	-0.137 (-0.41)	0.214* (1.71)	0.370* (1.85)	-0.093 (-0.44)	-0.472 (-0.91)
Control variables	YES	YES	YES	YES	YES	YES
FE	YES	YES	YES	YES	YES	YES
Observations	75,030	75,030	75,030	75,030	75,030	75,030
Adj R-squared	0.778	0.383	0.811	0.568	0.658	0.330

Panel B INTER = Dependence on external equity financing

	<i>Totpay</i> (1)	<i>Totpay_Sales</i> (2)	<i>Div</i> (3)	<i>Div_Sales</i> (4)	<i>Repur</i> (5)	<i>Repur_Sales</i> (6)
<i>COW</i>	-0.186*** (-3.25)	-0.305 (-1.03)	-0.142** (-2.62)	-0.151** (-2.35)	-0.213*** (-3.14)	-0.014 (-0.06)
<i>INTER</i>	-0.577*** (-12.60)	-2.229*** (-9.54)	-0.041 (-1.53)	0.115*** (2.70)	-0.923*** (-15.31)	-2.327*** (-10.41)
<i>COW</i> × <i>INTER</i>	-0.196*** (-4.20)	-0.874*** (-3.62)	-0.038 (-1.43)	-0.114*** (-3.08)	-0.101* (-1.76)	-0.767*** (-3.22)
<i>CONSTANT</i>	0.315* (1.75)	1.249*** (4.04)	0.310** (2.53)	0.444** (2.12)	0.502** (2.60)	0.757 (1.60)
Control variables	YES	YES	YES	YES	YES	YES
FE	YES	YES	YES	YES	YES	YES
Observations	75,030	75,030	75,030	75,030	75,030	75,030
Adj R-squared	0.793	0.404	0.811	0.567	0.692	0.361

Panel C INTER = Dependence on external debt financing

	<i>Totpay</i> (1)	<i>Totpay_Sales</i> (2)	<i>Div</i> (3)	<i>Div_Sales</i> (4)	<i>Repur</i> (5)	<i>Repur_Sales</i> (6)
<i>COW</i>	-0.291*** (-5.83)	-0.769*** (-3.00)	-0.160*** (-3.37)	-0.215*** (-4.22)	-0.250*** (-4.67)	-0.415** (-2.32)
<i>INTER</i>	0.160*** (7.79)	0.621*** (6.01)	0.080*** (4.91)	0.120*** (3.62)	0.137*** (5.49)	0.428*** (5.29)
<i>COW</i> × <i>INTER</i>	-0.005 (-0.31)	-0.042 (-0.42)	-0.007 (-0.44)	-0.014 (-0.44)	-0.007 (-0.36)	-0.032 (-0.44)
<i>CONSTANT</i>	-0.451** (-2.05)	-1.746*** (-3.74)	0.188 (1.50)	0.419** (2.18)	-0.557** (-2.27)	-2.131*** (-3.39)
Control variables	YES	YES	YES	YES	YES	YES
FE	YES	YES	YES	YES	YES	YES
Observations	75,030	75,030	75,030	75,030	75,030	75,030
Adj R-squared	0.777	0.379	0.812	0.567	0.654	0.321

Table 10 reports the regression results with financing proxies and their interaction with COW. Specifically, the interactive variables in panel A to panel C are (1) *Dependence on external Financing*, the ratio of capital expenditures minus cash flow over capital expenditures (Klapper et al. 2006); (2) *Dependence on external equity Financing*, the ratio of the net amount of equity issues to capital expenditures (Rajan and Zingales 1998); (3) *Dependence on external debt Financing*, the ratio of the net amount of debt issues to capital expenditures. Variable definitions are provided in Appendix 3 Table 14. All continuous variables are winsorized at the 1% and 99% levels. All regressions include firm-level control variables in specification (1), together with firm fixed effects, headquarter state × year fixed effects, and industry × year fixed effects. The reported t-statistics are based on robust standard errors clustered by the state of incorporation. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively

significant in Panel C, suggesting that the financing substitution effect of COW is stronger for firms that rely more heavily on external financing, particularly external equity financing. In summary, these results indicate that COW laws may expand the financing channels thus reducing the pressure on managers to communicate private information through dividend payouts for external equity financing.

6 Additional analysis

Drawing from the above analysis, the adoption of corporate opportunity waivers has led to a marked decrease in corporate payouts. The phenomenon can be explained by both the resource diversion channel and the reduced signaling incentive channel. While the resource diversion hypothesis refers to the exacerbation of agency problems between shareholders and managers by COW, leading to management capturing investor interests, the reduced signaling incentive hypothesis indicates that COW laws expand the financing channel and alleviate the signaling need for managers to disclose private information through costly dividend payments for external financing (especially the equity). Although both hypotheses predict decreased distributions following COW enactment, they bear opposite welfare implications: the resource diversion hypothesis reveals the rule change's detrimental governance consequences, while the reduced signaling incentive hypothesis suggests a potentially efficiency-enhancing outcome. We conduct further tests to assess the relative importance of these two hypotheses in explaining the decline in distribution by firms.

We first investigate the effect of COW on firms' financial performance. We use two measures in the tests, return-on-assets (*ROA*) computed as the ratio of net income before extraordinary items to total assets and firm value computed (*Tobin's Q*) computed as the market value of equity plus book value of assets minus book value of equity minus deferred taxes divided by book value of total assets. We re-estimate the baseline model using these two proxies above as dependent variables. The results are listed in Panel A, Table 11. In columns (1)–(3), the dependent variables are *ROA* in the next one to three years, while in columns (4)–(6), the dependent variables are *Tobin's Q* for the next one to three years. The results show that following the implementation of the COW laws, both *ROA* and *Tobin's Q* decrease, suggesting that the COW has a negative impact on corporate performance.⁶

The above performance tests focus on the value implication of COW laws up to the next three years. In the next test, we examine the effect of COW laws on cost of equity capital, which can reflect investors' expectation of firm's riskiness derived from firm value over a horizon beyond three years. Prior studies have found that poor corporate governance increases the cost of equity capital (Hail and Leuz 2009; Chen et al. 2011, 2013). In our context, if the passage of COW laws stimulates stronger conflicts of interests between shareholders and corporate insiders (e.g. officers and directors divert

⁶ The payout ratio is only one part of the return that investors receive from investee firms. It's possible that investors benefit from capital gains with the passage of COW laws, which can substitute for corporate distributions. Our findings that firms' *ROA* and *Tobin's Q* reduce in post-COW period partly rules out this possibility. We thank a reviewer for this comment.

Table 11 COW, corporate performance and cost of equity capital

Panel A: Corporate performance						
	ROA _{t+1}	ROA _{t+2}	ROA _{t+3}	Tobin's Q _{t+1}	Tobin's Q _{t+2}	Tobin's Q _{t+3}
	(1)	(2)	(3)	(4)	(5)	(6)
<i>COW</i>	-0.089*** (-4.22)	-0.098** (-2.54)	-0.058* (-1.80)	-0.085*** (-2.87)	-0.074*** (-2.95)	-0.067** (-2.10)
<i>CONSTANT</i>	-0.336*** (-5.25)	-0.138*** (-4.96)	-0.082 (-0.94)	2.528*** (30.36)	2.110*** (77.91)	1.832*** (38.04)
Control variables	YES	YES	YES	YES	YES	YES
FE	YES	YES	YES	YES	YES	YES
Observations	65,233	57,642	51,129	65,230	57,639	51,126
Adj R-squared	0.626	0.632	0.633	0.666	0.647	0.643
Panel B: Implied cost of equity capital						
	RPAVG	RPGLS	RPOJ	RPCT	RPES	
	(1)	(2)	(3)	(4)	(5)	
<i>COW</i>	0.003** (2.63)	0.002** (2.02)	0.003* (1.77)	0.002** (2.19)	0.003* (1.91)	
<i>BETA</i>	-0.001*** (-4.48)	-0.000 (-0.15)	-0.001*** (-3.93)	-0.003*** (-6.33)	-0.001* (-1.93)	
<i>IRISK</i>	0.032*** (4.54)	0.024*** (4.75)	0.034*** (3.38)	-0.007 (-0.55)	0.050*** (4.49)	
<i>LOGMV</i>	-0.010*** (-37.93)	-0.003*** (-10.00)	-0.010*** (-37.36)	-0.010*** (-31.86)	-0.015*** (-47.56)	
<i>LOGBM</i>	-0.001 (-1.40)	0.009*** (17.20)	-0.005*** (-12.65)	-0.005*** (-11.91)	-0.004*** (-7.52)	
<i>MMT</i>	-0.028*** (-59.89)	-0.021*** (-40.02)	-0.026*** (-55.13)	-0.023*** (-46.01)	-0.035*** (-40.21)	
<i>LEV</i>	0.029*** (8.01)	0.014*** (4.45)	0.030*** (6.40)	0.017*** (3.82)	0.042*** (8.72)	
<i>FLTG</i>	0.055*** (59.52)	0.012*** (20.16)	0.035*** (36.41)	0.119*** (24.93)	0.030*** (32.43)	
<i>FERR</i>	-0.048*** (-23.36)	-0.032*** (-25.45)	-0.047*** (-19.78)	-0.034*** (-12.94)	-0.068*** (-26.74)	
<i>ROE</i>	-0.003*** (-4.06)	0.009*** (12.71)	-0.008*** (-8.89)	0.012*** (13.63)	-0.019*** (-13.60)	
<i>CONSTANT</i>	0.125*** (57.56)	0.082*** (31.09)	0.136*** (55.07)	0.102*** (37.28)	0.176*** (51.80)	
<i>FE</i>	YES	YES	YES	YES	YES	
Observations	31,745	36,556	32,510	35,973	31,973	
Adj R-squared	0.737	0.694	0.596	0.735	0.593	

Table 11 reports the regression results on the effect of COW on corporate performance (Panel A) and implied cost of equity capital (Panel B). In columns (1)–(3) of panel A, the dependent variables are return on assets (ROA) for the subsequent one to three periods, and in columns (4)–(6) of panel B, dependent variables are tobin's Q (Tobin's Q) for the subsequent one to three periods. Variable definitions are provided in Appendix 3 Table 14. In columns (1)–(5) of panel B, dependent variables are RPAVG, the average of the cost of equity capital estimates calculated by four different models minus the risk-free rate measured as the yield on the 10-year treasury bonds; RPGLS, the cost of equity capital estimated following Gebhardt et al. (2001) and Pastor et al. (2008) minus the risk-free rate; RPOJ, the cost of equity capital estimated following Ohlson and Juettner-Nauroth (2005) minus the risk-free rate; RPCT, the cost of equity capital estimated following Claus and Thomas (2001) minus the risk-free rate; and RPES, the cost of equity capital estimated following Easton (2004) minus the risk-free rate, respectively. As for control variables, BETA is the systematic risk, IRISK is the idiosyncratic risk, LOGMV is the firm size, LOGBM is the book-to-market ratio, MMT is the momentum return, LEV is the leverage ratio, FERR is the analysts' forecast error, FLTG is the analysts' forecasted long-term growth rate, and ROE is the return on equity. All continuous variables are winsorized at the 1% and 99% levels. All regressions include firm fixed effects, headquarter state × year fixed effects, and industry × year fixed effects. The reported t-statistics are based on robust standard errors clustered by the state of incorporation. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively

internal resources for alternative, self-serving uses and thus pay lower dividends to shareholders), firms with corporate opportunity waivers are likely charged a higher financing cost by shareholders. In other words, a finding of a larger cost of equity capital for firms adopting COW laws can substantiate the conjecture that COW laws result in lower dividend payouts because of corporate insiders' agency problem (i.e., resource diversion). Conversely, a decrease in cost of equity financing for corporate opportunity waivers may lend support to the conjecture that the passage of COW laws reduces the dividend payouts because it eases external financing thus mitigates firms' signaling incentive with dividend payment.

We measure firms' cost of equity using analyst earnings forecasts, following prior studies (Gebhardt et al. 2001; Ohlson and Juettner-Nauroth 2005; Claus and Thomas 2001; Easton 2004). Following Chen et al. (2013), we include the following control variables in the regression of cost of equity capital: *BETA*, the systematic risk; *IRISK*, the idiosyncratic risk; *LOGMV*, the market value, *LOGBM*, the book-to-market ratio; *MMT*, the momentum return; *LEV*, the leverage ratio; *FERR*, the analysts' forecast error; *FLTG*, the analysts' forecast long-term growth rate; *ROE*, the return on equity. The results in Panel B, Table 11 suggest that the enactment of COW laws leads to a significant increase in the cost of equity capital for firms in the COW states, regardless of the models used to calculate the cost of equity capital. This result suggests that managers' resource diversion incentive plays a more important role in interpreting the decline in dividends in post-COW period.

7 Conclusion

This study investigates how state-level corporate opportunity waivers—a legal shock enabling managers to pursue personal benefits—affect firms' payout policies. We document a significant decline in payouts following COW adoption, particularly in firms where fiduciary managers face greater conflicts of interest with shareholders. Specifically, the reduction in payouts is more pronounced among firms with (1) lower ownership by long-term institutional investors, (2) greater external opportunities for managers, and (3) CEOs with longer tenure. The negative effect is also stronger in firms who are more reliant on external financing, especially equity financing. However, additional tests reveal that COW laws are associated with worse future financial performance and higher implied cost of equity capital. Overall, while COWs may ease financing constraints, our findings suggest that the exacerbation of agency problems plays a dominant role in reducing payouts to shareholders.

The findings suggest that COW laws introduce significant risks for investors, particularly in firms with weak governance. When investors increase the required rate of return for investing in these firms, they may consider engaging directly with management and boards to demand stronger oversight. The study's results also raise important concerns for policymakers regarding the unintended consequences of COW laws and reassess whether the economic benefits of COWs outweigh their costs, particularly in cases where shareholder protections are weak.

Appendix 1

Table 12 Summary of corporate opportunity waivers legislation in different states

State	Effective date	Bill No.	Specificity requirement	Coverage of fiduciaries	Means of adoption
Delaware	2000/7/1	Del. Code Ann. tit. 8, § 122(17)	Waiver must specify opportunities or categories.	Directors, officers and shareholders	Charter or board action.
Oklahoma	2001/11/1	Okla. Stat. Ann. tit. 18, § 1016(17)	Waiver must specify opportunities or categories.	Directors, officers and shareholders	Charter or board action.
Missouri	2003/10/1	Mo. Ann. Stat. § 351.385(16)	Waiver must specify opportunities or categories.	Directors, officers, shareholders, employees and agents	Charter or board action.
Kansas	2005/1/1	Kan. Stat. Ann. § 17-6102 (17)	Waiver must specify opportunities or categories.	Directors, officers and shareholders	Charter or board action.
Texas	2006/1/1	Tex. Bus. Orgs. Code Ann. § 2.101(21)	Waiver must specify opportunities or categories.	Directors, officers and shareholders	Charter or board action.
Nevada	2007/10/1	Nev. Rev. Stat. Ann. § 78.070(8)	Waiver must specify opportunities or categories.	Directors, officers and shareholders	Charter or board action.
New Jersey	2011/3/1	NJ Stat. Ann. 14A:3-1(q)	Waiver must specify opportunities or categories.	Directors, officers and shareholders	Charter or board action.
Maryland	2014/10/1	Md. Code Ann., Corps. & Ass'ns § 2-103(15)	No specificity requirement—waivers can be broad without specifying opportunities.	Directors, officers and any other persons (with board approval for officers).	Charter or board action.
Washington	2016/1/1	Wash. Rev. Code Ann. § 23B.02.020(5)(k)	Waiver must specify opportunities or categories.	Directors, officers and any other persons (with board approval for officers).	Charter only (no board action)

Appendix 2

Table 13 Sample construction procedures

Sample construction procedures	Observation	Firms
Financial data from Compustat between 2000 and 2022	191,834	21,363
- excluding observations lacking state registration information or registered outside U.S. jurisdictions	189,419	20,949
- excluding financial institutions and regulated utilities	111,237	12,465
- excluding observations with missing values in main variables	75,030	7,710

Appendix 3

Table 14 Variable definitions

	Definition	Source
Panel A: Payouts variables		
<i>Totpay</i>	The natural logarithm of one plus total payout. The total payouts are cash dividends declared on common shares (<i>DVC</i>) plus share repurchases. The repurchase amount equals the purchase of common and preferred stock (<i>PRSTKC</i>) minus any decrease in the value of the net number of preferred stock outstanding (<i>PSTKRV</i> or <i>PSTK</i> if <i>PSTKRV</i> is missing). The payout amount is set to 0 if missing.	Compustat
<i>Totpay_Sales</i>	One hundred times the ratio of cash dividends declared on common shares (<i>DVC</i>) plus share repurchases to total sales (<i>SALE</i>).	Compustat
<i>Div</i>	The natural logarithm of one plus cash dividends declared on common shares (<i>DVC</i>). The cash dividend is set to 0 if missing.	Compustat
<i>Div_Sales</i>	One hundred times the ratio of cash dividends declared on common shares (<i>DVC</i>) to total sales (<i>SALE</i>).	Compustat
<i>Repur</i>	The natural logarithm of one plus repurchase. The repurchase is set to 0 if missing.	Compustat
<i>Repur_Sales</i>	One hundred times the ratio of repurchase to total sales (<i>SALE</i>).	Compustat
Panel B: COW variables		
<i>COW</i>	A dummy variable that equals 1 if the focal firm-year's state of incorporation has passed Corporate Opportunity Waiver laws by the fiscal year, and 0 otherwise.	Rauterberg and Talley (2017)
<i>COW_DE</i>	A dummy variable that equals 1 if the focal firm-year's state of incorporation is Delaware and has passed Corporate Opportunity Waiver laws by the fiscal year, and 0 otherwise.	Rauterberg and Talley (2017)
<i>COW_NONDE</i>	A dummy variable that equals 1 if the focal firm-year's state of incorporation is not Delaware and has passed Corporate Opportunity Waiver laws by the fiscal year, and 0 otherwise.	Rauterberg and Talley (2017)
Panel C: Other variables		
<i>SIZE</i>	Natural logarithm of total assets (<i>AT</i>) in millions of U.S. dollars	Compustat
<i>LEV</i>	Leverage ratio, defined as the book value of long-term debt (<i>DLTT</i>) divided by book value of total assets (<i>AT</i>).	Compustat
<i>ROA</i>	Return on assets, computed as the ratio of net income before extraordinary items (<i>IB</i>) to total assets (<i>AT</i>).	Compustat
<i>REA</i>	Ratio of retained earnings (<i>RE</i>) to total assets (<i>AT</i>).	Compustat
<i>SGR</i>	Natural logarithm of sales growth, computed as $\ln(SALE_t / SALE_{t-1})$	Compustat
<i>CHA</i>	Ratio of cash and short-term investments (<i>CHE</i>) to total assets (<i>AT</i>).	Compustat
<i>RDE</i>	Ratio of R&D expenditure (<i>XRD</i>) to sales revenue (<i>SALE</i>).	Compustat
<i>COVID19</i>	A dummy variable that equals 1 if the year is during the pandemic, and 0 otherwise.	Compustat
<i>NEGSI</i>	Special items (<i>SPI</i>) deflated by lagged total assets (<i>AT</i>), multiplied by negative one.	Compustat
<i>LOSS</i>	A dummy variable that equals 1 if earnings ($IB + 0.6 \times XINT - 0.6 \times IDIT$) are less than zero.	Compustat
<i>ROAVOL</i>	The standard deviation of <i>ROA</i> over the most recent four years (year $t-3$ to year t).	Compustat
<i>UD</i>	A dummy variable that equals 1 if the firm-year of incorporation state passed Universal Demand law by the fiscal year, and 0 otherwise.	Bourveau et al. (2018)

Table 14 (continued)

	Definition	Source
<i>AR</i>	A dummy variable that equals 1 if the firm-year of incorporation state passed Anti-recharacterization law by the fiscal year, and 0 otherwise.	Attig (2024)
<i>CS</i>	A dummy variable that equals 1 if the firm-year of incorporation state passed Constituency Status law by the fiscal year, and 0 otherwise.	Sun et al. (2023)
<i>PP</i>	A dummy variable that equals 1 if the firm-year of incorporation state passed the Poison Pill laws.	Karpoff and Wittry (2018)
<i>Long-term institutional ownership</i>	The natural logarithm of shares held by long-term institutional shareholders.	Thompson 13f
<i>CEO Tenure</i>	The natural logarithm of the length of time between the date when the person became the CEO and the current fiscal year end.	Execucomp
<i>Industry Q</i>	Average Tobin's Q for each industry. <i>Tobin's Q</i> is computed as market value of equity ($PRCC_F \times CSHO$) plus book value of assets (AT) minus book value of equity (CEQ) minus deferred taxes ($TXDB$), divided by book value of total assets (AT) at the end of the fiscal year t-1.	Compustat
<i>Dependence on external financing</i>	The ratio of capital expenditures ($CAPX$) minus cash flow ($IB + DP$) over capital expenditures ($CAPX$).	Compustat
<i>Dependence on external equity financing</i>	The ratio of the net amount of equity issues (NEI) to capital expenditures ($CAPX$).	Compustat
<i>Dependence on external debt financing</i>	The ratio of the net amount of debt issues (NDI) to capital expenditures ($CAPX$).	Compustat
<i>Tobin's Q</i>	Computed as market value of equity ($PRCC_F \times CSHO$) plus book value of assets (AT) minus book value of equity (CEQ) minus deferred taxes ($TXDB$), divided by book value of total assets (AT) at the end of the fiscal year t-1.	Compustat
<i>RPGLS</i>	The firm's cost of equity, measured with Gebhardt et al. (2001)'s model minus the risk-free rate.	Gebhardt et al. (2001)
<i>RPOJ</i>	The firm's cost of equity, measured with Ohlson and Juettner-Nauroth (2005)'s model minus the risk-free rate	Ohlson and Juettner-Nauroth (2005)
<i>RPCT</i>	The firm's cost of equity, measured with Claus and Thomas (2001)'s model minus the risk-free rate.	Claus and Thomas (2001)
<i>RPES</i>	The firm's cost of equity, measured with Easton (2004)'s model minus the risk-free rate	Easton (2004)
<i>RPAVG</i>	The average of the four cost of equity estimates.	Chen et al. (2013)
<i>BETA</i>	Beta, estimated for each firm-year observation by regressing monthly returns on the value-weighted market returns of NYSE/AMEX/NASDAQ. Sixty (with a minimum of 24) monthly observations before the month at which the cost of capital is computed are used in the regression.	CRSP
<i>IRISK</i>	Idiosyncratic risk, measured as the standard deviation of the residuals from the above regression used to estimate <i>BETA</i> .	CRSP
<i>LOGMV</i>	Natural logarithm of the market value of equity ($PRCC_F \times CSHO$), measured at the most recent fiscal year-end.	Compustat
<i>LOGBM</i>	Natural logarithm of the ratio of the book value of equity (CEQ) to the market value of equity ($PRCCF \times CSHO$), both measured at the most recent fiscal year-end.	Compustat

Table 14 (continued)

	Definition	Source
<i>MMT</i>	Natural logarithm of the compounded returns over the 12 months before the month at which the cost of equity is computed.	CRSP
<i>FERR</i>	Analysts' forecast error of the forthcoming annual earnings, defined as actual EPS from IBES minus the analysts' forecast EPS used to compute the cost of equity, scaled by the price in the month at which the cost of equity is computed. When the IBES actual EPS is missing, actual EPS from Compustat is used instead.	IBES
<i>FLTG</i>	Analysts' forecast of the long-term growth rate. If missing, it is defined as FY_3/FY_2 , where FY_3 and FY_2 are analysts' forecasts of earnings in years $t+3$ and $t+2$. The value of FY_2 is required to be positive in the calculation.	IBES
<i>ROE</i>	Return on equity, computed as the ratio of net income before extraordinary items (<i>IB</i>) to equity (<i>CEQ</i>).	Compustat

Appendix 4: Cost of equity capital estimates

RPGLS

The cost of equity capital estimated following Gebhardt et al. (2001) and Pástor et al. (2008) minus the risk-free rate measured as the yield on the 10-year Treasury bonds. Specifically, the implied cost of equity capital is the internal rate of return (R) in the following equation:

$$P_t = B_t + \sum_{i=1}^{T-1} \frac{(FROE_{t+i} - R) \times B_{t+i-1}}{(1+R)^i} + \frac{(FROE_{t+T} - R) \times B_{t+T-1}}{(1+R)^{T-1}R}.$$

We use IBES analysts' earnings per share forecasts as a proxy for the market expectations of a firm's earnings for the next 3 years. Subsequent *FROE* forecasts are a linear interpolation to the industry median *ROE*, with industries defined using the 48 classifications in Fama and French (1997). The future book value of equity (B) is estimated by assuming a clean surplus relation. We follow Gebhardt et al. (2001) and assume $T=12$.

RPOJ

The cost of equity capital estimated following Ohlson and Juettner-Nauroth (2005) minus the risk-free rate measured as the yield on the 10-year Treasury bonds. Specifically, the implied cost of equity capital is the internal rate of return (R) in the following equation:

$$P_t = \frac{FEPS_{t+1}}{R} + \frac{FEPS_{t+2} - FEPS_{t+1} - (R * FEPS_{t+1} * (1 - DPOUT))}{R(R - FLTG)},$$

which can be written as

$$R = A + \sqrt{A^2 + \frac{FEPS_{t+1}}{P_t} \left(\frac{FEPS_{t+2} - FEPS_{t+1}}{FEPS_{t+1}} - FLTG \right)},$$

where

$$A = \frac{1}{2} \left(FLTG + \frac{DPOUT * FEPS_{t+1}}{P_t} \right)$$

This model follows the procedure outlined in Gode and Mohanram (2003). It uses short-term growth computed from 1-year ahead earnings forecasts which gradually declines to long-term growth rate $FLTG$. The short-term growth rate is calculated as the average between the forecasted percentage change in earnings from year $t+1$ to $t+2$, while the long-term growth rate can be obtained from I/B/E/S. The model requires positive earnings for the period $t+1$ and $t+2$ for numerical approximation to converge.

RPCT

The cost of equity capital estimated following Claus and Thomas (2001) minus the risk-free rate measured as the yield on the 10-year Treasury bonds. Specifically, the implied cost of equity capital is the internal rate of return (R) in the following equation:

$$P_t = B_t + \sum_{i=1}^5 \frac{FEPS_{t+i} - (R * B_{t+i-1})}{(1+R)^i} + \frac{FEPS_{t+5} - (R * B_{t+4}) * (1+FLTG)}{(R-FLTG)(1+R)^5}$$

This model uses abnormal earnings, to circumvent various problems noted in the dividend growth model. The abnormal earnings are calculated from earnings forecasts up to 5 years ahead. More specifically, the model uses earnings forecasts for the first three years ahead. The forecasts for the fourth and fifth year are calculated from the forecasted third year EPS and long-term earnings growth rate. In the absence of a long-term earnings growth rate, it is substituted by the earnings growth derived from $FEPS_{t+2}$ and $FEPS_{t+3}$. After the fifth year, we assume that the abnormal earnings will grow at a constant rate $FLTG$. We estimate the future book value of equity (B) by assuming a clean surplus relation.

RPES

The cost of equity capital estimated following Easton (2004) minus the risk-free rate measured as the yield on the 10-year Treasury bonds. Specifically, the implied cost of equity capital is the internal rate of return (R) in the following equation:

$$P_t = \frac{FEPS_{t+2} - FEPS_{t+1} - (R * FEPS_{t+1} * DPOUT)}{R^2}.$$

This model is a special case of the OJ model where the abnormal returns are assumed to exist in perpetuity after the initial period. It uses 1- and 2-year ahead earnings forecasts combined with dividend payout to estimate abnormal earnings. This model requires positive changes in forecasted earnings for numerical approximation to converge.

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