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Firm-level regulatory intensity and corporate strategic change

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Abstract

Purpose – We empirically examine the impact of firm-level regulatory intensity, an external force or context, on corporate strategic change (i.e. changes in a firm's financing, investing and operating decisions to boost its competitive advantage and performance).

Design/methodology/approach – Using a sample of 78,523 firm-year observations of US firms from 1995–2019, we model firm strategic change as a function of firm-level regulatory intensity and other firm characteristics. We estimate the model using OLS regression with standard errors clustered at the firm level to generate statistical inference, controlling for firm- and year-fixed effects. Robustness tests include various methodologies, including propensity score matching, entropy balancing and instrumental variable approaches. We also employ alternative measures of firm-level regulatory intensity and corporate strategic change to further validate our results.

Findings – Regulatory intensity decreases the extent of corporate strategic change, providing evidence that managers become more cautious and conservative in undertaking strategic changes when facing a greater regulatory burden. This finding is robust to various model specifications and alternative proxies for strategic change, suggesting that regulations may hinder firms from making strategic changes in a timely manner. Delayed strategic changes can lead to negative effects on a firm's performance in the short run and growth in the long run. Further analysis shows that regulatory intensity reduces strategic changes in resource allocations but induces more strategic changes in corporate capital structure.

Originality/value – We enrich the literature on corporate strategic change and the association between regulatory intensity and corporate decision-making. The finding that corporate managers are more cautious in implementing strategic changes when facing a high level of regulatory compliance provides important implications to regulators and managers. To mitigate the unintended effects of regulations on businesses, policymakers should be more prudent in initiating and passing new regulations by adopting a more evidence-based and transparent approach and regulators and regulation implementing agencies should provide sufficient compliance support. Corporate managers need to proactively engage in the rule-making process to turn intensified compliance into business strategy drivers and undertake timely changes to enhance performance and long-term competitiveness.

Keywords Firm-level regulatory intensity, Regulatory compliance, Regulatory burden, Strategic change

Paper type Research article

1. Introduction

Regulations add significant fixed costs to businesses (Ince & Ozsoylev, 2024). As indicated by Kalmenovitz (2023) and Ince (2024), regulatory compliance is expensive and sticky, suggesting significant economic implications. Strategic change, according to the Cambridge dictionary, is "a change or changes to important features of an organization's business, for

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example because of new threats or opportunities in its market" [1]. Exposure to increased regulatory compliance requires that firms allocate resources more strategically and induces them to adjust their policies (James *et al.*, 2025). Hale, Borys, and Adams (2011) note that regulations generally stifle innovations and limit improvements in risk-management strategies, suggesting that firms may reduce their R&D expenditures which are one of the important areas of resource allocation.

Corporate strategic change refers to significant and deliberate adjustments in firms' financing, investing and operating decisions that are aimed at achieving competitive advantage and enhancing firm performance over time. Strategic decisions are long-term in nature and are critical to the success of an organization. The existing literature documents that the CEO, the top management team and the board of directors affect a firm's strategic decisions (Samara & Yousef, 2023); in other words, more on the effects of internal forces. However, little is known about how firms make strategic decisions when facing increased regulatory burdens. We intend to fill this void by empirically examining the impact of firm-level regulatory intensity, an external force or context, on corporate strategic change.

Klarner, Yu, Yoshikawa, and Hitt (2023) and Rajagopalan and Spreitzer (1997) argue that strategic change is the result of an organization's alignment with its external environment. Hale *et al.* (2011) indicated that regulations provide some opportunities for firms to improve their processes to achieve gains in productivity and quality control to mitigate overall compliance costs. James *et al.* (2025) propose that regulations can serve as a valuable public monitoring tool to reduce agency frictions generated from opacity between corporate insiders and outsiders, and that regulatory compliance requirements can significantly improve corporate transparency and mitigate managerial opportunistic behavior. Empirically, they document strong supporting evidence that US firms improve their labor investment efficiency as regulatory compliance costs increase. Ince (2024) shows that large firms engage in within-industry acquisitions to spread regulatory costs across larger outputs. The results of these studies suggest that firms actively plan and implement strategic changes as regulatory intensity at the firm level increases.

However, the increasing number of regulations can overwhelm a business, making firms simply focus on compliance rather than improving their operations, thereby delaying the strategic changes needed. Additionally, regulatory compliance costs can create budget constraints and uncertainty (Kalmenovitz, 2023; Crain & Crain, 2023). Furthermore, regulatory uncertainty may further compound the uncertainty of businesses. Regulatory uncertainty arises from vague, overbroad, excessively complex and changing rules (Hale *et al.*, 2011). Williams and Adams (2012) argue that regulatory overload can discourage firms from finding innovative solutions to problems. Distractions, budget constraints and increased uncertainty from increased regulatory compliance may make it more challenging for a firm to adapt effectively to changing market opportunities, hindering it from undertaking significant strategic changes needed in a timely fashion. Lastly, managers may hesitate to implement strategic changes in the face of high levels of uncertainty due to self-interest such as preserving their reputation and legacy. The discussions above suggest that heightened regulatory compliance requirements may lead to variation in firms' ability to implement timely strategic changes. Some firms can adopt strategic change effectively, whereas others may face some constraints that hinder them from adjusting their strategic decisions.

To empirically test the impact of regulatory intensity on corporate strategic change, we employ four firm-level regulatory intensity measures developed by Kalmenovitz (2023) using administrative data and supervised machine-learning algorithms [2]. These measures capture different aspects of the cost of compliance with all federal paperwork regulations deemed relevant to a firm. Specifically, the four measures are the number of active regulations (REGIN_REG), the estimated costs of compliance in terms of responses (REGIN_RESP), the estimated costs of compliance in terms of hours spent (REGIN_TIME) and the total dollar amount spent by a firm for regulatory compliance (REGIN_DOLLAR). The four variables are the logarithm of the original data obtained from Professor Kalmenovitz's website [3].

Following Ferris and Sainani (2021) and James *et al.* (2025), we undertake a principal component analysis (PCA) to construct two composite regulatory intensity measures, REGIN_COMP3 and REGIN_COMP4, using the first three regulatory intensity variables and all four regulatory intensity variables above to capture the joint impact of these variables, respectively [4]. We define strategic change as changes in a firm's strategic direction by reallocating its resources to important strategic components (Finkelstein & Hambrick, 1990; Quigley & Hambrick, 2012; Oehmichen, Schrapp, & Wolff, 2017). Firms need to adopt a portfolio perspective to engage in resource reallocation, i.e. engaging in multiple changes within their change portfolio (Agarwal & Helfat, 2009). Ahlstrom *et al.* (2020) indicated that firms should maintain a portfolio of changes to have the flexibility and agility required to respond to environmental changes effectively. Therefore, we use a composite measure to capture changes in a firm's investing, financing and daily operating decisions (STRG). STRG is the average of standardized absolute values of annual changes of six strategic variables (i.e. research and development (R&D) intensity, advertising intensity, plant and equipment newness, non-operational overhead (selling, general and administrative) expenses, inventory level and debt usage) [5].

Using a sample of 78,523 firm-year observations of US firms covering the period from 1995 to 2019, we find that the level of strategic change decreases with firm-level regulatory intensity across all regulatory intensity measures, including the four original regulatory intensity variables and the two composite variables constructed with PCA [6]. The results hold when we use industry-adjusted strategic change, developed using industry-median-adjusted values of the six component variables as in Wu, Li, and Zhang (2024). We define industries using the three-digit SIC codes. Our baseline result shows that the impact of regulatory intensity on strategic change is larger than any other determinant of strategic change, indicating that the impact is also economically significant.

Strategic change component variable analyses show that the negative impact of firm-level regulatory intensity on strategic change is mainly driven by decreased adjustments on operational and investment activities, including changes in R&D intensity, advertising intensity, fixed assets investment, non-production overhead and inventory levels. However, as firm-level regulatory intensity increases, firms tend to engage in more capital structure adjustments, suggesting that regulatory intensity affects a firm's strategic decisions differently in operating, investing and financing decisions.

We conducted several robustness tests to further check the results. First, to rule out the potential explanation for the results from the systematic differences between firms with high and those with low regulatory intensity, we use the propensity score matching (PSM) (Rosenbaum & Rubin, 1983) and entropy balancing (EB) (Canil, Karpavičius, & Yu, 2019) approaches. Second, we undertake an instrumental variable approach to alleviate the bias attributable to simultaneity and reverse causality. We use two instrumental variables (i.e. the median values of the regulatory intensity proxies for firms in the same state and the median values of the regulatory intensity proxies for firms in the same industry (defined using three-digit SIC codes) as the focal firm by excluding the focal firm itself) in the first stage analysis. In the second stage, we replace regulatory intensity proxies with their predicted values in the first stage and revisit our baseline models. Third, we control for industry-year fixed effects to ensure that the results are not attributed to the overall regulatory burden in a specific year for a particular industry, as in Kalmenovitz (2023) and James *et al.* (2025). Our baseline results remained unchanged across all the tests.

This study contributes to the literature on strategic change by showing that regulatory intensity plays an important role in firm strategic changes in corporate America. It appears that regulatory intensity stabilizes strategic decisions. However, the hindering effect of firm-level regulatory intensity on strategic change may deter firms from initiating and implementing strategic changes in their operations and investment in a timely manner, leading to potential loss of competitive advantage and consequently affecting shareholders negatively.

Second, we add to the literature on the associtaions between regulatory intensity and corporate decisions and outcomes (Kalmenovitz, 2023; James *et al.*, 2025; Ince, 2024). Kalmenovitz (2023) studies the impact of regulatory intensity on firm-level expenses, financing decisions, lobbying and other business operations such as hiring. We find that US companies are hesitant in implementing operational and investment strategic changes, but make more adjustments in their capital structures, as regulatory compliance costs increase. Our finding that firm-level regulatory intensity slows down corporate strategic change provides important implications for regulators and regulated firms. From a policy perspective, policymakers need to fully assess the benefits and costs of government oversight of businesses to determine the true economic impact of various regulations. To do so, policymakers should invite, encourage and facilitate continuous stakeholder engagement, such as businesses and monitoring agencies and undertake an evidence-based and transparent approach in the rule-making process to avoid imposing unnecessary burden on businesses. Given that vague and overbroad, excessively complex and changing rules create uncertainty (Hale *et al.*, 2011), regulators should prioritize clear, specific, simplified and stable regulations. Meanwhile, regulators should make efforts to avoid redundant regulations and eliminate outdated ones for more effective regulatory monitoring while lowering corporate compliance costs. Furthermore, to shorten the learning curve for firms affected by new regulations and the corresponding compliance procedures, it is critically vital for regulators and regulation-implementing agencies to provide supporting resources, such as educational programs or workshops, to help these firms minimize corporate compliance costs and efforts, enabling them to undertake the strategic changes needed in a timely fashion.

Increased regulatory compliance can increase firms' efforts to maximize shareholder wealth. James, Qiu, and Wang (2025) note that an average regulation proposal remains in the rulemaking pipeline for more than two years in the United States. The prolonged process presents corporate managers and other stakeholders with an opportunity to proactively engage with regulators and monitor potential regulation changes. When used effectively, such engagement facilitates policymakers to better balance government oversight and corporate innovations better, potentially mitigating redundant and unnecessary regulatory compliance requirements. Additionally, monitoring pending regulations and understanding the upcoming changes can help firms proactively turn regulatory compliance into new opportunities. Positioning themselves to innovate in compliance-intensive areas, firms can reallocate resources more efficiently and promptly implement the corresponding strategic changes. In other words, managers should make efforts to translate regulatory compliance into business strategy drivers. In addition, both regulators and firms need to take full advantage of newly developed technologies, such as artificial intelligence, which can significantly reduce processing time and human error, consequently enhancing efficiency in both rule-making and implementation. For example, firms can use machine-learning algorithms to automate repetitive compliance tasks, reduce costs and improve decision-making efficiency.

The remainder of this paper is organized as follows. Section 2 describes the sample, key variables and research design. Section 3 provides the results and Section 4 concludes the paper.

2. Sample, variables and methodology

We obtain firm regulation compliance cost data from Professor Kalmenovitz's website at https://drive.google.com/file/d/17IK78reybdhcGrNTIPZR5p-8GRTcTgKX/view?pli=1 (available up to 2019) [7]. We merge these data with the Compustat database and exclude highly regulated financial (SIC 6000–6999) and utility (SIC 4900–4999) firms. After deleting firm-year observations with missing values on key variables, we have a sample of 78,523 firm-year observations from 1995–2019 covering 7,539 unique firms. The sample size varies with the proxies for regulation burden and additional control variables for CEO and board characteristics. We obtain CEO and board variables from the S&P People Intelligence database.

2.1 Key variables

2.1.1 Strategic change. We follow prior studies to measure firm strategic changes with financial variables that capture changes in strategy because of the difficulty in directly observing strategic changes (Bednar, Boivie, & Prince, 2013; Dyck & Zingales, 2002). In particular, we use six strategic variables: (1) R&D intensity (R&D expenditures to sales ratio), (2) advertising intensity (advertising expenditures to sales ratio), (3) plant and equipment (P&E) newness (net P&E to gross P&E ratio), (4) non-production overhead (selling, general and administrative expenses to sales ratio), (5) inventory levels (net inventory to sales ratio) and (6) debt-to-equity ratio. We first standardize the absolute value of the annual change of each variable, i.e. the difference of a variable between the current year (year t) and the prior year (year t-1), and then take the average of the standardized values of the six strategic variables as our proxy for strategic changes (STRG). In the robustness check, we employ an industry-adjusted STRG (Industry-adjusted STRG) by using industry median adjusted values of the six strategic variables instead of their raw values as the input variables to construct STRG as in Wu *et al.* (2024). We use the three-digit SIC codes to define industries.

2.1.2 Regulatory intensity. To measure firm-level regulation exposure, we used the logarithm-transformed regulatory intensity variables obtained from Professor Kalmenovitz's website. Using administrative data and supervised machine-learning algorithms, Kalmenovitz (2023) developed four unique firm-level regulatory intensity measures with regulations only relevant to a particular firm's operations. These measures capture different aspects of a firm's compliance costs with all federal paperwork regulations, including the number of active regulations applied to the firm (REGIN_REG), estimated costs of paperwork (REGIN_RESP), total hours spent on compliance (REGIN_TIME) and the total dollar amount spent on compliance (REGIN_DOLLAR) [8]. Larger values of these variables indicate higher levels of regulatory intensity.

In the robustness tests, we use two regulatory intensity composite measures constructed from PCA using the above component variables, as in Ferris and Sainani (2021) and James *et al.* (2025). REGIN_COMP3 is the composite proxy generated from a PCA using REGIN_REG, REGIN_RESP and REGIN_TIME with an eigenvalue above one. REGIN_COMP4 is the composite proxy using all four regulatory intensity measures with an eigenvalue above one.

2.2 Empirical model

We estimate the following baseline regression:

$$\begin{aligned} STRG_{it} = {} & \beta_0 + \beta_1 REGULATION_{it-1} + \beta_2 SIZE_{it-1} + \beta_3 AGE_{it-1} + \beta_4 ROA_{it-1} \\ & + \beta_5 RETURN_{it-1} + \beta_6 INDCONC_{it-1} + \beta_7 CEOTURN_{it-1} \\ & + \beta_8 CEODUALITY_{it-1} + \beta_9 BOARDSIZE_{it-1} + Firm\,FE + Year\,FE + \varepsilon_{it,} \end{aligned} \quad (1)$$

where i and *t* denote firm i and year *t*, respectively. STRG is one of the eight measures of strategic changes (two composite and six component measures) and REGULATION is one of the six regulatory intensity measures discussed above (four logarithm-transformed regulatory intensity variables developed by Kalmenovitz (2023) and two composite measures constructed from these variables using PCA). We follow Bednar *et al.* (2013) and Wu *et al.* (2024) to include firm characteristics and governance quality as control variables. Specifically, we control for firm performance with RETURN (total stock return) and ROA (ratio of earnings before extraordinary income to total assets), firm maturity with SIZE (the logarithm of market capitalization) and AGE (the logarithm of the number of years a firm has been listed on CRSP), and market competition with INDCONC (the Herfindahl sales-based concentration index, calculated as the squared market share within a three-digit SIC code in a year). We measure governance quality with CEODUALITY (an indicator variable, coded one if a CEO also holds

the chairman position of the board and zero otherwise), CEOTURN (an indicator variable that equals one if there is a CEO turnover and zero otherwise) and BOARDSIZE (the logarithm of the number of directors on the board). Given that the governance variables are only available for larger firms, we conduct further analysis by excluding them to address the large firm bias. We also provide detailed definitions of all variables in Appendix A.

To alleviate reverse causality, we use one-time period lagged values for all control variables. We estimate the model using OLS regression with the standard errors clustered at the firm level to generate statistical inference. We include firm- and year-fixed effects to mitigate the concern that the results are attributed to firms' long-term compliance costs or the overall regulatory burden in a specific year for a particular industry. We winsorize all continuous variables at the upper and lower 1% of the sample distribution to avoid the influence of outliers. We report standardized coefficients to make them directly comparable in terms of economic significance.

2.3 Sample descriptive statistics

Panel A of Table 1 presents the summary statistics of the sample. The mean and median values of STRG were −0.014 and −0.188, respectively. The distribution is consistent with Bednar *et al.* (2013) who report a mean value of the strategic change proxy of −0.009. The mean (median) raw value of REGIN_REG/REGIN_RESP/REGIN_TIME/REGIN_DOLLAR is 99.246 (99.843)/96.916 (94.000)/97.902 (96.850)/95.591 (93.462). The distributions of the regulatory intensity proxies are consistent with the quintile distribution reported in Kalmenovitz (2023).

Panel B shows Pearson correlations between variables. All four regulatory intensity variables are negatively correlated with STRG (strategic change) with significance at the 1% level, providing preliminary supporting evidence that greater regulatory intensity is associated with lower levels of strategic change. In addition, STRG is positively associated with stock return, market competition and CEO turnover, and negatively associated with firm size, age, profitability (ROA), CEO-Chairman duality and board size.

3. Results

3.1 Baseline regression analysis

Table 2 reports the baseline regression results. Models (1)–(4) include firm characteristics as control variables, and Models (5)–(8) include additional controls for governance quality. The coefficients on all four regulatory intensity measures are negative and statistically significant at the 1% level across all models, suggesting that greater regulatory intensity is associated with lower levels of strategic change. The magnitude of the coefficient estimates of regulatory intensity proxies is larger than that of all control variables but firm age (AGE) and profitability (ROA), suggesting that the effects of regulatory intensity on corporate strategic change are also economically significant.

3.2 Robustness checks

In this section, we conduct several robustness tests to alleviate endogeneity concerns from measurement errors, omitted variable bias and reverse causality.

3.2.1 Alternative measures. We employ alternative proxies for both regulatory intensity and strategic change to control measurement error in those variables. Similar operating environments and competition for firms in the same industries may induce them to share similar motivations for making strategic changes. To better capture firms' unique strategic changes, we measure them with their deviations from industry norms. As indicated earlier, we followed Wu *et al.* (2024) to construct an alternative measure for STRG, the industry-median-adjusted STRG (Industry-adjusted STRG) and rerun the baseline regressions. Table 3 displays the results. The results are qualitatively similar to the baseline results.

Table 1. Descriptive statistics

Panel A – Summary statistics

Variables	*N*	Mean	Median	25th percentile	75th percentile	Standard deviation
STRG	78,523	−0.014	−0.188	−0.269	−0.008	0.526
REGIN_REG	78,523	99.246	99.843	93.364	104.981	11.256
REGIN_RESP	78,523	96.916	94.000	83.500	112.005	21.502
REGIN_TIME	78,523	97.902	96.850	87.511	109.246	18.273
REGIN_DOLLAR	64,378	95.591	93.462	80.592	108.998	23.500
SIZE	78,523	5.373	5.365	3.713	6.985	2.361
AGE	78,523	2.660	2.639	2.079	3.258	0.754
ROA	78,497	−0.067	−0.040	−0.342	0.212	1.960
RETURN	78,523	0.343	0.067	−0.252	0.467	1.266
INDCONC	78,523	0.018	0.011	−0.044	0.067	0.125
CEOTURN	61,353	0.133	0.000	0.000	0.000	0.340
CEODUALITY	61,353	0.573	1.000	0.000	1.000	0.495
BOARDSIZE	61,090	1.402	1.609	0.693	2.197	0.879

Panel B – Correlation matrix

Variables	STRG	REGIN_ REG	REGIN_ RESP	REGIN_ TIME	REGUL_ DOLLAR	REGIN_ DOLLAR
STRG	1					
REGIN_REG	−0.131***	1				
REGIN_RESP	−0.059***	0.801***	1			
REGIN_TIME	−0.075***	0.821***	0.902***	1		
REGIN_DOLLAR	−0.063***	0.486***	0.550***	0.573***	1	
SIZE	−0.236***	0.196***	0.191***	0.185***	0.146***	1
AGE	−0.186***	0.196***	0.175***	0.170***	0.104***	0.243***
ROA	−0.543***	0.048***	0.004	0.013***	0.053***	0.369***
RETURN	0.058***	−0.045***	−0.033***	−0.030***	−0.039***	0.045***
INDCONC	0.012***	−0.105***	−0.048***	−0.038***	−0.011***	−0.019***
CEOTURN	0.023***	0.097***	0.102***	0.090***	0.037***	0.016***
CEODUALITY	−0.058***	−0.023***	−0.046***	−0.040***	−0.035***	0.068***
BOARDSIZE	−0.077***	0.492***	0.543***	0.492***	0.284***	0.350***

Variables	AGE	ROA	RETURN	INDCONC	CEOTURN	CEODUALITY	BOARDSIZE
AGE	1						
ROA	0.152***	1					
RETURN	−0.070***	−0.006*	1				
INDCONC	−0.077***	0.007**	0.024***	1			
CEOTURN	0.037***	−0.058***	−0.021***	0.001	1		
CEODUALITY	0.062***	0.071***	0.004	−0.018***	−0.022***	1	
BOARDSIZE	0.243***	0.079***	−0.067***	−0.006	0.169***	−0.016***	1

Note(s): This table presents the sample distribution in Panel A and the correlation matrix in Panel B. We obtain accounting information from Compustat, regulation costs data from https://sites.google.com/view/jkalmenovitz and CEO and board variables from the S&P People Intelligence database. The sample excludes financial (SIC 6000–6999) and utility (SIC 4900–4949) firms. The full sample includes 78,523 firm-year observations from 1995–2019 covering 7,539 unique firms and the sample size varies with the proxies for regulation intensity and additional control variables for CEO and board characteristics. Refer to Appendix A for detailed variable definitions. We winsorize all continuous variables at the upper and lower 1% of the sample distribution. ***, ** and * indicate significance at the 1%, 5% and 10% levels, respectively

We further replace REGIN_REG, REGIN_RESP, REGIN_TIME and REGIN_DOLLAR with the two composite measures, REGIN_COMP3 and REGIN_COMP4, in the baseline models and report the results in Table 4. The coefficients for REGIN_COMP3 and REGIN_COMP4 are negative and significant at 1% in all models, suggesting that the results are unchanged.

3.2.2 Matching methodologies. Our baseline results may not capture the causal effect of regulatory intensity on firm strategic changes if the systematic differences between firms with

Table 2. Regulatory intensity and strategic change

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
REGIN_REG	−0.121***				−0.108***			
	(−10.626)				(−8.826)			
REGIN_RESP		−0.075***				−0.080***		
		(−7.811)				(−6.838)		
REGIN_TIME			−0.077***				−0.076***	
			(−8.725)				(−7.346)	
REGIN_DOLLAR				−0.035***				−0.033***
				(−5.215)				(−4.841)
SIZE	−0.008	−0.003	−0.002	0.005	−0.014	−0.008	−0.007	−0.006
	(−0.521)	(−0.224)	(−0.142)	(0.317)	(−0.763)	(−0.435)	(−0.413)	(−0.319)
AGE	−0.108***	−0.118***	−0.119***	−0.152***	−0.142***	−0.156***	−0.154***	−0.162***
	(−6.245)	(−6.861)	(−6.878)	(−6.916)	(−6.100)	(−6.739)	(−6.644)	(−6.881)
ROA	−0.321***	−0.326***	−0.326***	−0.327***	−0.309***	−0.314***	−0.314***	−0.319***
	(−22.536)	(−22.513)	(−22.605)	(−20.395)	(−18.666)	(−18.692)	(−18.792)	(−18.775)
RETURN	0.026***	0.027***	0.027***	0.021***	0.018***	0.019***	0.019***	0.019***
	(5.474)	(5.672)	(5.633)	(3.989)	(3.487)	(3.523)	(3.534)	(3.510)
INDCONC	0.006**	0.008***	0.008***	0.011***	0.010***	0.012***	0.011***	0.011***
	(2.099)	(2.616)	(2.736)	(3.564)	(3.232)	(3.804)	(3.766)	(3.607)
CEOTURN					0.003	0.002	0.002	0.002
					(0.706)	(0.525)	(0.557)	(0.363)
CEODUALITY					−0.001	−0.002	−0.001	−0.001
					(−0.103)	(−0.197)	(−0.168)	(−0.142)
BOARDSIZE					0.031***	0.032***	0.031***	0.033***
					(3.166)	(3.317)	(3.179)	(3.393)
Constant	0.710***	0.375***	0.405***	0.341***	0.623***	0.304***	0.338***	0.360***
	(14.151)	(11.461)	(12.195)	(8.410)	(4.990)	(2.611)	(2.896)	(8.163)
Observations	78,523	78,523	78,523	64,378	61,090	61,090	61,090	60,021
Adj. *R*-squared	0.523	0.519	0.519	0.533	0.550	0.547	0.547	0.545
Year fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Clustered std err by firm	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Note(s): This table presents the baseline results of the association between regulatory intensity and strategic change. The dependent variable is STRG, defined as the average of the absolute values of the annual changes in six strategic variables, including R&D intensity, advertising intensity, plant and equipment newness, selling, general and administrative expenses, inventory levels and debt-to-equity ratio. REGIN_REG is the number of active paperwork regulations. REGIN_RESP is the total number of responses received ("how much paperwork"). REGIN_TIME is the total hours spent by a firm to comply with paperwork regulations, including the time it takes to collect the information, read the instructions and file the paperwork. REGIN_DOLLAR is the total dollars spent by a firm for compliance. We obtain regulatory intensity data from https://sites.google.com/view/jkalmenovitz. Refer to Appendix A for detailed variable definitions. We winsorize all continuous variables at the upper and lower 1% of the sample distribution. ***, ** and * indicate significance at the 1%, 5% and 10% levels, respectively

higher and lower regulatory intensity drive the observed relation in the baseline regression. To address this issue, we employ the PSM (Rosenbaum & Rubin, 1983) and EB (Canil *et al.*, 2019) approaches.

We use the top quartile of the sample distribution as the cutoff to define firms with higher and lower levels of regulatory intensity per proxy. Specifically, we create an indicator variable equal to one for firm-year observations in the 4th quartile of the sample distribution of REGIN_REG/REGIN_RESP/REGIN_TIME/REGIN_DOLLAR (treated firms) and zero otherwise (control firms). In the first stage of the PSM, we employ logistic regression to predict the likelihood of a firm being a treated firm (propensity score) using the same set of control variables with and without controlling for corporate governance. We then matched each treated firm with a control firm using the closest propensity score. Panel A of Table 5 displays the logistic regression results using pre-matched and post-matched samples. The control variables are largely insignificant and the models have very small predictive power post-match, suggesting that differences between firms with higher and lower levels of regulatory intensity are minimized. In Panel B of Table 5, we revisit our baseline models using

Table 3. Industry-adjusted strategic change

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
REGIN_REG	−0.120***				−0.107***			
	(−10.666)				(−8.832)			
REGIN_RESP		−0.076***				−0.082***		
		(−7.912)				(−7.032)		
REGIN_TIME			−0.077***				−0.077***	
			(−8.754)				(−7.418)	
REGIN_DOLLAR				−0.033***				−0.031***
				(−4.879)				(−4.485)
SIZE	−0.002	0.002	0.004	0.008	−0.011	−0.005	−0.005	−0.003
	(−0.134)	(0.167)	(0.249)	(0.485)	(−0.631)	(−0.297)	(−0.276)	(−0.196)
AGE	−0.099***	−0.110***	−0.110***	−0.135***	−0.124***	−0.138***	−0.136***	−0.144***
	(−5.749)	(−6.355)	(−6.374)	(−6.153)	(−5.374)	(−6.004)	(−5.911)	(−6.128)
ROA	−0.306***	−0.311***	−0.312***	−0.312***	−0.294***	−0.298***	−0.299***	−0.303***
	(−21.682)	(−21.670)	(−21.761)	(−19.585)	(−17.871)	(−17.895)	(−17.994)	(−17.972)
RETURN	0.032***	0.033***	0.033***	0.028***	0.025***	0.026***	0.026***	0.026***
	(6.884)	(7.057)	(7.022)	(5.298)	(4.861)	(4.873)	(4.887)	(4.843)
INDCONC	0.006**	0.007***	0.008***	0.010***	0.009***	0.011***	0.011***	0.010***
	(2.071)	(2.595)	(2.710)	(3.217)	(3.022)	(3.596)	(3.551)	(3.417)
CEOTURN					0.001	0.000	0.001	−0.000
					(0.275)	(0.098)	(0.127)	(−0.089)
CEODUALITY					0.004	0.003	0.004	0.004
					(0.521)	(0.425)	(0.455)	(0.461)
BOARDSIZE					0.030***	0.032***	0.030***	0.032***
					(3.140)	(3.297)	(3.155)	(3.361)
Constant	0.730***	0.389***	0.420***	0.337***	0.624***	0.301***	0.335***	0.356***
	(14.232)	(11.521)	(12.231)	(8.023)	(5.019)	(2.618)	(2.890)	(7.795)
Observations	78,523	78,523	78,523	64,378	61,090	61,090	61,090	60,021
Adj. *R*-squared	0.515	0.511	0.512	0.526	0.543	0.540	0.541	0.538
Year fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Clustered std err by firm	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Note(s): This table presents the results of tests on the association between regulatory intensity and Industry-adjusted STRG. We construct Industry-adjusted STRG in the same way as STRG by using industry median adjusted values of strategic variables (R&D intensity, advertising intensity, plant and equipment newness, selling, general, and administrative expenses, inventory levels, and debt-to-equity ratio). Refer to Appendix A for detailed variable definitions. We winsorize all continuous variablesat the upper and lower 1% of the sample distribution. ***, ** and * indicate significance at the 1%, 5% and 10% levels, respectively.

the matched sample and find that the results are qualitatively similar to those from the baseline analyses.

In Table 6, we implement the EB approach. The EB approach minimizes the differences between the treated and control firms by continuously adjusting the distributional moments of the observations in the control sample. This approach allows less discretion in selecting matching criteria and retains all observations, leading to enhanced testing power and more generalized results (Canil *et al.*, 2019; Davidson, Ngo, & Wang, 2025). We define the treated and control firms as those in the PSM approach.

In Panel A, we compare the mean and variance of the control variables between the treated and control samples. Std.Diff. is the mean difference of a control variable between the treated and the control samples divided by the standard deviation of the control variable in the treated sample. Var.Ratio is the variance of a control variable in the treated sample divided by the variance of its corresponding control variable in the control sample. Panel A shows that Stdz.Diff is 0 and Var.Ratio is 1 for all variables across all models, suggesting well-matched distributional moments. In Panel B, we report the results from the weighted least squared regressions of STRG using the EB balanced sample. The results echo those in the baseline

Table 4. Alternative measures of regulatory intensity

Variables	(1)	(2)	(3)	(4)
REGIN_COMP3	−0.106***		−0.101***	
	(−9.756)		(−8.208)	
REGIN_COMP4		−0.100***		−0.096***
		(−8.580)		(−7.892)
SIZE	−0.003	0.005	−0.009	−0.007
	(−0.222)	(0.290)	(−0.509)	(−0.380)
AGE	−0.114***	−0.143***	−0.150***	−0.154***
	(−6.607)	(−6.530)	(−6.463)	(−6.519)
ROA	−0.324***	−0.322***	−0.312***	−0.315***
	(−22.561)	(−20.289)	(−18.707)	(−18.676)
RETURN	0.026***	0.020***	0.018***	0.018***
	(5.546)	(3.853)	(3.483)	(3.411)
INDCONC	0.008***	0.011***	0.011***	0.011***
	(2.680)	(3.637)	(3.657)	(3.624)
CEOTURN			0.003	0.002
			(0.623)	(0.525)
CEODUALITY			−0.001	−0.002
			(−0.171)	(−0.191)
BOARDSIZE			0.031***	0.032***
			(3.207)	(3.313)
Constant	0.162***	0.211***	0.074	0.234***
	(5.439)	(5.187)	(0.642)	(5.235)
Observations	78,523	64,378	61,090	60,021
Adj. *R*-squared	0.521	0.536	0.548	0.548
Year fixed effect	Yes	Yes	Yes	Yes
Firm fixed effect	Yes	Yes	Yes	Yes
Clustered std err by firm	Yes	Yes	Yes	Yes

Note(s): This table presents the results of tests on the association between regulatory intensity and strategic change using composite measures for regulatory intensity. REGIN_COMP3 is the composite proxy generated from Principal Components Analysis (PCA) using REGIN_REG, REGIN_RESP, and REGIN_TIME with an eigenvalue above one. REGIN_COMP4 is the composite proxy generated from Principal Components Analysis (PCA) using all four regulatory intensity measures with an eigenvalue above one. Refer to Appendix A for detailed variable definitions. We winsorize all continuous variables at the upper and lower 1% of the sample distribution. ***, ** and * indicate significance at the 1%, 5% and 10% levels, respectively.

regressions, confirming that regulatory intensity significantly hinders strategic changes in corporate America.

3.2.3 Instrument variable approach. We employ the instrumental variable approach to further mitigate endogeneity due to simultaneity and reverse causality (Wooldridge, 2002). Table 7 displays the results. We use the median values of the regulatory intensity proxies for firms in the same state and the median values of the regulatory intensity proxies for firms in the same industry (defined using the three-digit SIC codes) as the focal firm, excluding the focal firm itself, as instrumental variables. Regulations may be geographically clustered, leading to positive associations between a focal firm's regulatory intensity and those of nearby firms. In addition, the focal firm and its peer firms in the same industry may be subject to similar regulatory compliance requirements, resulting in a positive association between their regulatory intensity. Meanwhile, no theory clearly predicts the relationship between focal firms' strategic decisions and those of their peers. In other words, both variables satisfy the two conditions of an instrumental variable (relevance and exclusion).

In the first stage, we regress STRG on these two instrumental variables and the same set of control variables as those in the baseline models and report the results in Panel A. Both instrumental variables are positively related to STRG, consistent with our prediction. We

Table 5. Propensity score matching

Panel A – Logistic Regressions

	(1) REGIN_REG	(2)	(3) REGIN_RESP	(4)	(5) REGIN_TIME	(6)	(7) REGIN_DOLLAR	(8)
Variables	Pre-match	Post-match	Pre-match	Post-match	Pre-match	Post-match	Pre-match	Post-match
Without controlling for corporate governance								
SIZE	−0.071*	0.019	−0.017	0.002	0.025	0.028	0.136***	−0.008
	(−1.86)	(0.52)	(−0.53)	(0.07)	(0.75)	(0.85)	(4.28)	(−0.26)
AGE	0.097***	−0.020	−0.058*	−0.037	−0.007	−0.002	−0.080***	0.007
	(2.65)	(−0.59)	(−1.83)	(−1.21)	(−0.22)	(−0.05)	(−2.69)	(0.24)
ROA	0.131***	0.004	0.035	0.001	−0.018	0.016	−0.013	−0.032
	(3.20)	(0.12)	(1.11)	(0.04)	(−0.58)	(0.50)	(−0.39)	(−1.01)
RETURN	−0.051**	−0.013	0.001	0.001	−0.049**	0.023	−0.044*	0.003
	(−2.41)	(−0.62)	(0.03)	(0.06)	(−2.37)	(1.05)	(−1.91)	(0.12)
INDCONC	0.143***	−0.003	0.278***	−0.015	0.316***	−0.040*	0.128***	−0.013
	(6.53)	(−0.11)	(12.22)	(−0.67)	(13.81)	(−1.72)	(5.41)	(−0.53)
Constant	−0.953***	0.168	−1.430***	0.088	−1.681***	−0.041	−0.975***	0.194
	(−4.12)	(0.64)	(−7.25)	(0.37)	(−8.05)	(−0.16)	(−6.00)	(0.90)
Observations	78,441	38,452	78,422	38,635	78,410	38,904	64,303	31,721
Pseudo R2	0.0888	0.00280	0.0487	0.00377	0.0523	0.00457	0.0471	0.00415
Year fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Clustered std err by firm	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Controlling for corporate governance								
SIZE	−0.175***	−0.022	−0.039	0.021	0.003	0.002	0.139***	−0.012
	(−4.01)	(−0.55)	(−1.01)	(0.55)	(0.08)	(0.06)	(4.01)	(−0.36)
AGE	0.129***	−0.015	−0.066*	−0.004	0.007	−0.016	−0.098***	−0.005
	(3.17)	(−0.38)	(−1.83)	(−0.13)	(0.19)	(−0.44)	(−3.17)	(−0.15)
ROA	0.198***	−0.013	0.047	0.005	0.021	0.020	−0.007	0.005
	(4.10)	(−0.35)	(1.34)	(0.14)	(0.62)	(0.57)	(−0.21)	(0.14)
RETURN	−0.041*	0.002	−0.004	−0.006	−0.096***	−0.000	−0.036	0.005
	(−1.71)	(0.07)	(−0.16)	(−0.24)	(−3.87)	(−0.01)	(−1.52)	(0.19)
INDCONC	0.079***	−0.036	0.176***	−0.019	0.182***	−0.041	0.126***	−0.002
	(3.20)	(−1.46)	(6.82)	(−0.75)	(7.31)	(−1.60)	(5.13)	(−0.07)
CEOTURN	0.032	−0.011	−0.010	0.013	0.038	−0.001	0.025	0.008
	(1.03)	(−0.37)	(−0.36)	(0.44)	(1.38)	(−0.03)	(0.96)	(0.32)
CEODUALITY	0.011	0.004	−0.026	0.004	0.008	0.000	0.036	0.010
	(0.31)	(0.11)	(−0.79)	(0.12)	(0.25)	(0.00)	(1.21)	(0.33)
BOARDSIZE	−0.025	−0.022	0.031	0.004	−0.136**	0.024	0.028	0.015
	(−0.35)	(−0.32)	(0.49)	(0.06)	(−2.12)	(0.38)	(0.58)	(0.27)
Constant	−1.840**	−0.731	−2.642***	−0.169	−4.354***	0.500	−1.148***	−0.113
	(−2.41)	(−1.01)	(−3.68)	(−0.21)	(−3.70)	(0.39)	(−5.86)	(−0.52)
Observations	61,000	29,718	60,719	29,219	60,955	30,196	59,955	29,552
Pseudo R2	0.105	0.00442	0.0894	0.00673	0.0703	0.00478	0.0491	0.00453
Year fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Clustered std err by firm	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Panel B – Stage 2 – Regressions of STRG

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
REGIN_REG	−0.092***				−0.085***			
	(−8.615)				(−7.408)			
REGIN_RESP		−0.057***				−0.067***		
		(−6.468)				(−5.958)		
REGIN_TIME			−0.059***				−0.062***	
			(−7.264)				(−6.267)	
REGIN_DOLLAR				−0.022***				−0.022***
				(−3.104)				(−3.054)
SIZE	−0.036**	0.001	0.000	−0.012	−0.046**	−0.009	−0.009	−0.026

(*continued*)

Table 5. Continued

Panel B – Stage 2 – Regressions of STRG Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	(−2.275)	(0.084)	(0.014)	(−0.667)	(−2.357)	(−0.465)	(−0.491)	(−1.406)
AGE	−0.103***	−0.117***	−0.121***	−0.147***	−0.126***	−0.144***	−0.141***	−0.161***
	(−5.976)	(−6.372)	(−6.643)	(−6.181)	(−5.683)	(−5.738)	(−5.809)	(−6.611)
ROA	−0.279***	−0.328***	−0.322***	−0.309***	−0.267***	−0.321***	−0.316***	−0.297***
	(−18.661)	(−20.918)	(−20.544)	(−17.047)	(−14.774)	(−17.237)	(−16.820)	(−16.524)
RETURN	0.021***	0.025***	0.023***	0.014**	0.012**	0.018***	0.017***	0.012**
	(4.062)	(4.691)	(4.343)	(2.345)	(2.134)	(2.933)	(2.797)	(2.086)
INDCONC	0.009**	0.006*	0.008**	0.014***	0.014***	0.011***	0.012***	0.012***
	(2.361)	(1.887)	(2.307)	(3.473)	(3.525)	(3.065)	(3.642)	(3.283)
CEOTURN					0.005	0.001	0.003	0.003
					(1.149)	(0.294)	(0.591)	(0.595)
CEODUALITY					−0.003	−0.004	−0.003	−0.001
					(−0.398)	(−0.461)	(−0.359)	(−0.133)
BOARDSIZE					0.026**	0.036***	0.035***	0.031***
					(2.560)	(3.176)	(3.340)	(2.791)
Constant	0.522***	0.352***	0.369***	0.327***	0.359**	0.307**	0.257*	0.347***
	(11.961)	(10.220)	(10.773)	(7.481)	(2.486)	(2.278)	(1.856)	(7.916)
Observations	38,452	38,635	38,904	31,721	29,718	29,219	30,196	29,552
Adj. R-squared	0.492	0.539	0.539	0.546	0.515	0.567	0.568	0.547
Year fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Clustered std err by firm	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Note(s): This table presents the results of the propensity score matching approach. We create an indicator variable equal to one for firms with higher levels of regulatory intensity (treated firms) if they belong to the 4th quartile of the sample distribution of REGIN_REG/REGIN_RESP/REGIN_TIME/REGIN_DOLLAR and zero otherwise (control firms). In the first stage, we employ logistic regression to predict the propensity score using the same set of control variables with and without the control for corporate governance. Panel A displays the results. We revisit our baseline regressions using the matched sample in the second stage. Panel B displays the results. Refer to Appendix A for detailed variable definitions. We winsorize all continuous variables at the upper and lower 1% of the sample distribution. ***, ** and * indicate significance at the 1%, 5% and 10% levels, respectively

replace STRG with their instrumented values and rerun the baseline models. Panel B reports the results. The conclusions are unchanged. Strategic change decreases with heightened regulatory intensity.

3.2.4 Controlling for industry-year fixed effects. Following Kalmenovitz (2023) and James *et al.*, 2025, we control for the industry-year fixed effects (we define industries with the three-digit SIC codes) to detangle the within-firm variations over time from those of industry-specific trends in regulatory intensity. Table 8 reports the results. The coefficients on all regulatory intensity measures were negative and significant, consistent with those from the baseline regressions.

3.3 Component strategic changes

In Table 9, we examine the impact of regulatory intensity on strategic change in the six components separately. Panels A, B, C, D, E and F present results for R&D intensity, advertising intensity, plant and equipment newness, non-production overhead, inventory levels and debt-to-equity ratio as the dependent variables, respectively. We construct strategic change in each component as the absolute value of the annual change of the corresponding variable. The results show a significantly negative effect of regulatory intensity on strategic change in all strategy components but the debt-to-equity ratio. The coefficients on REGIN_REG and REGIN_TIME are positive and significant at the 5% level or higher when the change in the debt-to-equity ratio is used. Collectively, the results in Table 9 suggest that higher regulation compliance costs impede firms from strategically changing the way they allocate resources to operating and investing decisions, but induce more changes in capital structure.

Table 6. Entropy balancing

Panel A – Comparison between treated firms and control firms after entropy balancing

Model (1)	Treated (N = 19,621)		Control (N = 58,902)			
	Mean	Var	Mean	Var	Stdz.Diff.	Var. Ratio
SIZE	5.403	5.235	5.403	5.235	0.000	1.000
AGE	2.683	0.534	2.683	0.534	0.000	1.000
ROA	0.078	0.044	0.078	0.044	0.000	1.000
RETURN	0.318	1.393	0.318	1.393	0.000	1.000
INDCONC	0.021	0.019	0.021	0.019	0.000	1.000
Model (2)	Treated (N = 19,621)		Control (N = 58,902)			
	Mean	Var	Mean	Var	Stdz.Diff.	Var. Ratio
SIZE	5.395	5.560	5.395	5.560	0.000	1.000
AGE	2.638	0.550	2.638	0.550	0.000	1.000
ROA	0.051	0.062	0.051	0.062	0.000	1.000
RETURN	0.351	1.645	0.351	1.645	0.000	1.000
INDCONC	0.026	0.018	0.026	0.018	0.000	1.000
Model (3)	Treated (N = 19,621)		Control (N = 58,902)			
	Mean	Var	Mean	Var	Stdz.Diff.	Var. Ratio
SIZE	5.417	5.413	5.417	5.413	0.000	1.000
AGE	2.678	0.554	2.678	0.554	0.000	1.000
ROA	0.055	0.058	0.055	0.058	0.000	1.000
RETURN	0.323	1.430	0.323	1.430	0.000	1.000
INDCONC	0.025	0.019	0.025	0.019	0.000	1.000
Model (4)	Treated (N = 19,621)		Control (N = 58,902)			
	Mean	Var	Mean	Var	Stdz.Diff.	Var. Ratio
SIZE	5.644	5.731	5.644	5.732	0.000	1.000
AGE	2.701	0.548	2.700	0.548	0.001	1.000
ROA	0.055	0.056	0.055	0.056	0.000	1.000
RETURN	0.323	1.588	0.323	1.588	0.000	1.000
INDCONC	0.005	0.014	0.005	0.014	0.000	1.000
Model (5)	Treated (N = 15,181)		Control (N = 45,909)			
	Mean	Var	Mean	Var	Stdz.Diff.	Var. Ratio
SIZE	5.545	5.401	5.545	5.401	0.000	1.000
AGE	2.728	0.496	2.728	0.496	0.000	1.000
ROA	0.074	0.044	0.074	0.044	0.000	1.000
RETURN	0.302	1.358	0.302	1.358	0.000	1.000
INDCONC	0.003	0.015	0.003	0.015	0.000	1.000
CEOTURN	0.135	0.117	0.135	0.117	0.000	1.000
CEODUALITY	0.588	0.242	0.588	0.242	0.000	1.000
BOARDSIZE	1.417	0.746	1.417	0.746	0.000	1.000
Model (6)	Treated (N = 15,181)		Control (N = 45,909)			
	Mean	Var	Mean	Var	Stdz.Diff.	Var. Ratio
SIZE	5.580	5.699	5.580	5.701	0.000	1.000
AGE	2.685	0.519	2.685	0.520	0.000	0.998
ROA	0.038	0.067	0.038	0.067	0.000	1.000
RETURN	0.345	1.698	0.345	1.697	0.000	1.001
INDCONC	0.007	0.015	0.007	0.015	0.000	1.000
CEOTURN	0.135	0.117	0.135	0.117	0.000	1.000
CEODUALITY	0.566	0.246	0.566	0.246	0.000	1.000
BOARDSIZE	1.421	0.759	1.421	0.759	0.000	1.000
Model (7)	Treated (N = 15,200)		Control (N = 45,890)			
	Mean	Var	Mean	Var	Stdz.Diff.	Var. Ratio
SIZE	5.571	5.574	5.571	5.574	0.000	1.000
AGE	2.739	0.514	2.739	0.514	0.000	1.000
ROA	0.044	0.063	0.044	0.063	0.000	1.000
RETURN	0.297	1.387	0.297	1.387	0.000	1.000
INDCONC	0.006	0.015	0.006	0.015	0.000	1.000
CEOTURN	0.136	0.118	0.136	0.118	0.000	1.000
CEODUALITY	0.574	0.245	0.574	0.245	0.000	1.000
BOARDSIZE	1.408	0.765	1.408	0.765	0.000	1.000
Model (8)	Treated (N = 14,960)		Control (N = 46,130)			
	Mean	Var	Mean	Var	Stdz.Diff.	Var. Ratio
SIZE	5.706	5.525	5.706	5.525	0.000	1.000
AGE	2.714	0.544	2.714	0.544	0.000	1.000

(*continued*)

Table 6. Continued

Panel A – Comparison between treated firms and control firms after entropy balancing

ROA	0.056	0.055	0.056	0.055	0.000	1.000
RETURN	0.325	1.592	0.325	1.592	0.000	1.000
INDCONC	0.003	0.014	0.003	0.014	0.000	1.000
CEOTURN	0.138	0.119	0.138	0.119	0.000	1.000
CEODUALITY	0.589	0.242	0.589	0.242	0.000	1.000
BOARDSIZE	1.445	0.755	1.445	0.755	0.000	1.000

Panel B – Weighted least squared regressions of STRG

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
REGIN_REG	−0.092***				−0.085***			
	(−8.615)				(−7.408)			
REGIN_RESP		−0.057***				−0.067***		
		(−6.468)				(−5.958)		
REGIN_TIME			−0.059***				−0.062***	
			(−7.264)				(−6.267)	
REGIN_DOLLAR				−0.022***				−0.022***
				(−3.104)				(−3.054)
SIZE	−0.036**	0.001	0.000	−0.012	−0.046**	−0.009	−0.009	−0.026
	(−2.275)	(0.084)	(0.014)	(−0.667)	(−2.357)	(−0.465)	(−0.491)	(−1.406)
AGE	−0.103***	−0.117***	−0.121***	−0.147***	−0.126***	−0.144***	−0.141***	−0.161***
	(−5.976)	(−6.372)	(−6.643)	(−6.181)	(−5.683)	(−5.738)	(−5.809)	(−6.611)
ROA	−0.279***	−0.328***	−0.322***	−0.309***	−0.267***	−0.321***	−0.316***	−0.297***
	(−18.661)	(−20.918)	(−20.544)	(−17.047)	(−14.774)	(−17.237)	(−16.820)	(−16.524)
RETURN	0.021***	0.025***	0.023***	0.014**	0.012**	0.018***	0.017***	0.012**
	(4.062)	(4.691)	(4.343)	(2.345)	(2.134)	(2.933)	(2.797)	(2.086)
INDCONC	0.009**	0.006*	0.008**	0.014***	0.014***	0.011***	0.012***	0.012***
	(2.361)	(1.887)	(2.307)	(3.473)	(3.525)	(3.065)	(3.642)	(3.283)
CEOTURN					0.005	0.001	0.003	0.003
					(1.149)	(0.294)	(0.591)	(0.595)
CEODUALITY					−0.003	−0.004	−0.003	−0.001
					(−0.398)	(−0.461)	(−0.359)	(−0.133)
BOARDSIZE					0.026**	0.036***	0.035***	0.031***
					(2.560)	(3.176)	(3.340)	(2.791)
Constant	0.522***	0.352***	0.369***	0.327***	0.359**	0.307**	0.257*	0.347***
	(11.961)	(10.220)	(10.773)	(7.481)	(2.486)	(2.278)	(1.856)	(7.916)
Observations	78,523	78,523	78,523	64,378	61,090	61,090	61,090	60,021
Adj. *R*-squared	0.492	0.539	0.539	0.546	0.515	0.567	0.568	0.547
Year fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Clustered std err by firm	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Note(s): This table presents the results of the Entropy balancing approach. We use the 4th quartile of the sample distribution of REGIN_REG/REGIN_RESP/EGIN_TIME/REGIN_DOLLAR to define firms with higher levels of regulatory intensity (treated firms) and lower levels of regulatory intensity (control firms). Panel A compares the distributional moments for the control variables after balancing the treated and control firms. Model numbers indicate which baseline model is used. *Std.Diff.* is the difference in the mean values of the control variables between the treated and the control samples, standardized by the standard deviations of the corresponding variables of the treated sample. *Var. Ratio* is the ratio of variance in the treated sample to the variance in the control sample. Panel B shows the regression results using the Entropy-balanced sample. Refer to Appendix A for detailed variable definitions. We winsorize all continuous variables at the upper and lower 1% of the sample distribution. ***, ** and * indicate significance at the 1%, 5% and 10% levels, respectively

4. Conclusion and discussions

We examine the impact of regulatory intensity on corporate strategic change in US firms. We use the average of the standardized absolute values of annual changes in the six strategic variables to measure the extent of strategic change. We employ the four firm-level regulatory intensity measures developed by Kalmenovitz (2023) based on regulations relevant to a firm to measure the number of active regulations and their estimated compliance costs, including the

Table 7. Instrument variable approach

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A – Stage 1								
IND_REGIN_	0.875***				0.874***			
REG	(76.30)				(69.79)			
STATE_	0.082***				0.081***			
REGIN_REG	(3.30)				(2.86)			
IND_REGIN_		0.926***				0.940***		
RESP		(100.20)				(109.03)		
STATE_		0.066***				0.070***		
REGIN_RESP		(2.59)				(3.20)		
IND_TIME			0.930***				0.943***	
			(92.70)				(97.91)	
STATE_TIME			0.079***				0.072***	
			(3.21)				(2.93)	
IND_DOLLAR				0.949***				0.954***
				(102.32)				(101.99)
STATE_				0.038*				0.038*
DOLLAR				(1.92)				(1.84)
SIZE	0.081*	0.127*	0.217***	0.155*	0.088	0.123*	0.163**	0.178*
	(1.83)	(1.73)	(3.21)	(1.68)	(1.59)	(1.67)	(2.25)	(1.81)
AGE	0.353**	−0.586*	−0.574*	−1.161**	0.460**	−0.703**	−0.547*	−1.217**
	(2.00)	(−1.65)	(−1.82)	(−2.56)	(2.22)	(−2.06)	(−1.70)	(−2.54)
ROA	2.950***	3.228***	2.887***	2.328***	3.106***	3.573***	3.152***	2.320***
	(7.57)	(6.09)	(5.90)	(3.57)	(6.75)	(6.40)	(5.98)	(3.63)
RETURN	−0.180***	−0.169***	−0.197***	−0.150***	−0.140***	−0.130***	−0.154***	−0.136**
	(−4.83)	(−3.72)	(−4.61)	(−2.72)	(−3.37)	(−2.76)	(−3.35)	(−2.46)
INDCONC	−0.224	0.136	−0.060	−0.567	−0.353	−0.179	−0.126	−0.632
	(−1.03)	(0.36)	(−0.17)	(−1.08)	(−1.50)	(−0.58)	(−0.40)	(−1.17)
CEOTURN					0.266***	0.345***	0.228*	0.120
					(2.84)	(2.70)	(1.91)	(0.70)
CEODUALITY					0.053	−0.082	−0.108	0.342
					(0.44)	(−0.46)	(−0.67)	(1.40)
BOARDSIZE					−0.094	−0.073	−0.068	−0.131
					(−0.87)	(−0.50)	(−0.50)	(−0.67)
Constant	2.784	1.510	−0.610	3.421	2.798	0.219	−0.825	3.030
	(1.09)	(0.57)	(−0.23)	(1.42)	(0.94)	(0.09)	(−0.31)	(1.19)
Observations	77,356	77,356	77,356	63,013	59,993	59,993	59,993	58,784
Adj. *R*−squared	0.721	0.816	0.785	0.794	0.689	0.858	0.812	0.799
F-statistics	915.4	1,544	1,311	1,690	560.8	1,404	1,043	1,199
Year fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Clustered std err by firm	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Panel B – Stage 2								
REGIN_REG	−0.001**				−0.001**			
	(−2.99)				(−2.12)			
REGIN_RESP		−0.001**				−0.001**		
		(−2.09)				(−2.11)		
REGIN_TIME			−0.000*				−0.000*	
			(−1.81)				(−1.87)	
REGIN_				−0.000*				−0.000**
DOLLAR				(−1.93)				(−2.25)
SIZE	−0.001	−0.000	−0.000	0.002	−0.001	−0.001	−0.001	−0.001
	(−0.39)	(−0.25)	(−0.29)	(0.86)	(−0.74)	(−0.61)	(−0.64)	(−0.49)
AGE	−0.086***	−0.086***	−0.087***	−0.111***	−0.115***	−0.117***	−0.117***	−0.119***
	(−12.72)	(−12.80)	(−12.90)	(−13.06)	(−12.86)	(−13.06)	(−13.08)	(−13.13)
ROA	−0.719***	−0.719***	−0.720***	−0.717***	−0.693***	−0.693***	−0.695***	−0.699***
	(−73.91)	(−74.04)	(−74.33)	(−65.91)	(−61.15)	(−61.31)	(−61.61)	(−61.50)
RETURN	0.011***	0.011***	0.012***	0.009***	0.008***	0.008***	0.008***	0.008***
	(9.77)	(9.77)	(9.82)	(6.77)	(6.04)	(6.01)	(6.07)	(5.97)
INDCONC	0.023*	0.024**	0.024**	0.047***	0.049***	0.051***	0.051***	0.051***
	(1.89)	(2.04)	(1.97)	(3.31)	(3.40)	(3.53)	(3.49)	(3.47)

(*continued*)

Table 7. Continued

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
CEOTURN					0.002	0.002	0.002	0.001
					(0.34)	(0.32)	(0.30)	(0.18)
CEODUALITY					−0.001	−0.002	−0.001	−0.002
					(−0.24)	(−0.29)	(−0.26)	(−0.30)
BOARDSIZE					0.019***	0.020***	0.019***	0.020***
					(4.39)	(4.43)	(4.40)	(4.52)
Observations	77,356	77,356	77,356	63,013	59,993	59,993	59,993	58,784
R-squared	0.083	0.082	0.082	0.079	0.078	0.077	0.076	0.076
F-statistics	1,025	1,025	1,024	808.1	486.3	485.9	485.1	482.1
Sargan *p*-value	0.969	0.9775	0.407	0.506	0.818	0.7692	0.524	0.416
Sargan stats	0.002	0.001	0.687	0.442	0.053	0.086	0.406	0.661
Kleibergen-Paap rk Wald F statistic	15000.00	6945.04	34000.00	51000.00	12000.00	6297.47	32000.00	5406.31
Year fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Clustered std err by firm	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Note(s): This table presents the results of the instrumental variable regression. In the first stage, we instrument regulatory intensity proxies with the median values of the regulatory intensity proxies for firms in the same state and the median values of the regulatory intensity proxies for firms in the same industry (defined using the three-digit SIC codes) as the focal firm, excluding the focal firm itself, as two instrumental variables. Panel A displays the results. In the second stage, we replace regulatory intensity proxies with their predicted values from the first stage. Panel B displays the results. Refer to Appendix A for detailed variable definitions. We winsorize all continuous variables at the upper and lower 1% of the sample distribution. ***, ** and * indicate significance at the 1%, 5% and 10% levels, respectively

number of responses, total hours spent on compliance and dollars spent to comply. In the robustness tests, we use two regulatory intensity composite measures constructed from PCA using the above component variables.

We find that firm-level regulatory intensity decreases the extent of overall strategic changes. Strategic change component analyses show that the negative association between the two is mainly driven by resource allocation-related strategic changes such as changes in R&D intensity, advertising intensity, fixed assets investment, non-production overhead and inventory levels. The results are robust to various model specifications, including the PSM, EB and instrumental variable approaches, and the inclusion of industry-year fixed effects. The results are consistent with the view that managers are more cautious and conservative in the presence of higher regulatory compliance costs. Increased regulatory intensity can impede corporate strategic changes needed in a timely manner, which may negatively affect various stakeholders, especially shareholders, given their residual claimant status. We also document some evidence that increased firm-level regulatory intensity is associated with more adjustments in corporate capital structure, suggesting that firms make attempts to reduce their financing costs while shying away from dramatic changes in their operating and investing activities.

A key limitation of text-based measures of regulatory intensity is that they may not capture the real regulatory burden faced by firms. For example, Kalmenovitz (2023) found that the aggregate measures of regulatory intensity are positively correlated with the number of regulatory words but negatively correlated with the percentage of restrictive words in the Code of Federal Regulations (CFR, the annual publication of all federal regulations). This finding illustrates that the proportion of restrictive language can decline even though the actual burden of compliance is increasing, suggesting potential measurement error in regulatory intensity developed with machine learning techniques, i.e. these measures may not correctly estimate the actual level of regulatory intensity and compliance costs. Researchers should interpret such measures with caution and recognize that the real compliance burden may extend beyond the

Table 8. Controlling for industry-year fixed effects

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
REGIN_REG	−0.181***				−0.161***			
	(−12.016)				(−9.857)			
REGIN_RESP		−0.164***				−0.206***		
		(−9.813)				(−8.957)		
REGIN_TIME			−0.159***				−0.179***	
			(−9.999)				(−8.874)	
REGIN_DOLLAR				−0.093***				−0.087***
				(−5.805)				(−5.067)
SIZE	−0.004	−0.006	−0.003	0.001	0.003	0.003	0.003	0.002
	(−0.240)	(−0.380)	(−0.226)	(0.085)	(0.813)	(0.782)	(0.681)	(0.486)
AGE	−0.125***	−0.131***	−0.132***	−0.154***	−0.001	−0.001	−0.002	−0.000
	(−6.745)	(−7.042)	(−7.114)	(−6.512)	(−0.064)	(−0.184)	(−0.196)	(−0.031)
ROA	−0.318***	−0.324***	−0.324***	−0.327***	0.030***	0.030***	0.030***	0.031***
	(−22.319)	(−22.599)	(−22.593)	(−20.293)	(3.094)	(3.132)	(3.146)	(3.239)
RETURN	0.024***	0.026***	0.026***	0.021***	−0.006	−0.008	−0.007	−0.010
	(5.137)	(5.517)	(5.415)	(3.875)	(−0.321)	(−0.407)	(−0.358)	(−0.522)
INDCONC	0.032	0.041	0.038	−0.000	−0.152***	−0.163***	−0.161***	−0.160***
	(1.239)	(1.565)	(1.457)	(−0.003)	(−6.027)	(−6.438)	(−6.376)	(−6.237)
CEOTURN					−0.309***	−0.313***	−0.313***	−0.320***
					(−18.354)	(−18.470)	(−18.531)	(−18.487)
CEODUALITY					0.017***	0.018***	0.018***	0.019***
					(3.191)	(3.367)	(3.316)	(3.539)
BOARDSIZE					−0.005	−0.000	−0.001	−0.002
					(−0.148)	(−0.004)	(−0.040)	(−0.075)
Constant	0.522***	0.352***	0.369***	0.327***	0.359**	0.307**	0.257*	0.347***
	(11.961)	(10.220)	(10.773)	(7.481)	(2.486)	(2.278)	(1.856)	(7.916)
Observations	78,523	78,523	78,523	64,378	61,090	61,090	61,090	60,021
Adj. *R*-squared	0.492	0.539	0.539	0.546	0.515	0.567	0.568	0.547
Year fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry-year fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Clustered std err by firm	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Note(s): This table presents the results of adding industry-year fixed effects in the baseline models. Refer to Appendix A for detailed variable definitions. We winsorize all continuous variables at the upper and lower 1% of the sample distribution. ***, ** and * indicate significance at the 1%, 5% and 10% levels, respectively

level inferred from written text alone. Kalmenovitz (2023) develops both aggregate and firm-level regulatory intensity measures using machine-learning techniques and administrative data similarly; hence, we assume similar measurement errors can occur in firm-level intensity measures as well. Nevertheless, Kalmenovitz (2023) shows that aggregate regulatory intensity measures are positively correlated with the size of the federal workforce and negatively correlated with Republican administrations, indicating that these measures indeed capture regulatory burden [9].

Our study focuses on compliance with US federal regulations, even though many American multinational corporations operate in multiple jurisdictions. Firms with foreign operations must also adjust to different regulatory systems, which can significantly shape their strategic responses. Because our work is limited to the US regulatory setting, it does not capture the broader compliance burden faced by multinational firms. In that sense, the measures of regulatory intensity used in this study represent only a portion of the overall compliance costs. Future studies could expand our work by incorporating cross-country data to assess how international regulatory exposure influences firms' strategic choices.

Additionally, the evidence we report may not extend to other economies or to extraordinary periods of regulatory upheaval such as the COVID-19 pandemic. While companies in many countries struggle to face changing compliance requirements, the level of regulatory pressure

Table 9. Components of strategic change

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A – R&D intensity								
REGIN_REG	−0.088***				−0.077***			
	(−6.366)				(−5.248)			
REGIN_RESP		−0.071***				−0.065***		
		(−6.477)				(−5.120)		
REGIN_TIME			−0.072***				−0.067***	
			(−7.482)				(−6.019)	
REGIN_DOLLAR				−0.025***				−0.021***
				(−3.458)				(−3.008)
Control variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	0.766***	0.359***	0.412***	0.253***	0.666***	0.256*	0.329**	0.296***
	(6.769)	(4.824)	(5.472)	(3.074)	(3.563)	(1.663)	(2.118)	(3.377)
Observations	78,523	78,523	78,523	64,378	61,090	61,090	61,090	60,021
Adj. *R*-squared	0.536	0.535	0.535	0.545	0.564	0.562	0.563	0.562
Year fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Clustered std err by firm	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Panel B – Advertising intensity								
REGIN_REG	−0.031***				−0.025**			
	(−3.107)				(−2.159)			
REGIN_RESP		−0.002				−0.004		
		(−0.272)				(−0.367)		
REGIN_TIME			−0.010				−0.014	
			(−1.290)				(−1.423)	
REGIN_DOLLAR				−0.007				−0.004
				(−0.921)				(−0.595)
Control variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	0.614***	0.404***	0.434***	0.227***	0.860***	0.689***	0.732***	0.258***
	(6.658)	(6.080)	(6.488)	(2.686)	(3.140)	(2.616)	(2.774)	(2.840)
Observations	78,523	78,523	78,523	64,378	61,090	61,090	61,090	60,021
Adj. *R*-squared	0.366	0.365	0.365	0.394	0.408	0.407	0.407	0.407
Year fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Clustered std err by firm	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Panel C – PPENTCHG								
REGIN_REG	−0.122***				−0.124***			
	(−11.250)				(−10.499)			
REGIN_RESP		−0.073***				−0.094***		
		(−8.174)				(−8.414)		
REGIN_TIME			−0.071***				−0.083***	
			(−8.271)				(−8.063)	
REGIN_DOLLAR				−0.043***				−0.042***
				(−6.296)				(−5.934)
Control variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	1.484***	0.839***	0.882***	0.877***	1.275***	0.604**	0.649**	0.863***
	(15.888)	(14.261)	(14.354)	(12.115)	(4.802)	(2.399)	(2.570)	(11.025)
Observations	78,168	78,168	78,168	64,084	60,847	60,847	60,847	59,788
Adj. *R*-squared	0.242	0.238	0.238	0.249	0.259	0.255	0.255	0.254
Year fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Clustered std err by firm	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Panel D – XSGACHG								
REGIN_REG	−0.089***				−0.089***			
	(−5.354)				(−5.354)			
REGIN_RESP		−0.064***				−0.064***		
		(−4.517)				(−4.517)		

(*continued*)

Table 9. Continued

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
REGIN_TIME			−0.065***				−0.065***	
			(−5.079)				(−5.079)	
REGIN_DOLLAR				−0.030***				−0.030***
				(−4.033)				(−4.033)
Control variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	0.659**	0.157	0.225	0.278***	0.659**	0.157	0.225	0.278***
	(2.504)	(0.681)	(0.964)	(2.828)	(2.504)	(0.681)	(0.964)	(2.828)
Observations	61,090	61,090	61,090	60,021	61,090	61,090	61,090	60,021
Adj. *R*-squared	0.483	0.481	0.482	0.481	0.483	0.481	0.482	0.481
Year fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Clustered std err by firm	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Panel E – Inventory levels								
REGIN_REG	−0.066***				−0.061***			
	(−5.528)				(−4.640)			
REGIN_RESP		−0.054***				−0.051***		
		(−5.474)				(−4.191)		
REGIN_TIME			−0.052***				−0.045***	
			(−5.921)				(−4.282)	
REGIN_DOLLAR				−0.019***				−0.019***
				(−3.077)				(−3.054)
Control variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	0.658***	0.370***	0.398***	0.256***	0.756***	0.464***	0.486***	0.276***
	(6.567)	(5.398)	(5.726)	(3.345)	(5.181)	(3.929)	(4.103)	(3.327)
Observations	78,523	78,523	78,523	64,378	61,090	61,090	61,090	60,021
Adj. *R*-squared	0.407	0.406	0.406	0.411	0.430	0.430	0.430	0.426
Year fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Clustered std err by firm	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Panel F – Debt/equity ratio								
REGIN_REG	0.019**				0.020***			
	(2.467)				(2.588)			
REGIN_RESP		0.014				0.017		
		(1.490)				(1.500)		
REGIN_TIME			0.020**				0.024**	
			(2.366)				(2.500)	
REGIN_DOLLAR				0.007				0.006
				(0.953)				(0.755)
Control variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	−0.053	0.036	0.003	0.172**	−0.443	−0.340	−0.388	0.194**
	(−0.685)	(0.542)	(0.044)	(2.071)	(−1.163)	(−0.899)	(−1.025)	(2.136)
Observations	78,523	78,523	78,523	64,378	61,090	61,090	61,090	60,021
Adj. *R*-squared	0.265	0.265	0.265	0.290	0.293	0.293	0.293	0.291
Year fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Clustered std err by firm	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Note(s): This table presents the results of the components of strategic change. Panels A, B, C, D, E and F present results for R&D intensity, advertising intensity, plant and equipment newness, selling, general and administrative expenses, inventory level and debt-to-equity ratio, respectively. We measure the component strategic changes as the absolute value of the annual percentage change of the corresponding variable. Refer to Appendix A for detailed variable definitions. We winsorize all continuous variables at the upper and lower 1% of the sample distribution. ***, ** and * indicate significance at the 1%, 5% and 10% levels, respectively

and its financial impact differ across regions. How firms adjust their strategies in response to new rules depends heavily on local factors, including laws, enforcement and market conditions, all of which vary significantly across economies.

The US business operating environment is distinctive. It combines strong regulatory oversight and high standards of corporate governance with political stability, moderate economic fluctuations and deep, liquid financial markets. Its relatively transparent and deliberate rulemaking process also gives firms more time to prepare for policy changes, helping them manage strategic transitions more smoothly. However, emerging markets tend to face greater political uncertainty, higher economic volatility and less developed financial systems. While such countries offer substantial growth potential, their weaker institutional structures can make it harder for firms to promptly adapt to regulatory changes.

Furthermore, firms in the developed economies and those in the emerging markets adopt different ownership structures, which may further complicate corporate strategic change. For example, many companies in China are state-owned enterprises with highly concentrated ownership and government intervention can play a significant role in shaping the business environment through regulations, subsidies and other forms of intervention (Onwuzulike, Ononiwu, & Shitu, 2024), thereby influencing firm strategic change. Even within developed and emerging markets, nuances exist among countries, as each has its own unique regulatory landscape and market features.

Finally, differences in legal environments affect financial markets and, in turn, corporate behavior. For example, common law countries tend to be more supportive of business activity, offering stronger investor protection and more developed capital markets than civil law countries (La Porta, Lopez-De-Silanes, Shleifer, & Vishny, 1997). Mclean, Zhang and Zhao (2012) found that in countries with strong investor safeguards, investment decisions are less dependent on internal cash flow because firms in need of cash can more easily access external capital markets, suggesting that investor protection influences how firms allocate resources. This finding helps explain the positive link observed in our study between regulatory intensity and changes in capital structure. As such, firms in different legal systems may approach strategic change differently. La Porta, Lopez-De-Silanes, Shleifer and Vishny (1998) indicate that companies in common law systems tend to emphasize shareholder value creation, whereas those in civil law systems are likely to be constrained by weaker governance practices. Additionally, enforcement adds another layer of complexity. Some countries may have well-designed laws but lack consistent enforcement, whereas wealthier nations generally implement and uphold regulations more effectively (La Porta *et al.*, 1997).

Proactive management of these challenges requires corporate managers to implement timely strategic change, and any delay might result in missed opportunities and a drop in performance. In practice, managers should closely monitor pending regulations to adapt to new requirements and identify growth opportunities quickly, regardless of where their firms operate, even when engagement is limited due to country-level institutional constraints.

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Notes

1. https://dictionary.cambridge.org/dictionary/english/strategic-change, accessed on 4/September/2025.
2. Please refer to Kalmenovitz (2023) for details of the construction of these measures.
3. https://sites.google.com/view/jkalmenovitz
4. The number of firm-year observations of REGIN_DOLLAR is less than the other three proxies. To avoid any missing information, we create two PCA measures from the first three proxies and all proxies separately.
5. See detailed definitions of the six strategic component variables in Section 2.1.1.

6. Regulatory intensity data is available till 2020. Our sample ends in 2019 because including 2020 in the sample may bias our results, given that firms had to adjust their policies anyway due to the outbreak of COVID-19.
7. Accessed on 22 December 2024.
8. The data on REGIN_DOLLAR is less complete than others. As such, the sample size is reduced when this variable is used.
9. This is consistent with the perception that GOP (Republican) presidents tend to reduce regulatory burden.

Supplementary material

The supplementary material for this article can be found online.

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