The Bright Side of Regulatory Fragmentation: Evidence from Earnings Management[*]

Yifei Bi, *Queen Mary University of London*

Zicheng Lei, *King's College London*

Dimitris Petmezas, *Durham University*

Chen Yang, *University of Glasgow*

Abstract

Using the novel proxy of regulatory fragmentation by Kalmenovitz, Lowry, and Volkova (2023), we highlight the bright side of regulatory fragmentation in eliminating earning management. Specifically, we find that regulatory fragmentation is negatively related to accrual-based earnings management and restatements. This negative effect is stronger for small firms and firms with better internal governance and could be partially explained by the change in firms' risk-taking behaviour. Regulatory fragmentation is also effective in reducing real earnings management through abnormal cash flow and abnormal production costs. Our finding reveals the complex trade-off of deregulation.

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1. Introduction

Deregulation is widely debated by academics, politicians, and the media. Kalmenovitz (2023) shows that regulatory intensity, as measured by the number of federal rules, continued to decline in the United States after Trump took office (Figure 1b).[1] While it rose briefly during Covid-19, it then began to decline again. Supporters of deregulation argue that regulation burdens businesses and is detrimental to the optimal allocation of resources and maximization of social welfare. Recent academic studies have also emphasized the regulatory burden placed on firms (see Ewens, Xiao, and Xu, 2023; Kalmenovitz, 2023; Kalmenovitz, Lowry, Volkova, 2023, Plosser and Santos, 2023, among others). Opponents of deregulation, on the other hand, attribute some of the major corporate scandals and collapses of recent years to overly deregulation. For instance, deregulation is considered to be one of the major causes of the 2008 financial crisis (Caprio et al., 2014; Dagher and Fu, 2015). A recent editors' pick article on Forbes attributes the demise of Silicon Vally Bank to Trump's deregulation and notes that "every time bank regulations are eliminated or made lighter, banks proceed to take on more risks and reduce risk identification and measurements."[2] However, opinions against deregulation are mostly based on anecdotal evidence, and existing academic studies mainly focus on the bank sector rather than on general firms (e.g., Goodhart, 2008; Kim, Koo, and Park, 2013; Caprio et al., 2014; Dagher and Fu, 2015).

In this article, we examine whether the regulatory burden has positive effects, in particular, whether it reduces earnings management for a general set of US public firms. Specifically, we focus on a newly emerging concern on the regulatory burden, namely regulatory fragmentation, which is defined as the regulation of a single topic by multiple federal agencies (Kalmenovitz et

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[1] This change was also recognized early on by the media as the "Trump Effect". See "The Trump Effect: Business, Anticipating Less Regulation, Loosens Purse Strings" (New York Times, January 2018) and "Trump Administration Pushes to Deregulate with Less Enforcement" (Wall Street Journal, June 2019).

[2] "How Trump's Deregulation Sowed the Seeds for Silicon Valley Bank's Demise" (Forbes, March 2023).

al., 2023). As of September 2021, the Government Accountability Office (GAO) has issued 11 annual reports on the fragmentation, overlap, and duplication of federal activities, which has drawn the attention of policymakers to eliminate regulatory fragmentation (GAO, 2021). The Business Roundtable 2019 warns that regulatory fragmentation "poses significant challenges to American businesses and can dampen economic activity across the wider U.S. economy". Kalmenovitz et al. (2023) find that regulatory fragmentation increases firms' costs while decreasing their productivity, profitability, and growth.

However, in this paper, we highlight the bright side of regulatory fragmentation. Using the text-based firm-specific measure of regulatory fragmentation of Kalmenovitz et al. (2023), we find that regulatory fragmentation reduces earnings management of US firms. We measure earnings management using accrual-based earnings management and restatements to address the concern of spurious correlations. Our results show that regulatory fragmentation is negatively and significantly associated with earnings management. Regarding economic magnitude, one standard deviation increase in regulatory fragmentation leads to a 9.69% decrease in accrual-based earnings management and 0.8 percentage point decrease in the probability of restatement.

To address the endogeneity concerns on our findings, we employ two matching methods, namely propensity score matching (PSM) and entropy balancing, two-stage least squares, and change regressions. To identify causal effects, we focus on the deregulation due to the Trump presidency as an exogenous shock to regulatory fragmentation. Using the novel data of the proposed federal rules of Chang, Kalmenovitz, and Lopez-Lira (2023), we distinguish firms having higher exposure to the shock and firms having lower exposure and find decreasing regulatory fragmentation increases firms' earnings management. Our main results also remain unchanged across a battery of robustness tests, including using alternative definitions of regulatory

fragmentation, changing the measure of earnings management and using alternative fixed effects and clustered errors.

The relationship between regulatory fragmentation and earnings management is moderated by the quality of a firm's internal governance. To reveal possible channels of regulatory fragmentation effects, we first investigate the impact of internal governance. We measure internal governance from three dimensions, non-CEO executives, independent directors, and institutional owners. Consistent with the theory that information accessibility enhances the effectiveness of internal governance mechanisms (e.g., Adams and Ferreira, 2007, Duchin, Matsusaka, and Ozbas, 2010), we find that the effect of regulatory fragmentation is stronger in firms with better internal governance. Then, we examine the effect of regulatory fragmentation on firm risk-taking. We measure risk-taking using ROA volatility, R&D investment, and CEO risk-taking motives and document that regulatory fragmentation significantly reduces firms' risk-taking.

In our further analysis, we consider three channels of real earnings management, following Roychowdhury (2006). We find that regulatory fragmentation also reduces real earnings management through abnormal cash flow and abnormal production costs but does not have a significant effect on abnormal discretionary expenses. This finding rules out the explanation that the negative effect of regulatory fragmentation on accrual-based earning management is by making firms shift to more real earnings management. Subsequently, we split our sample into big firms and small firms based on their total assets. We find regulatory fragmentation makes small firms reduce significantly more earnings management comparing with big firms. This finding is consistent with Fich, Griffin, and Kalmenovitz (2023) that small firms have less flexibility when faced with regulation.

Our study has two contributions to the literature. First, we contribute to a newly emerging literature which studies the effects of regulatory burden (e.g., Ewens, Xiao, and Xu, 2023; Kalmenovitz, 2023; Kalmenovitz, Lowry, Volkova, 2023, Plosser and Santos, 2023). In contrast to these studies which emphasizes the burdens and losses that regulation imposes on firms' operations, our findings demonstrate the positive effects of regulation in reducing corporate misconduct. Moreover, earlier literature on regulatory burdens has either examined the impact of firms' compliance with a particular regulatory requirement (e.g., Sarbanes–Oxley Act and Dodd-Frank Act) or focused on the impact of regulation on a particular industry (e.g., banking or energy sectors).[3] To the best of our knowledge, our paper is the first to highlight the bright side of the general regulatory burden to a general set of public firms.

Second, our findings contribute to the studies on the determinants of earnings management. We extend the scope of this literature by showing another important determinant that systematically affects firms' earnings management activities, namely regulatory fragmentation. Specifically, we find that regulatory fragmentation significantly affects accrual-based earnings management, restatements, and real earnings management through abnormal cash flow and production costs.

The paper proceeds as follows. In Section 2, we review the literature on the determinants of earnings management and the real impact of regulation, and develop our hypotheses accordingly. In Section 3, we describe the sample and empirical design of this study. In Section 4, we present the main findings and tests to address endogeneity concerns. In Section 5, we report the results of additional tests. In Section 6, we conclude the paper.

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[3] For instance, see Boot and Thakor (1993), Benston and Kaufman (1996), Barth, Caprio, and Levine (2004), Zhang (2007), Ahern and Dittmar (2012), Barth et al. (2013), among others.

2. Related literature and hypotheses development

2.1 Regulatory fragmentation and earnings management

2.1.1 Public interest theory

Public interest theory is rooted in the idea that governmental intervention in markets and industries is necessary to correct inefficiencies and protect the well-being of the public (Pigou,1938). This theory is used to justify regulatory actions and policies, with the underlying belief that such measures are implemented with the objective of serving the public good, rather than catering to special interest groups or political agendas (Demsetz, 1974). At its core, the theory assumes that markets, left to operate without any form of regulation, can fail to produce socially optimal outcomes (Joskow and Rose, 1989). Therefore, intervention in the form of regulations is deemed necessary to correct these market failures and align outcomes with the societal notion of the public good (Melody, 2016).

Building on *public interest theory*, our hypothesis suggests that regulatory fragmentation—where regulatory responsibilities are dispersed across multiple federal agencies—may lead to a reduction in corporate earnings management. Firstly, increased regulatory scrutiny is an inherent outcome of regulatory fragmentation (Kalmenovitz et al., 2024). Multiple agencies overseeing corporate behavior means that the likelihood of comprehensive oversight is higher. Different facets of financial reporting come under the scrutiny of specialized agencies, acting as a deterrent to corporations engaging in aggressive or misleading earnings management practices (Haw et al., 2005; Libby et al., 2015).

Secondly, the presence of multiple regulatory bodies introduces a system of checks and balances. Different agencies may collaborate to ensure consistency and accuracy in financial reporting standards. This cross-agency cooperation reduces the potential for corporations to exploit

regulatory gaps or engage in selective earnings management practices without scrutiny (Angela et al., 2005; Garrett et al., 2019). Moreover, regulatory fragmentation may incentivize standardization initiatives to harmonize regulatory approaches across agencies. Standardization contributes to clarity and predictability in regulatory requirements, making it more challenging for corporations to manipulate earnings by selectively choosing regulatory jurisdictions with laxer standards (Botzem, 2012).

Furthermore, because of the accountability of regulatory bodies to the broader public, in a fragmented regulatory landscape, the expectation of public scrutiny and accountability acts as a deterrent to corporations engaging in earnings management practices that could erode public trust (Canning and O'Dwyer, 2010). Each regulatory body, being aware of its responsibility and the public eye, may be more vigilant and stricter in its oversight functions.

In conclusion, we hypothesize that regulatory fragmentation, when viewed through the lens of *public interest theory*, leads to a reduction in corporate earnings management. The presence of multiple regulatory agencies is expected to enhance oversight, promote standardization, and foster accountability, aligning corporate behavior more closely with the public interest and contributing to the reliability and transparency of financial reporting. Following the above discussion, we propose the subsequent hypothesis:

H1a: Regulatory fragmentation is negatively correlated with accrual-based earnings management.

2.1.2 Public choice theory

Public choice theory is an economic and political framework that applies the principles of economic analysis to the behavior of individuals and groups involved in the political process. At its core, the theory assumes that individuals are motivated by self-interest and that this extends to

their activities in the public sector (Tullock, 1967). The theory posits that just as markets fail due to problems like externalities and public goods, political decisions can also fail to achieve socially desirable outcomes due to the self-interested behaviors of those involved in the political process (Stigler, 1971; Krueger, 1974). Moreover, *public choice theory* critically analyzes the behavior of bureaucrats and government agencies (Posner, 1974; Becker, 1983). Bureaucrats and government agencies are seen not just as neutral agents carrying out political directives, but as individuals with their own interests, which may include budget maximization, job security, or power enhancement (Peltzman, 1976).

From the perspective of *public choice theory*, corporate entities, acting in rational self-interest, seek to maximize their utility. Corporations, regarded as powerful interest groups, engage in lobbying and rent-seeking behaviors to influence regulations in their favor (Kalmenovitz, 2023). Given this backdrop, our hypothesis posits that in a regulatory environment marked by fragmentation, corporations may engage in more strategic earnings management practices. These practices aim to exploit regulatory arbitrage and navigate inconsistencies in regulatory approaches, both in service of their self-interest, potentially at the cost of transparency and accuracy in financial reporting.

Firstly, one potential mechanism of this behavior is regulatory arbitrage opportunities. In a fragmented regulatory landscape, corporations might identify and exploit differences in regulatory standards and enforcement across agencies (Kalmenovitz et al., 2024). They may employ earnings management practices like income smoothing or strategic timing of revenue recognition to comply with the laxer standards or enforcement practices of specific agencies, thereby optimizing their reported earnings (Graham et al., 2005).

Moreover, the dispersed regulatory landscape may result in information asymmetry, with corporations having more insights into the regulatory priorities and enforcement capabilities of individual agencies than the public or other stakeholders (Beatty and Harris, 1999; Beyer et al., 2019). Corporations can use this information to their advantage, strategically managing earnings in areas where they perceive less rigorous scrutiny. Corporations might also influence regulatory agendas, engaging with specific agencies where they perceive the possibility of regulatory capture or a more favorable regulatory stance (Cooper and Robson, 2006). By shaping the regulatory environment, corporations can indirectly create a more permissive set of standards conducive to earnings management.

In conclusion, we anticipate that regulatory fragmentation, understood through *public choice theory*, creates an environment conducive to more strategic earnings management practices by corporations. These practices aim to exploit regulatory disparities and uncertainties, potentially leading to financial reports that do not accurately reflect the economic reality of the firm. This can compromise the transparency and reliability of financial information (Jain and Rezaee, 2006). Following the above discussion, we propose the subsequent hypothesis:

H1b: Regulatory fragmentation is positively correlated with accrual-based earnings management.

2.2 Regulatory fragmentation and earnings management: cross-sectional heterogeneity

2.2.1 Internal governance

In the context of regulatory fragmentation and earnings management, the interplay between regulatory environments and firm characteristics, particularly internal governance, can significantly influence corporate behavior. The *public interest theory* and *public choice theory*

provide different perspectives on how regulatory fragmentation might impact earnings management, conditional on the quality of a firm's internal governance.

Public interest theory posits that regulations are designed to serve the public good by addressing market failures and promoting fair and transparent practices (Pigou, 1938). Under this theory, a negative relationship between regulatory fragmentation and earnings management is expected, as increased regulatory oversight and scrutiny should theoretically limit the opportunities for earnings management (Naughton, 2019). However, the effectiveness of this regulatory environment might be contingent on the internal governance of the firms (Hoitash et al., 2009). For firms with robust internal governance mechanisms, the deterrent effect of regulatory fragmentation on earnings management should be stronger. These firms are already inclined towards transparency and accountability due to their internal policies and oversight mechanisms (Bushman and Smith, 2001; Archambeault et al., 2008). Consequently, when faced with a fragmented regulatory environment that potentially offers increased oversight and specialized scrutiny, firms with good internal governance are more likely to align with the public interest goals of the regulations, further reducing their propensity to engage in earnings management.

On the other hand, *public choice theory*, which views regulatory decisions as influenced by the self-interest of individuals and interest groups, suggests a positive relationship between regulatory fragmentation and earnings management. This theory argues that a fragmented regulatory environment creates opportunities for firms to exploit regulatory gaps and inconsistencies, potentially leading to increased earnings management. The effectiveness of this relationship, however, is likely to vary based on the firm's internal governance (Bushman et al., 2004). Specifically, for firms with poor internal governance, the positive relationship between regulatory fragmentation and earnings management should be stronger. Weak internal governance

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implies fewer internal checks and balances, less transparency, and possibly a higher tolerance for aggressive financial reporting practices (Dey, 2008). These firms, already predisposed to exploit opportunities for their benefit, might find a fragmented regulatory environment particularly conducive to earnings management, as it allows for greater manipulation and less accountability (Cheng et al., 2016). To account for this cross-sectional heterogeneity, we posit the following hypotheses:

H2a. The negative relationship between regulatory fragmentation and earnings management will be more pronounced for firms with better internal governance mechanisms.

H2b. The positive relationship between regulatory fragmentation and earnings management will be more pronounced for firms with weaker internal governance.

2.2.2 Firm size

In exploring the relationship between regulatory fragmentation and earnings management, the influence of firm size emerges as a critical factor. *Public interest theory* suggests a negative relationship between regulatory fragmentation and earnings management, arguing that a more diversified regulatory landscape enhances oversight, thereby reducing the propensity for earnings management. However, the impact of regulatory fragmentation may be more pronounced for smaller firms. Smaller firms typically have fewer resources and less influence, making it harder for them to navigate or influence a complex regulatory environment compared to their larger counterparts (Brush and Chaganti, 1999). They are also likely to be more directly impacted by regulatory scrutiny due to their size and resource limitations (Westhead et al., 2001). Consequently, under *public interest theory*, we expect the negative relationship between regulatory fragmentation and earnings management to be stronger for smaller firms. These firms are more responsive to the

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protective effects of regulatory oversight and have less ability to engage in sophisticated earnings management strategies.

On the other hand, *public choice theory*, suggests a positive relationship between regulatory fragmentation and earnings management. According to this theory, a fragmented regulatory environment creates opportunities for firms to exploit regulatory gaps and inconsistencies. Larger firms, with their greater resources and more complex organizational structures, are better equipped to navigate, influence, or even capture regulatory agencies (Wernerfelt, 2013). They can engage in strategic interactions, leveraging their size and influence on shape regulations or enforcement practices to their advantage (Yang et al., 2014). This behavior includes engaging in earnings management practices that might be more difficult to detect or counteract in a fragmented regulatory environment. Therefore, *public choice theory* predicts that the positive relationship between regulatory fragmentation and earnings management will be stronger for larger firms. To account for this cross-sectional heterogeneity, we posit the following hypotheses:

H3a. Smaller firms are expected to exhibit a stronger negative relationship between regulatory fragmentation and earnings management.

H3b. Larger firms are expected to exhibit a stronger positive relationship between regulatory fragmentation and earnings management.

2.3 Regulatory fragmentation and earnings management: accrual-based earnings management vs real earnings management

Under the *public interest theory*, regulations are enacted to protect and promote the public good by addressing market failures and ensuring fair and equitable practices (Demsetz, 1974). From this perspective, the argument is grounded in the belief that despite the challenges of regulatory fragmentation, the presence of multiple regulatory agencies can lead to more specialized,

focused, and perhaps even more stringent oversight of different aspects of firm operations (Kalmenovitz et al., 2024). In a fragmented regulatory environment, agencies may develop unique expertise and deeper insights into the specific areas they regulate (Kalmenovitz, 2023). This specialization can enhance the detection and deterrence of real earnings management, as agencies are better equipped to identify and address manipulations in their respective domains. The increased scrutiny and potential for regulatory intervention make it riskier and less attractive for firms to also engage in real earnings management. According to *public interest theory*, regulatory agencies, despite fragmentation, strive to uphold the public good by ensuring transparent and accurate financial reporting (Joskow and Rose, 1989). Therefore, regulatory fragmentation, coupled with the specialized and diligent efforts of multiple regulatory bodies, decreases the incidence of real earnings management.

Conversely, the *public choice theory* views regulatory decisions and policies as influenced by the self-interest of individuals and groups, including those within regulatory agencies and regulated entities. Regulatory fragmentation creates a complex and divided regulatory landscape, offering opportunities for firms to exploit gaps and inconsistencies across different regulatory jurisdictions. In a fragmented regulatory environment, the coordination and enforcement efforts are spread across multiple agencies, potentially leading to a dilution of oversight and enforcement (Baumol, 1986). Firms, acting in their self-interest to maximize their own welfare, may perceive fragmented regulation as an opportunity to engage in real earnings management. They can strategically navigate the regulatory landscape, exploiting the lack of unified oversight and the potential for regulatory arbitrage (Olson, 2009). Thus, under *public choice theory*, regulatory fragmentation is hypothesized to increase the incidence of real earnings management as firms

capitalize on the reduced effectiveness and increased complexity of regulatory oversight. Following the above discussion, we propose two opposing hypotheses:

H4a. Regulatory fragmentation decreases real earnings management.

H4b. Regulatory fragmentation increases real earnings management.

3. Data and methodology

3.1 Measure of firm-level regulatory fragmentation

In our analysis, we employ the proxy for firm-level regulatory fragmentation as developed by Kalmenovitz et al. (2024). This proxy is constructed through a three-step process. Initially, Kalmenovitz et al. (2024) leverage a machine learning technique known as Latent Dirichlet Allocation (LDA) to distill the top 100 topics from the Federal Register (FR). This approach enables them to quantify the extent of fragmentation for each topic across various federal agencies. For example, a topic such as "Health: Insurance" might be governed by multiple entities including the Department of Labor, the Department of Health and Human Services, and the Department of Treasury. In the subsequent step, they assess the relevance of each topic to individual firms. This is done by determining the proportion of the topic-related content in a firm's annual report, thereby establishing its importance for each firm-year observation. Finally, they calculate the product of the topic's fragmentation and its importance for each firm-year observation. The cumulative sum of these products across all 100 topics yields the measure of regulatory fragmentation at the firm level.

3.2 Measure of earnings management

In our research, we adopt a two-dimensional approach to measuring earnings management, as outlined by Gross et al. (2024). This approach includes abnormal accruals and earnings restatements, both of which are distinct yet extensively utilized metrics in the academic field

(Kedia et al., 2015; Liu, 2016; Kim et al., 2017). To quantify abnormal accruals, we adhere to the methodology established by Cohen and Zarowin (2010), which is aimed at detecting accrual-based earnings management. This involves annually estimating a cross-sectional model specific to each industry, classified according to the 49 industries identified by Fama and French (1997), provided there are at least 8 observations per industry. The estimation of discretionary accruals is executed through a cross-sectional Ordinary Least Squares (OLS) regression:

$$\frac{TA_{i,t}}{Assets_{i,t-1}} = \alpha_1 \frac{1}{Assets_{i,t-1}} + \alpha_2 \frac{\Delta SALES_{i,t}}{Assets_{i,t-1}} + \alpha_3 \frac{PPE_{i,t}}{Assets_{i,t-1}} + \varepsilon_{i,t} \quad (1)$$

where $Assets_{i,t-1}$ represents total assets (Compustat item AT) of firm i at time $t-1$, $\Delta SALES_{i,t}$ is the change in revenues (Compustat item SALE) from the previous year, and $PPE_{i,t}$ is the gross value of property, plant, and equipment (Compustat item PPEGT) of firm i at time t. $TA_{i,t}$ represents the total accruals of firm i at time t, which is calculated as the following function: $TA_{i,t} = EBIT_{i,t} - CFO_{i,t}$, where $EBIT_{i,t}$ is the earnings before extraordinary items and discontinued operations (Compustat item IBC) of firm i at time t. $CFO_{i,t}$ is the operating cash flows (from continuing operations) taken from the statement of cash flows (Compustat item OANCF – Compustat item XIDOC).

The coefficient estimates from Equation (1) are then used to estimate firm-level normal accruals (NA_{it}):

$$NA_{i,t} = \hat{\alpha}_1 \frac{1}{Assets_{i,t-1}} + \hat{\alpha}_2 \frac{\Delta SALES_{i,t}}{Assets_{i,t-1}} + \hat{\alpha}_3 \frac{PPE_{i,t}}{Assets_{i,t-1}} \quad (2)$$

Our measure of discretionary accruals is the difference between total accruals and the fitted normal accruals, defined as $DA_{i,t} = \frac{TA_{i,t}}{Assets_{i,t-1}} - NA_{i,t}$.

Next, we follow the earnings management literature (e.g., Cohen et al., 2008; Yu, 2008; Gross et al., 2024) and use the absolute value of discretionary accruals (|AA|) as the measure of earnings

manipulation. Higher values of discretionary accruals imply that the firm is more likely to engage in accrual-based earnings manipulation.

To mitigate the possibility that our findings might be influenced by spurious correlations between our primary variable and potential systematic errors in the measurement of abnormal accruals, we introduce earnings restatements as an alternative indicator of earnings management. This data is sourced from the Audit Analytics database, which offers detailed insights on firm-level restatements stemming from various causes, including clerical mistakes, fraudulent activities, and incorrect application of accounting principles. Aligning with the methodologies adopted in studies by Tan and Young (2015), Bartov et al. (2021), and Gross et al. (2024), our focus is specifically on material restatements, often referred to as "Big Rs". These are significant enough to necessitate the filing of SEC Form 8-K, thereby excluding restatements that are merely the result of clerical errors.[4]

3.3 Sample construction and summary statistics

In our study, we explore the impact of firm-level regulatory fragmentation on earnings management, employing data from several key sources: (1) Compustat, which provides the necessary data for constructing variables related to accruals-based earnings management and other control variables; (2) the Audit Analytics database, the source of our restatement data; and (3) the regulatory fragmentation variables as developed by Kalmenovitz et al. (2024). Our analysis begins with the year 2005, a starting point chosen due to the SEC's implementation of the Form 8-K Item

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[4] The SEC's introduction of the Item 4.2 filing requirement under Form 8-K in August 2004 significantly aided market participants in differentiating between major ("Big R") and minor ("Little r") restatements (Bartov et al., 2021). "Big R" restatements are significant adjustments due to either inadvertent (unintentional) or fraudulent (intentional) errors in previous financial statements. In contrast, "Little r" restatements arise when immaterial errors in a firm's reports cumulatively reach a material level within a particular year. Our primary analysis considers all variations of "Big Rs" because they collectively signify potential earnings manipulation by firms. However, it's noteworthy that our findings remain consistent even when we further delineate material restatements as those impacting firms' GAAP net income. This refined categorization includes specific categories – |1|, |3|, |4|, |6|, |7|, |8|, |12|, |14|, |17|, |18|, |20|, |21|, |22|, |23|, |24|, |32|, and |69| – as classified in Audit Analytics, following Gross et al. (2024).

4.02 filing requirement on August 23, 2004. The study period extends up to 2019, aligning with the timeframe of the regulatory fragmentation variables constructed by Kalmenovitz et al. (2024), which also concludes in that year.

To rigorously test our hypotheses, we employ regression models utilizing two distinct measures of earnings management. These are the absolute value of abnormal accruals ($|AA|$) and the incidence of earnings restatements (*Restate*). The specific structure of these regression models is as follows:

$$|AA|_{i,t} = \alpha + \beta\ Regulatory\ Fragmentation_{i,t-1} + \rho R_{i,t-1} + \mu F_{i,t-1} + \lambda EM_{i,t-1} + \gamma_k + \delta_i + \varepsilon_{i,k,t} \quad (3)$$

$$Restate_{i,t} = \alpha + \beta\ Regulatory\ Fragmentation_{i,t-1} + \rho R_{i,t-1} + \mu F_{i,t-1} + \lambda EM_{i,t-1} + \gamma_k + \delta_i + \varepsilon_{i,k,t} \quad (4)$$

where i indexes firms, t indexes time, and k indexes the industry-year pairs. γ and δ denote industry-year fixed effects and firm fixed effects. ε is the error term.

Our research includes three categories of control variables. Firstly, *R* represents two additional regulatory variables developed by Kalmenovitz et al. (2024): *Dispersion of Topics* and *Regulation Quantity*. Secondly, following Gross et al. (2024), we include a set of firm characteristics that are fundamental in determining firms' accruals and a series of variables that influence firms' incentives for earnings management. Specifically, *F* denotes firm characteristics such as firm size, ROA, sales volatility, cash flow volatility, and operating shocks. *EM* denotes factors that drive earnings management incentives, including firm age, leverage, market-to-book ratio, financial needs, equity and debt issuances, incentives to beat benchmarks, equity compensation, industry Herfindahl index, dividend payout, operating cycle, auditor quality, and auditor tenure. Additionally, in Equation (3), we incorporate first-stage regressors (independent variables from

Equation (1)) to counteract any measurement error inherent in residual-based models (Chen et al., 2018).

Consistent with Kalmenovitz et al. (2024), our analysis also accounts for firm fixed effects and year × industry fixed effects. These are based on firm ID, calendar year, and the Fama-French (1997) 49 industry classification. Firm fixed effects are employed to control for unique, time-invariant characteristics of each firm, while industry × year fixed effects adjust for industry-specific trends affecting all firms within a particular industry in a given year. For instance, industry-wide regulatory changes would be captured by the industry × year fixed effect, enabling comparative analysis between two firms from the same industry experiencing different levels of regulatory fragmentation in the same year.

In Table 1, we present the summary statistics of our sample. To mitigate the impact of outliers, we winsorize all non-binary variables at the 1st and 99th percentiles. The average *Regulatory Fragmentation* in our sample is 0.803, aligning with findings by Kalmenovitz et al. (2024). The mean value of *Restate* is 0.013, representing 380 "Big R" restatements from 2005 to 2020. Overall, the characteristics of firms in our sample broadly resemble those in previous studies on U.S. public firms (e.g., Liu, 2016; Dey and White, 2021).

4. Empirical results

4.1 Regulatory fragmentation and earnings management: baseline results

To demonstrate the dynamics between regulatory fragmentation and earnings management, we initially depict the trends of these two variables over time in Figure 2a. Our analysis reveals that, for the most part, regulatory fragmentation and accrual-based earnings management exhibit inverse trends. A notable instance of this is around the 2008 financial crisis, where a noticeable increase in regulatory fragmentation coincides with a decline in earnings management. However,

in more recent years, this pattern has inverted, with regulatory fragmentation decreasing while earnings management has been on the rise. To further illustrate and examine this relationship, we also plot the first differences of both regulatory fragmentation and accrual-based earnings management over time, denoted as *Δ|AA|* and *ΔRegulatory Fragmentation* respectively. These are presented in Figure 2b. This additional analysis reinforces our observation of a negative correlation between changes in regulatory fragmentation and accrual-based earnings management, further highlighting the inverse relationship between these two phenomena.

To unravel the relationship between firm-level regulatory fragmentation and earnings management, we then conduct analyses using Equations (3) and (4), the results of which are reported in Table 2. In columns (1) and (2), we only control for regulatory variables. In the first column, we observe a significant negative correlation between regulatory fragmentation and accrual-based earnings management, statistically significant at the 1% level. In column (2), regulatory fragmentation is inversely related to the incidence of restatements.

When we expand our analysis to include all control variables in columns (3) and (4), the observed patterns remain consistent. Notably, the influence of regulatory fragmentation is not just statistically significant but also economically meaningful. For instance, in column (3), the coefficient for regulatory fragmentation is -0.274, suggesting that a one standard deviation increase in regulatory fragmentation corresponds to a 0.79% (=0.274×0.029×100) decrease in accrual-based earnings management in the next year. These results are economically significant because the decrease is 11.35% of the average accrual-based earnings management in our sample (=7.0%). Similarly, in column (4), the coefficient of -0.280 implies that a one standard deviation rise in regulatory fragmentation is associated with a 0.81% (=0.280×0.029×100) reduction in the likelihood of a restatement. A 0.81% decrease is economically sizable, representing 62.31% of the

unconditional probability of a restatement (=1.3%). These findings underscore the substantial negative impact of regulatory fragmentation on earnings management practices within firms.[5]

Consistent with the *public interest theory* and hypothesis *H1a*, our findings underscore that increased regulatory fragmentation significantly curtails corporate earnings management. The involvement of multiple regulatory bodies might enhance oversight and accountability, driving corporations to act in ways that are more aligned with public interests. The presence of diverse regulatory agencies is expected to foster greater standardization in corporate practices (Madsen, 2011). This, in turn, guides corporate behavior to align more closely with public welfare, thereby enhancing the reliability and transparency of financial reporting.

4.2 Dealing with endogeneity

There remain concerns regarding endogeneity in our analysis. Firstly, sample selection bias may introduce random or systematic differences in firm characteristics between higher regulatory fragmentation observations and others. Secondly, the potential for omitted variable bias exists, where relevant variables impacting both regulatory fragmentation and earnings management might be overlooked. Thirdly, reverse causality could be a factor, where firms' regulatory profiles are influenced by their earnings management practices.

To address sample selection bias, we utilize two matching approaches: propensity score matching (PSM) and entropy balancing. Our sample is divided into treatment and control groups based on the median value of regulatory fragmentation in each year. PSM aims to reduce significant firm characteristic differences between these groups, using a propensity score calculated from all control variables in Table 2. Entropy balancing, following Madsen and

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[5] To ensure the reliability of our baseline findings, we have performed a series of robustness tests and reported the results in the online appendix. Notably, our baseline conclusions remain consistent when employing alternative measures for earnings management, restatements, and regulatory fragmentation.

McMullin (2020) and Leone et al. (2021), rebalances covariate distributions (control variables in Table 2) between the groups. Baseline regressions (Equations (3) and (4)) are replicated using both matched and entropy-balanced samples. As reported in Table 3, our measure of regulatory fragmentation remains negatively significant in all models, suggesting resilience of our baseline results against sample selection bias.

To counter omitted variable bias, we perform a two-stage least square analysis (2SLS) using an instrumental variable, adhering to criteria set by Larcker and Rusticus (2010) and Roberts and Whited (2013). A valid instrument must be correlated with the independent variable (relevance condition) and impact the dependent variable only through the independent variable (exclusion condition). We use city-level averages of regulatory fragmentation as our instrument, meeting both criteria as city-level regulation correlates with a firm's regulatory profile and does not directly affect a firm's earnings management outside this relationship.

2SLS results in Table 4 show that the city-level regulatory fragmentation is effective predictors of firm-level regulatory fragmentation in column (1). The coefficients are significant at a 1% level, and the Kleibergen-Paap rk Wald F-statistic of 493.714 surpasses the LIML Size of Nominal 10% threshold of 16.380, affirming the instrument's validity. In columns (2) and (3), the instrumented regulatory fragmentation is negatively associated with accrual-based earnings management and restatements.

To mitigate concerns of reverse causality, we have conducted a change regression analysis using the first differences of both dependent and independent variables. This approach focuses on the year-to-year variations in our main variables, capturing the incremental impacts of regulatory fragmentation on earnings management. We contend that even if there were a potential reverse

causality between regulatory fragmentation and earnings management, its likelihood diminishes when analyzing the first differences of these variables.[6]

The outcomes of this analysis are presented in Table 5. Column (1) shows that the coefficient for the first difference in regulatory fragmentation (*ΔRegulatory Fragmentation*) is negatively and significantly correlated with the first differences in accrual-based earnings management (*Δ|AA|*) at a 5% significance level. Similarly, in column (2), the first difference of regulatory fragmentation is negatively associated with the first difference of restatements (*ΔRestate*). These results suggest that changes in regulatory fragmentation maintain a negative relationship with earnings management. This finding aligns with the patterns observed in Figure 2b, further reinforcing our conclusions.[7]

4.3 Evidence from exogenous shock: the election of Donald Trump

To further mitigate concerns of endogeneity, we present evidence regarding an exogenous shock of deregulation in the United States. The election of Donald Trump serves as a pivotal exogenous shock for examining the impact of deregulation expectations on market behaviors (Wagner et al., 2018; Child et al., 2020). Deregulation was a cornerstone of Trump's campaign, evidenced by his "Contract with the American Voter", where he vowed to roll back two regulations for every new federal regulation introduced. His commitment to reducing government intervention

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[6] Our findings demonstrate a reduced susceptibility to reverse causality bias. While firms can choose the topics relevant to their operations, they have little control over how extensively federal agencies regulate these issues. Additionally, our regression approach employs a one-year lag for dependent variables and includes both firm fixed effects and industry × year fixed effects. This design effectively eliminates constant factors at both the firm and industry-year levels that could otherwise lead to reverse causality.

[7] In Table A2 of the online appendix, we follow the approach of Kalmenovitz et al. (2024) and exclude observations from firms undergoing substantial operational changes to ensure that our results are attributed to regulatory fragmentation rather than operational shifts. We construct three subsamples: (1) removing observations where there's a change in a firm's industry year-over-year, (2) excluding observations with more than a 30% change in the number of segments from the previous year, and (3) omitting observations with total assets fluctuating by over 30% compared to the previous year. Our baseline results remain consistent across these subsamples.

in the economy was further emphasized through proposed hiring freezes and budget cuts (Belton et al., 2017).

Moreover, the Trump administration's unique approach to regulation, which includes keeping a majority of administrative positions unfilled, further underscores its commitment to reducing regulatory burdens (Heidari-Robinson, 2017). This approach was markedly different from previous Republican and Democratic administrations, as evidenced by the significant decrease in the number of major rules passed during Trump's term compared to other administrations (Kundu, 2023). This heightened focus on deregulation in Trump's campaign and subsequent policy actions provides a clear signal of potential future deregulation to investors, making the Trump election a prime setting to study deregulatory expectations.[8]

To establish a causal relationship between regulatory fragmentation and earnings management, we conduct a difference-in-differences (DiD) analysis, utilizing President Trump's inauguration in January 2017 as an exogenous shock.[9] Our approach categorizes firms based on their varying degrees of impact from Trump's deregulatory measures. The process for federal rules to become effective, averaging 882.1 days with a standard deviation of 1087.6 days, involves multiple stages, including agency review, White House oversight, and public commentary (Chang et al., 2023). Thus, firms with federal rules in the pipeline before 2017 are presumably less affected by the deregulation. Using the annual data on the number of proposed federal rules pertinent to a firm, as provided by Chang et al. (2023), our treatment group consists of firms with the number of related rules below the sample median in 2015 and 2016, while the control group comprises firms with

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[8] Once in office, Trump's administration followed through on these promises, as evidenced by the signing of Executive Order 13771, titled "Reducing Regulation and Controlling Regulatory Costs." This executive order was a direct implementation of his campaign pledge. The effectiveness of his deregulation efforts is statistically validated by the significant reduction in the number of major rules published during the first three years of his presidency, compared to the past 25 years (Kundu, 2023).

[9] Figure 1a illustrates a marked decrease in regulatory fragmentation following Trump's inauguration into office.

the number of related rules above the sample median in these years.[10] Specifically, our treatment group comprises firms that are more susceptible to the effects of Trump's deregulation, primarily due to their fewer federal rules in the pipeline, making them likely candidates for deregulatory impact.

Our analysis focuses on the period from 2014 to 2019, requiring consistent sample presence of both treatment and control firms. The deregulation shock of Trump's inauguration is represented by the dummy variable *Post_2017*, assigned the value one for the years 2017 to 2019 and zero for 2014 to 2016. *Treated* is a binary variable that equals one if the firm is included in the treatment group, and zero otherwise. Propensity score matching, based on firm characteristics detailed in Table 2 and a caliper of 0.01, is used for matching.

The results are presented in Table 6. In columns (1) and (2), we interact *Treated* with *Post_2017* and the coefficients of the interaction variable are positive and significant at the 5% level, suggesting that firms with fewer proposed rules prior to Trump's inauguration engage in more earnings management after the shock. This finding supports our baseline result and indicates that deregulation, which means less regulatory fragmentation, is positively associated with earning management practices.

In columns (3) and (4), we test the parallel trend assumption in our DiD analysis. By decomposing the shock annually and creating dummy variables for 2015–2019 (i.e., with the year 2014 serving as the benchmark), we observe no significant pre-2017 differences in earnings management between the treatment and control groups, as indicated by the non-significant coefficients for *Year_2015* and *Year_2016*. However, the coefficients turn significant from 2017

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[10] We exclude 2014 data to avoid bias, considering the average approval duration for proposed rules. To bolster the validity and precision of our analysis, we exclusively focus on "active" proposed federal rules, effectively excluding any proposals that were officially rescinded within the same year.

onwards, indicating that the effect emerges following the deregulation shock of Trump's inauguration. By employing President Trump's inauguration as an exogenous shock, we establish a causal positive relationship between deregulation and earnings management, thereby reinforcing the *public interest theory*.

4.4 Cross-sectional heterogeneity: internal governance

Our baseline results reveal a negative correlation between regulatory fragmentation and earnings management, aligning with the *public interest theory*. Considering that robust internal governance is known to reduce earnings management, both independently and in conjunction with other factors (González and García-Meca, 2013; Cheng et al., 2016), we expect this deterrent effect to be more pronounced in firms with strong internal governance structures. These firms are typically inclined towards transparency and accountability due to existing internal policies and oversight (Archambeault et al., 2008). Thus, when encountering a fragmented regulatory landscape, firms with effective internal governance are better positioned to conform to the public interest objectives of these regulations. This alignment, in turn, further diminishes their tendency to engage in earnings management.

To examine the role of internal governance, we utilize three proxies identified in prior earnings management literature. Each proxy represents a distinct aspect of internal governance. First, we follow Cheng et al. (2016) and consider executive horizon, defined as the period until retirement (assumed at age sixty-five) minus the average age of the top five non-CEO executives. This measures the monitoring incentives of these executives.[11] Second, we use the percentage of

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[11] Additionally, we adopt the approach of Cheng et al. (2016) by using the absolute horizons of these non-CEO executives, rather than their horizons relative to the CEO, to better gauge their monitoring incentives. This choice is predicated on the relevance of absolute over relative horizons in influencing these incentives. For instance, consider two hypothetical firms: Firm A, where both the average age of non-CEO executives and the CEO's age are 65, and Firm B, where these ages are both 50. While the relative horizons (calculated either as ratios or differences) would be identical in both cases, the context clearly indicates that the younger non-CEO executives in Firm B are likely to have

independent directors on the board as a proxy for board independence, which previous studies (e.g., Klein, 2002; Chen et al., 2015) have shown to influence earnings management. Third, the percentage of institutional ownership serves as another proxy (Bushee, 1998; Koh, 2003). In our regression analysis, we create three dummy variables—*High Executive Horizon*, *High % of Independent Directors*, and *High % of Institutional Ownership*—each indicating a firm's level above the median in these respective areas for a given year.

The results, presented in Table 7, first reaffirm the negative association between regulatory fragmentation and earnings management across all specifications, highlighting the robustness of our baseline findings. More crucially, we observe a significant moderating effect of our internal governance proxies on the impact of regulatory fragmentation. For example, in columns (1) and (2), where executive horizon is the proxy, the interaction coefficients between regulatory fragmentation and executive horizon are -0.069 and -0.152, statistically significant at the 5% level. In columns (3) and (4), we find similar negative and significant coefficients for the interaction of regulatory fragmentation with board independence. This supports the view of Adams and Ferreira (2007) and Duchin et al. (2010) that the effectiveness of independent directors' monitoring is contingent on the accessibility of information, which can be enhanced by regulatory fragmentation. Lastly, in columns (5) and (6), with institutional ownership as the proxy, the interaction coefficients are negative and statistically significant at the 5% level.

Overall, our findings indicate that strong internal governance significantly reinforces the negative association between regulatory fragmentation and earnings management. This observation is consistent with the *public interest theory*, which posits that diverse regulatory

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stronger monitoring incentives compared to their counterparts in Firm A. This example underscores the significance of considering absolute horizons to accurately assess the monitoring drive of non-CEO executives. Results are qualitatively similar.

oversight aligns corporate behavior more closely with the public good and also corroborates our hypothesis *H2a*. The synergy between internal governance strength and regulatory fragmentation highlights the crucial role of firm-level governance in enhancing the effectiveness of external regulatory frameworks.

4.5 Cross-sectional heterogeneity: firm size

Our baseline results indicate a negative correlation between regulatory fragmentation and earnings management, consistent with *public interest theory*. However, the impact may be more significant for smaller firms, which, due to limited resources and influence, find it harder to navigate complex regulatory environments compared to larger firms (Brush and Chaganti, 1999; Westhead et al., 2001). Engel et al. (2007) argue that small firms are more sensitive to regulatory burdens. Echoing this, Kalmenovitz et al. (2024) find that the impact of regulatory fragmentation on reducing ROA is notably larger in small firms, and Fich et al. (2023) observe a significantly greater effect of increased regulatory burden on acquisition likelihood in small firms. Therefore, smaller firms are hypothesized to exhibit a stronger negative relationship between regulatory fragmentation and earnings management, being more responsive to regulatory oversight.

In our study, we separate our sample into two subsamples based on company size, selecting observations from the top and bottom terciles (representing large and small firms, respectively). We then replicate our baseline regressions (Equations (3) and (4)) for these subsamples. As presented in Table 8, our measure of regulatory fragmentation retains a negative and significant relationship in all scenarios. Notably, the coefficients' absolute values in the small firms subsample are larger than in the large firms subsample. For small firms, the coefficient for regulatory fragmentation is -0.569 (when the dependent variable is the absolute value of abnormal accruals),

which is significantly larger compared to large firms. Similarly, when the dependent variable is *Restate*, the coefficient is -0.459 for small firms, significantly larger than that for large firms.

Taken together, these findings highlight the enhanced sensitivity of smaller firms to the effects of regulatory fragmentation on earnings management. This supports our hypothesis *H3a* and aligns with the *public interest theory*, which says that a varied regulatory environment leads to better oversight. It suggests that smaller firms, due to their limited resources and less complex operational structures, are more likely to be influenced by regulatory fragmentation. This leads to a stronger alignment with the principles of transparency and reduced earnings management.

4.6 Accrual-based earnings management vs real earnings management

In the realm of earnings management, there are primarily two types: accrual-based earnings management and real activities manipulation. Earlier studies mainly focus on discretionary accruals, as they are more detectable by auditors and regulators but lack direct cash flow consequences (Healy, 1985; Defond and Jiambalvo, 1994; Guidry et al., 1999; Kasznik, 1999). However, recent research has shifted attention to real earnings management, which involves altering cash flows and operational activities (Roychowdhury, 2006; Cohen and Zarowin, 2010; Gunny, 2010). This type of management is less likely to be detected and carries lower expected private costs for executives (Dechow et al., 1996).

Our findings to date indicate a negative association between regulatory fragmentation and accrual-based earnings management. Following the implementation of the Sarbanes-Oxley Act in 2002, there was a significant shift from accrual-based to real earnings management methods (Cohen et al., 2008). This shift illustrates the flexibility of firms in choosing between these two strategies, influenced by factors like feasibility and costs (Ewert and Wagenhofer, 2005; Cohen and Zarowin, 2010). Given the more subtle nature and reduced scrutiny of real earnings

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management (Roychowdhury, 2006; Zang, 2012), it is plausible that firms may favor real activities management over accrual-based methods when confronted with regulatory fragmentation.

However, the specific effects of regulatory fragmentation on real earnings management remain ambiguous. It is uncertain whether regulatory fragmentation leads to a general decrease in all types of earnings management, primarily impacts accrual-based methods, or might even result in an increase in real earnings management. In this section, we delve deeper into examining the influence of regulatory fragmentation on real earnings management.

To assess the influence of regulatory fragmentation on real earnings management, we follow Cohen and Zarowin (2010) and use three distinct proxies: abnormal levels of cash flow (*Abnormal CFO*), production costs (*Abnormal PROD*), and discretionary expenses (*Abnormal DISX*).[12] We modify our baseline regression (Equation 3) to include these proxies for real earnings management and present the results in Table 9. Our findings reveal that regulatory fragmentation significantly reduces two types of real earnings management activities. In column (1), we find that *Regulatory Fragmentation* carries a negative coefficient that is significant at the 1% level. This indicates that regulatory fragmentation is negatively correlated with abnormal cash flow. In column (2), the coefficient on *Regulatory Fragmentation* is negative and significant at the 1% level, which indicates a negative relation between regulatory fragmentation and abnormal production costs. However, *Regulatory Fragmentation* is statistically insignificant at conventional levels when the dependent variable is abnormal discretionary expenses, suggesting that, in general, regulatory fragmentation does not significantly affect abnormal discretionary expenses.

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[12] The appendix provides a detailed presentation of the definition and calculation methods for three proxies of real earnings management. A measure including all three could result in bias due to potential overlap (Roychowdhury, 2006; Cohen and Zarowin, 2010).

Combining these findings with our baseline results, we conclude that regulatory fragmentation effectively suppresses both accrual-based and real earnings management. This outcome lends support to the *public interest theory* and validates our hypothesis *H4a*. The evidence suggests that in the face of regulatory fragmentation, firms are less inclined or able to engage in earnings management strategies, whether accrual-based or real. Our analysis, therefore, contributes to the understanding of the impact of regulatory policies on corporate financial practices, particularly in the context of earnings management.

5. Conclusions

In our study, we investigate the impact of regulatory fragmentation—defined as the complexity faced by companies regulated by multiple federal agencies—on earnings management. Employing a text-based measure developed by Kalmenovitz et al. (2024), we discover a negative correlation between regulatory fragmentation and earnings management. This is aligned with the *public interest theory* and suggests that the presence of diverse regulatory bodies enhances oversight and aligns corporate actions more closely with public interests, promoting standardized practices and transparency in financial reporting. Our results remain robust after addressing endogeneity concerns and are consistent following a comprehensive series of robustness tests. Using President Trump's inauguration as an exogenous shock, we establish a causal positive relationship between deregulation and earnings management, reinforcing the *public interest theory*.

Furthermore, our research reveals that strong internal governance amplifies the negative association between regulatory fragmentation and earnings management. Additionally, smaller firms are more responsive to regulatory fragmentation's impact on earnings management. Lastly, our study reveals that regulatory fragmentation effectively suppresses not only accrual-based earnings management but also real earnings management, the latter through abnormal cash flows

and abnormal production costs. This finding enhances our understanding of the impact of regulatory policies on corporate financial behavior, particularly in the domain of earnings management.

Our research yields several key implications. Firstly, while the prevailing literature often highlights the burdensome nature of regulation on businesses (e.g., Ewens et al., 2023; Kalmenovitz, 2023; Plosser and Santos, 2023), our study highlights the bright side of regulatory fragmentation by pointing to the significant role of regulation in curbing corporate misconduct. This suggests a nuanced trade-off in deregulation. While it may boost firm productivity and profitability (Kalmenovitz et al., 2024), deregulation could also lead to heightened earnings management. Secondly, our findings underscore the beneficial impact of comprehensive regulation across various domains, providing empirical support for regulatory measures on firms. Lastly, we observe that the impact of regulation varies markedly depending on firm-specific characteristics. This indicates that the design and execution of regulatory policies should be tailored to acknowledge these differences at the firm level.

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Figure 1. Trends in regulatory fragmentation and intensity

Figure (1a) displays the mean values of regulatory fragmentation and regulatory intensity for US firms spanning from 1995 to 2019. The data for regulatory fragmentation is sourced from Kalmenovitz et al. (2024), while the regulatory intensity data originates from Kalmenovitz (2023). Each year's mean value represents the arithmetic average across all firms for that year. Figure (1b) illustrates the country-level daily regulatory intensity from 1993 to 2020, based on the count of active federal rules. These values are normalized to an average of 100 and are annotated with key events, including Presidential elections, the LTCM crisis (October 1998), the Iraq war (April 2003), the enactment of the Affordable Care Act and Dodd-Frank Act (March and July 2010), and the COVID-19 outbreak (April 2020).

Figure (1a). Firm-level regulatory fragmentation and regulatory intensity
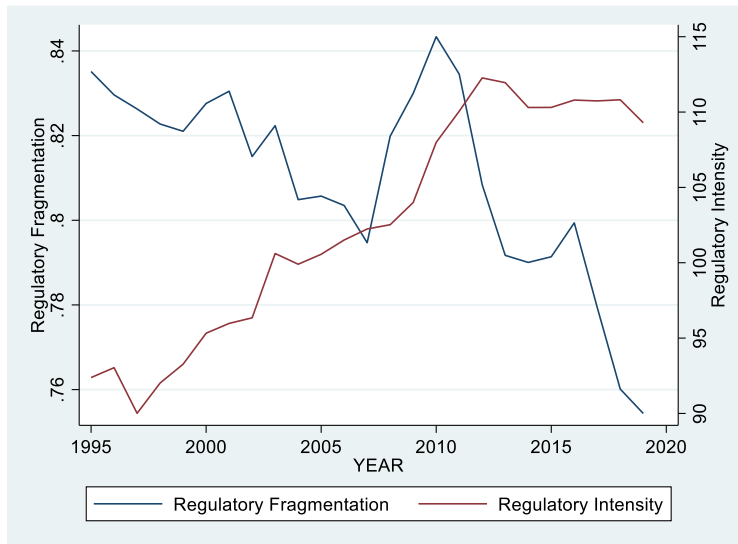
Figure (1b). Country-level regulatory intensity (i.e., total number of federal rules)
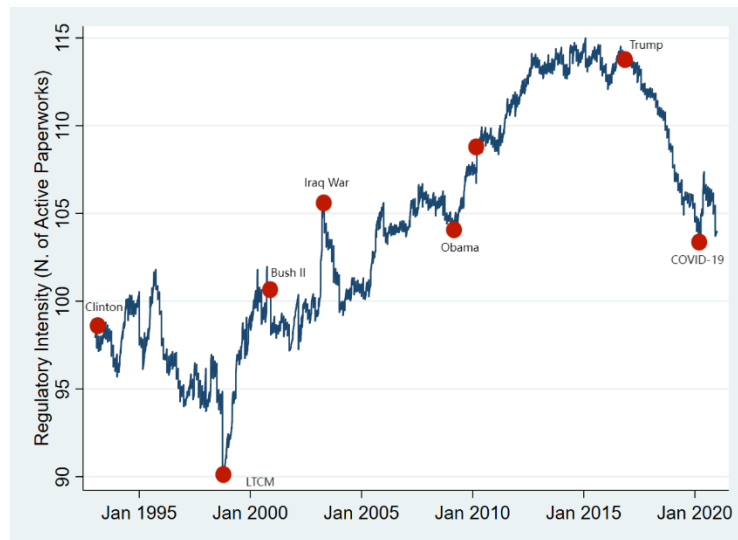
Figure 2. Regulatory fragmentation and earnings management

This figure illustrates both the absolute values and temporal changes in regulatory fragmentation and earnings management (represented by *|AA|*, the absolute value of abnormal accruals, with a one-year lag). In Figure (2a), the blue line represents the values of |AA|, indicating the average earnings management among the sample firms. The red line illustrates the values of regulatory fragmentation, a text-based index measuring the complexity faced by companies when their operational topics are regulated by multiple federal agencies. Figure (2b) features the blue line showing the changes in |AA|, while the red line tracks the changes in regulatory fragmentation. The data includes 29,269 observations from 3,855 US public firms collected between 2005 and 2019.

Figure (2a). Regulatory fragmentation and earnings management
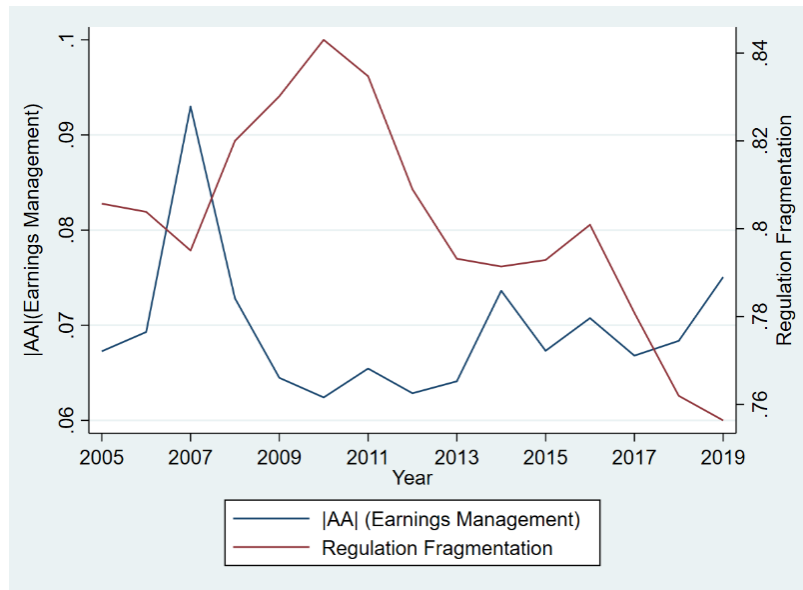
Figure (2b). Changes in regulatory fragmentation and earnings management
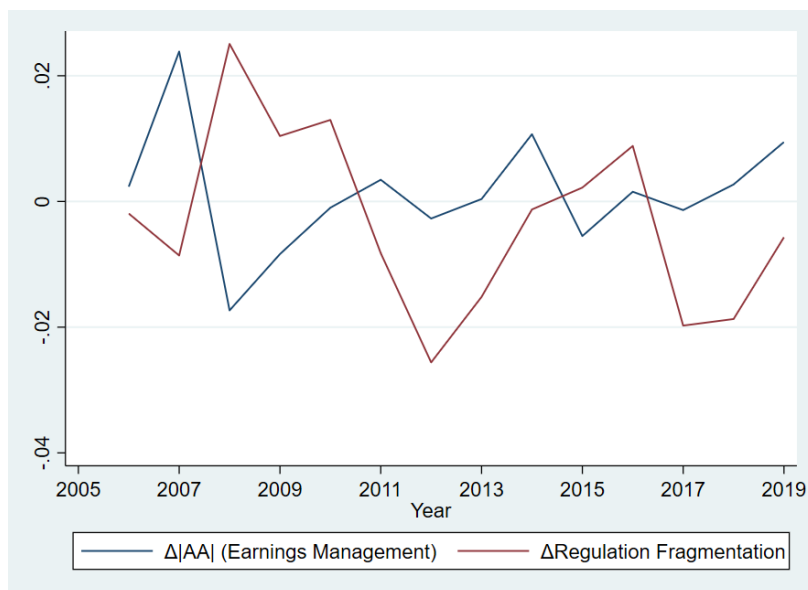
Table 1. Summary statistics

This table provides summary statistics for a sample of US publicly listed firms, focusing on those with available data on regulatory fragmentation from 2005 to 2019. We report key statistical measures such as the mean, median, first quartile, third quartile, standard deviation, and the total number of observations. Definitions for all variables are detailed in the appendix.

	N	Mean	St. Dev	p25	Median	p75
Regulatory Fragmentation	29,269	0.803	0.029	0.785	0.804	0.823
Dispersion of Topics	29,269	0.936	0.010	0.930	0.937	0.944
Regulation Quantity	29,269	11.891	0.141	11.786	11.893	11.984
|AA|	29,269	0.070	0.082	0.027	0.063	0.135
Restate	29,269	0.013	0.115	0.020	0.045	0.090
Size	29,269	6.547	1.985	5.157	6.556	7.871
ROA	29,269	0.027	0.239	0.001	0.068	0.119
σSale	29,269	0.132	0.154	0.043	0.085	0.163
σCFO	29,269	0.054	0.094	0.018	0.033	0.061
Operating Shock	29,269	0.650	0.477	0	1	1
Ln(Firm Age)	29,269	2.459	0.536	2.079	2.485	2.833
Leverage	29,269	0.041	0.352	-0.188	.06	0.266
Market-to-Book	29,269	2.968	8.009	1.252	2.107	3.662
Financing Needs	29,269	0.241	0.428	0	0	0
Equity Issuances	29,269	0.125	0.330	0	0	0
Debt Issuances	29,269	0.554	0.497	0	1	1
Beat Benchmark	29,269	0.271	0.445	0	0	1
Equity Compensation	29,269	0.016	0.034	0.004	0.007	0.017
Herfindahl Index	29,269	0.222	0.197	0.074	0.151	0.294
Dividend	29,269	0.396	0.489	0	0	1
Operating Cycle	29,269	3.839	2.002	3.614	4.659	5.111
Big 4	29,269	0.743	0.437	0	1	1
Auditor Tenure	29,269	0.575	0.494	0	1	1

Table 2. Regulatory fragmentation and earnings management

This table outlines the impact of regulatory fragmentation on earnings management among US firms from 2005 to 2019. The key independent variable, *Regulatory Fragmentation*, is a text-based index quantifying the complexity a company faces when its operational topics are subject to regulation by multiple federal agencies in a particular year. The dependent variables analysed are (1) |*AA*|, representing the absolute value of a firm's abnormal accruals in a given year, and (2) *Restate*, a binary variable set to one if a firm is mandated to issue an 8-K report by the SEC in that year, and zero otherwise. Definitions for all variables are provided in the appendix. Independent variables are adjusted to have a one-period lag. The analysis incorporates firm fixed effects and industry × year fixed effects, based on firm IDs, Fama-French 49 industry classifications, and year dummies. Standard errors are clustered at both the firm and year levels. The symbols ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

	(1)	(2)	(3)	(4)
	|AA|	Restate	|AA|	Restate
Regulatory Fragmentation	-0.253***	-0.259**	-0.274***	-0.280***
	(-4.783)	(-2.330)	(-5.259)	(-2.609)
Dispersion of Topics	0.093	0.281	0.051	0.297
	(0.827)	(1.216)	(0.481)	(1.234)
Regulation Quantity	-0.041*	-0.111**	-0.050**	-0.114**
	(-1.853)	(-2.341)	(-2.398)	(-2.394)
Size			-0.008*	0.006
			(-2.090)	(1.661)
ROA			-0.006	-0.003
			(-0.745)	(-0.309)
σSale			-0.007	0.010
			(-1.011)	(1.386)
σCFO			-0.021**	0.030
			(-2.321)	(1.014)
Operating Shock			-0.001	-0.003
			(-1.096)	(-1.325)
Ln(Firm Age)			-0.005	0.004
			(-1.293)	(0.563)
Leverage			0.021***	0.011***
			(4.317)	(2.676)
Market-to-Book			-0.000	0.000
			(-0.115)	(0.376)
Financing Needs			0.003*	0.004
			(2.092)	(1.759)
Equity Issuances			-0.000	-0.001
			(-0.206)	(-0.469)
Debt Issuances			0.002	-0.002
			(1.392)	(-1.237)
Beat Benchmark			-0.001	-0.002
			(-1.424)	(-1.320)
Equity Compensation			0.205***	-0.096
			(2.965)	(-1.746)
Herfindahl Index			-0.001	-0.013
			(-0.149)	(-1.012)
Dividend			-0.003*	-0.006*
			(-1.863)	(-1.788)
Operating Cycle			-0.001	0.001
			(-1.311)	(0.419)
Big 4			-0.002	-0.014*
			(-0.667)	(-2.104)
Auditor Tenure			0.002	0.008***
			(1.140)	(3.242)
Constant	0.672*	1.279**	0.888***	1.274**
	(1.905)	(2.204)	(2.709)	(2.261)
Observations	29,269	29,269	29,269	29,269
First Stage Regressors	Yes	-	Yes	-
Firm FEs	Yes	Yes	Yes	Yes
Industry × Year FEs	Yes	Yes	Yes	Yes
Adjusted R^2	0.333	0.041	0.352	0.043

Table 3. Dealing with endogeneity: propensity score matching (PSM) and entropy balancing

This table presents the impact of regulatory fragmentation on earnings management, analysed using a matched sample derived through propensity score matching (PSM) and a sample post-entropy balancing. The treatment group consists of firm-year observations with high levels of regulatory fragmentation (above the median) for a given year. The control group for the PSM analysis comprises firms matched on the criterion of having low levels of regulatory fragmentation (below the median) for the same year. The propensity score is calculated using all control variables listed in Table 2. *Regulatory Fragmentation*, the independent variable, is a text-based index gauging the complexity faced by companies when their operational topics are regulated by multiple federal agencies annually. The dependent variables are (1) *|AA|*, the absolute value of a firm's abnormal accruals in a given year, and (2) *Restate*, a binary variable assigned one if a firm must issue an 8-K report as required by the SEC in a given year, and zero otherwise. Comprehensive definitions of all variables are available in the appendix, and independent variables are adjusted to have a one-period lag. We include firm fixed effects and industry × year fixed effects, based on firm IDs, Fama-French 49 industry classifications, and year dummies. Standard errors are clustered at the firm and year levels. Statistical significance is indicated by ***, **, and * at the 1%, 5%, and 10% levels, respectively.

	(1)	(2)	(3)	(4)
	PSM		*Entropy Balancing*	
	|AA|	**Restate**	**|AA|**	**Restate**
Regulatory Fragmentation	-0.278***	-0.359**	-0.268***	-0.324***
	(-3.756)	(-2.224)	(-5.016)	(-2.659)
Dispersion of Topics	0.234	0.216	0.051	0.261
	(1.757)	(0.608)	(0.513)	(0.992)
Regulation Quantity	-0.031	-0.118**	-0.037*	-0.125***
	(-1.287)	(-2.568)	(-1.917)	(-2.631)
Observations	15,607	15,607	29,269	29,269
Control variables	Yes	Yes	Yes	Yes
First Stage Regressors	Yes	-	Yes	-
Firm FEs	Yes	Yes	Yes	Yes
Industry × Year FEs	Yes	Yes	Yes	Yes
Adjusted R^2	0.364	0.0223	0.327	0.043

Table 4. Dealing with endogeneity: two-stage least square (2SLS) analysis

This table displays the results of a two-stage least squares analysis employing an instrumental variable for regulatory fragmentation. The instrumental variable is city-level regulatory fragmentation, calculated as the average regulatory fragmentation for all firms in a city for a specific year. In column (1), regulatory fragmentation in year t serves as the dependent variable. Columns (2) and (3) focus on two dependent variables: (1) /AA/, the absolute value of a firm's abnormal accruals in a given year, and (2) *Restate*, a binary variable set to one if a firm must issue an 8-K report as mandated by the SEC in a given year, and zero otherwise. All variables are defined in the appendix, with independent variables incorporating a one-period lag. Standard errors are clustered at both the firm and year levels. The symbols ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

	(1) Regulatory Fragmentation	(2) |AA|	(3) Restate
City Regulatory Fragmentation	0.592***		
	(35.206)		
Instrumented Reg. Fragmentation		-0.291**	-0.287*
		(-2.460)	(-1.790)
Dispersion of Topics	-0.061	0.037	0.198
	(-1.755)	(0.310)	(0.957)
Regulation Quantity	-0.107***	-0.055**	-0.140***
	(-15.863)	(-2.160)	(-3.332)
Observations	29,269	29,269	29,269
Control variables	Yes	Yes	Yes
Kleibergen-Paap rk Wald F-statistic	493.714		
LIML Size of Nominal 10%	16.380		
Firm FEs	Yes	Yes	Yes
Industry × Year FEs	Yes	Yes	Yes
Adjusted R^2	0.950	0.024	0.003

Table 5. Dealing with endogeneity: reverse causality

This table reports the results of change regression analyses. The dependent variables in this analysis are the first differences of *|AA|* and *Restate*. *|AA|* represents the absolute value of a firm's abnormal accruals in a given year, while *Restate* is a binary variable set to one if a firm is mandated to issue an 8-K report by the SEC in that year, and zero otherwise. The independent variable, *Regulatory Fragmentation*, along with the control variables, are also presented in their first difference form. The definitions of all variables (prior to taking the first differences) are provided in the appendix. Independent variables include a one-period lag. Standard errors are clustered at both the firm and year levels. Symbols ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

	(1)	(2)
	Δ|AA|	ΔRestate
ΔRegulatory Fragmentation	-0.157**	-0.311*
	(-2.449)	(-1.846)
ΔDispersion of Topics	0.176	1.000***
	(0.960)	(2.968)
ΔRegulation Quantity	-0.043	-0.058
	(-1.610)	(-1.292)
Observations	24,887	24,887
Changes in control variables	Yes	Yes
Firm FEs	Yes	Yes
Industry × Year FEs	Yes	Yes
Adjusted R^2	0.156	0.080

Table 6. Evidence from exogenous shock: the election of Donald Trump

This table conveys the results from a difference-in-differences (DiD) analysis, utilizing President Trump's inauguration in January 2017 as an exogenous shock. The analysis includes a sample of treatment and control firms matched through propensity score matching (PSM) from 2014 to 2019. The treatment group is composed of firms with related rules count below the sample median in both 2015 and 2016. Conversely, the control group includes firms with related rules count above the sample median in these years. The propensity score is computed using firm characteristics outlined in Table 2, such as firm size, ROA, sales volatility, cash flow volatility, and operating shock, with a caliper set at 0.01. The dependent variables in the analysis are *|AA|* and *Restate*. Here, *|AA|* denotes the absolute value of a firm's abnormal accruals in a given year, while *Restate* is a binary variable assigned one if a firm is required to issue an 8-K report by the SEC in a particular year, and zero otherwise. *Post_2017* is a binary variable assigned one for the years 2017 to 2019, and zero otherwise, while *Year_X* is a binary variable assigned one in the specified year X, and zero in all other years. Definitions for all variables, including the lagged one-period independent variables, are provided in the appendix. Standard errors are clustered at both the firm and year levels. The symbols ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

	(1)	(2)	(3)	(4)
	|AA|	**Restate**	**|AA|**	**Restate**
Treated × Post_2017	0.007**	0.009**		
	(2.186)	(2.468)		
Treated × Year_2015			0.001	-0.002
			(0.442)	(-0.284)
Treated × Year_2016			-0.004	0.008
			(-1.117)	(1.560)
Treated × Year_2017			0.001	0.012**
			(0.420)	(2.585)
Treated × Year_2018			0.006*	0.012**
			(1.774)	(2.043)
Treated × Year_2019			0.012***	0.009*
			(2.659)	(1.774)
Dispersion of Topics	-0.297	-0.290	0.646**	0.642**
	(-1.173)	(-1.133)	(2.710)	(2.688)
Regulation Quantity	-0.043	-0.041	-0.008	-0.006
	(-1.292)	(-1.191)	(-0.138)	(-0.106)
Observations	3,460	3,460	3,460	3,460
Control variables	Yes	Yes	Yes	Yes
Firm FEs	Yes	Yes	Yes	Yes
Year FEs	Yes	Yes	Yes	Yes
Adjusted R^2	0.360	0.204	0.360	0.203

Table 7. Cross-sectional heterogeneity: the role of internal governance

This table outlines the influence of internal governance on the interplay between regulatory fragmentation and earnings management among US firms from 2005 to 2019. *Regulatory Fragmentation* is a text-based index quantifying the complexity a company encounters when regulated by multiple federal agencies annually. We examine three internal governance proxies: (1) executive horizon, calculated as the age of retirement (assumed to be sixty-five) minus the average age of the top 5 non-CEO executives; (2) the percentage of independent directors; and (3) the percentage of institutional ownership. For clearer interpretation of the regression results, we generate three dummy variables—*High Executive Horizon*, *High % of Independent Directors*, and *High % of Institutional Ownership*—each signifying a higher-than-median level in the respective governance measure for a given year. The dependent variables are (1) *|AA|*, the absolute value of a firm's abnormal accruals in a specific year, and (2) *Restate*, a binary variable set to one if a firm is required to issue an 8-K report by the SEC in that year, and zero otherwise. Definitions for all variables are available in the appendix, with independent variables incorporating a one-period lag. The analysis includes firm fixed effects and industry × year fixed effects, based on firm IDs, Fama-French 49 industry classifications, and year dummies. Standard errors are clustered at the firm and year levels. The symbols ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

	(1) $|AA|_{t+1}$	(2) $Restate_{t+1}$	(3) $|AA|_{t+1}$	(4) $Restate_{t+1}$	(5) $|AA|_{t+1}$	(6) $Restate_{t+1}$
Regulatory Fragmentation	-0.189**	-0.184***	-0.165**	-0.124*	-0.203***	-0.396***
	(-2.359)	(-2.871)	(-2.187)	(-1.924)	(-2.850)	(-2.745)
High Executive Horizon	0.055**	0.188**				
	(2.248)	(2.202)				
Regulatory Fragmentation × Executive Horizon	-0.069**	-0.152**				
	(-2.271)	(-2.196)				
High % of Independent Directors			-0.010	0.065		
			(-0.526)	(1.060)		
Regulatory Fragmentation × High % of Independent Directors			-0.013***	-0.078*		
			(-2.578)	(-1.940)		
High % of Institutional Ownership					-0.001**	-0.037
					(-2.028)	(-0.546)
Regulatory Fragmentation × High % of Institutional Ownership					-0.005**	-0.041**
					(-2.102)	(-2.505)
Dispersion of Topics	0.205	0.461**	0.117	0.218	0.102	0.347
	(1.451)	(2.339)	(0.861)	(1.203)	(0.876)	(1.183)
Regulation Quantity	-0.023	-0.001	-0.006	0.002	-0.021	-0.118*
	(-0.996)	(-0.145)	(-0.243)	(0.194)	(-1.174)	(-1.816)
Observations	15,848	15,848	11,284	11,284	20,884	20,884
Control variables	Yes	Yes	Yes	Yes	Yes	Yes
Firm FEs	Yes	Yes	Yes	Yes	Yes	Yes
Industry × Year FEs	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.251	0.035	0.273	0.047	0.311	0.043

Table 8. Cros-sectional heterogeneity: firm size

This table reports the impact of regulatory fragmentation on earnings management across two subsamples differentiated by firm size. The subsample of big firms comprises observations in the highest tercile of total assets for a given year, while the subsample of small firms includes observations in the lowest tercile of total assets. The principal independent variable, *Regulatory Fragmentation*, is a text-based index assessing the complexity faced by a company when multiple federal agencies regulate its operational topics in a given year. The dependent variables are (1) *|AA|*, representing the absolute value of a firm's abnormal accruals in a particular year, and (2) *Restate*, a binary variable assigned one if a firm is obligated to issue an 8-K report as required by the SEC in that year, and zero otherwise. All variables are defined in the appendix, with independent variables featuring a one-period lag. The analysis incorporates firm fixed effects and industry $\times$ year fixed effects, based on firm IDs, Fama-French 49 industry classifications, and year dummies. Standard errors are clustered at both the firm and year levels. The notations ***, **, and * signify statistical significance at the 1%, 5%, and 10% levels, respectively.

	(1)	(2)	(3)	(4)
	Big Firms (Top 1/3 Assets)		*Small Firms (Bottom 1/3 Assets)*	
	|AA|	Restate	|AA|	Restate
Regulatory Fragmentation	-0.176*	-0.186***	-0.569***	-0.459***
	(-1.783)	(-2.726)	(-4.522)	(-3.376)
Dispersion of Topics	-0.165	0.603**	0.165	0.200
	(-1.133)	(2.442)	(0.516)	(0.477)
Regulation Quantity	-0.024	-0.005	-0.116**	-0.156**
	(-0.806)	(-0.350)	(-2.272)	(-2.349)
P-Value ($\beta_0 = \beta_1$)	-	-	0.029	0.064
Observations	9,164	9,164	9,164	9,164
Control variables	Yes	Yes	Yes	Yes
Firm FEs	Yes	Yes	Yes	Yes
Industry $\times$ Year FEs	Yes	Yes	Yes	Yes
Adjusted R^2	0.271	0.048	0.333	0.076

Table 9. Regulatory fragmentation and real earnings management

This table outlines the impact of regulatory fragmentation on real earnings management for US firms from 2005 to 2019. The key independent variable, *Regulatory Fragmentation*, is a text-based index evaluating the complexity encountered by a company when its operations are subject to regulation by multiple federal agencies in a specific year. The dependent variables include abnormal cash flow, abnormal production costs, and abnormal discretionary expenses. Definitions for all variables are provided in the appendix, with independent variables including a one-period lag. The analysis incorporates firm fixed effects and industry × year fixed effects, determined by firm IDs, Fama-French 49 industry classifications, and year dummies. Standard errors are clustered at the firm and year levels. Symbols ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

	(1) Abnormal CFO	(2) Abnormal PROD	(3) Abnormal DISX
Regulatory Fragmentation	-0.465***	-0.414***	0.270
	(-3.852)	(-3.495)	(0.884)
Dispersion of Topics	0.184	-0.306	-0.624
	(0.711)	(-1.135)	(-1.296)
Regulation Quantity	-0.018	-0.018	-0.009
	(-0.412)	(-0.388)	(-0.098)
Observations	28,925	28,925	28,925
Control variables	Yes	Yes	Yes
Firm FEs	Yes	Yes	Yes
Industry × Year FEs	Yes	Yes	Yes
Adjusted R^2	0.602	0.757	0.730

Appendix. Variable definition

Variable	Definition	Data Source
Regulatory Variables		
Regulatory Fragmentation	A text-based index that measures the complexity a company experiences when its operation topics are regulated by multiple federal agencies in a given year, which is calculated as $1 - \sum_{Topic} \sum_{Agency} P_{Topic} \omega^2_{Topic,Agency}$, where P_{Topic} is the fraction of the 10-K dedicated to a given regulatory topic in a given year. $\omega_{Topic,Agency}$ is the fraction of the words in all Federal Register documents written by each agency on a given topic in a given year.	Federal Register, SEC EDGAR, via. Kalmenovitz et al. (2024)
Dispersion of Topics	The degree of dispersion of topics in a firm's 10-K, which is calculated as $1 - \sum_{Topic} P^2_{Topic}$, where P_{Topic} is the fraction of the 10-K dedicated to a given regulatory topic in a given year.	Federal Register, SEC EDGAR, via. Kalmenovitz et al. (2024)
Regulation Quantity	Regulation quantity calculated as $\sum_{Agency} P_{Topic} Ln(Topic\ Words\ in\ Federal\ Register)$, where P_{Topic} is the fraction of the 10-K dedicated to a given regulatory topic in a given year. *Ln(Topic Works in Federal Register)* is the natural logarithm of the number of words in each topic.	Federal Register, SEC EDGAR, via. Kalmenovitz et al. (2024)
Earnings Management Variables		
|AA|	Absolute abnormal accruals computed as the difference between a firm's total accruals and its nondiscretionary accruals.	Compustat
Restate	A dummy variable that equals one if a firm is required to release 8-K by SEC in a given year, and zero otherwise.	Audit Analytics
Abnormal CFO	Abnormal cash flows, which is the residual from the following regression model: $$\frac{CFO_{i,t}}{Assets_{i,t-1}} = k_1 \frac{1}{Assets_{i,t-1}} + k_2 \frac{Sales_{i,t}}{Assets_{i,t-1}} + k_3 \frac{\Delta Sales_{i,t}}{Assets_{i,t-1}} + \varepsilon_{i,t}$$ Where *CFO* is the cash flow from operating, *Assets* is the total assets, and *Sales* is the total avenue. The value of abnormal cash flows is multiplied by -1.	Compustat
Abnormal PROD	Abnormal production costs, which is the residual from the following regression model: $$\frac{PROD_{i,t}}{Assets_{i,t-1}} = k_1 \frac{1}{Assets_{i,t-1}} + k_2 \frac{Sales_{i,t}}{Assets_{i,t-1}} + k_3 \frac{\Delta Sales_{i,t}}{Assets_{i,t-1}} + k_4 \frac{\Delta Sales_{i,t-1}}{Assets_{i,t-1}} + \varepsilon_{i,t}$$ Where *PROD* represents the production costs, defined as the sum of *COGS* and the change in inventories.	Compustat
Abnormal DISX	Abnormal discretionary expenses, which is the residual from the following regression model: $$\frac{DISX_{i,t}}{Assets_{i,t-1}} = k_1 \frac{1}{Assets_{i,t-1}} + k_2 \frac{Sales_{i,t}}{Assets_{i,t-1}} + k_3 \frac{\Delta Sales_{i,t}}{Assets_{i,t-1}} + \varepsilon_{i,t}$$ Where *DISX* represents the discretionary expenditures, defined as the sum of advertising expenses, R&D expenses and SG&A. The value of abnormal discretionary expenses is multiplied by -1.	Compustat
Firm and CEO Characteristics		
Size	The natural log of a firm's total assets in a given year.	Compustat
ROA	Return on assets, calculated as income before extraordinary items plus interest expenses plus taxes divided by total assets.	Compustat

σSale	The standard deviation of sales divided by total assets, calculated across the current and the preceding two years.	Compustat
σCFO	The standard deviation of cash flows divided by total assets, computed for the current and the past two years.	Compustat
Operating Shock	A dummy variable that equals one if a firm experiences large operational shocks, including (1) a major merger or acquisition, (2) large, discontinued operations, (3) large restructuring charges, (4) large special items, or (5) a four-digit SIC industry change, and zero otherwise.	Compustat
Executive Horizon	A measure of the monitoring incentive of non-CEO executives, calculated as sixty-five (assumed age of retirement) minus the average age of the top 5 non-CEO executives.	ExecuComp
% of Independent Directors	The proportion of independent directors, in percentage.	BoardEx
% of Institutional Ownership	The proportion of shares owned by institutional owners, in percentage.	Institutional (13f) Holdings

Earnings Management Incentives

Ln(Firm Age)	The natural log of firm age based on the IPO year.	Compustat
Leverage	Net leverage calculated as the ratio of long-term debt plus debt in current liabilities minus cash and short-term investment to total assets.	Compustat
Market-to-Book	Market-to-book ratio, calculated as the annual closing share price divided by the book value per share.	Compustat
Financing Needs	A dummy variable that equals one if the ratio of free cash flow to current assets is less than -0.5, and zero otherwise.	Compustat
Equity Issuances	A dummy variable that equals one if the value of common and preferred stocks issued by the firm in the current period is greater than three percent of its market value at the end of the year, and zero otherwise.	Compustat
Debt Issuances	A dummy variable that equals one if net issuances of long-term debt is greater than zero, and zero otherwise.	Compustat
Beat Benchmark	A dummy variable that equals one if a firm has only reported earnings increases for at least five consecutive years, and zero otherwise.	Compustat
Equity Compensation	The ratio of equity compensation, calculated as stock-based compensation expense plus pro forma option expense, if available, divided by total assets.	Compustat
Herfindahl Index	The Herfindahl-Hirschman Index (HHI) based on Fama-French 49 industry classification.	Compustat
Dividend	A dummy variable that equals one if a firm pays dividends in a given year, and zero otherwise.	Compustat
Operating Cycle	The natural log of the operating cycle duration, calculated as 360/(sales/average accounts receivable) + 360/(cost of goods sold)/(average inventory).	Compustat
Big 4	A binary variable set to one if a firm employs a Big 4 auditor in a given year, and zero otherwise.	Compustat
Auditor Tenure	The natural logarithm of the auditor's tenure.	Compustat

Online Appendix

Table A1. Test of mean differences following propensity score matching

This table showcases t-tests for mean differences within the matched sample derived from the propensity score matching (PSM) method outlined in Table 3. The treatment group consists of firm-year observations exhibiting high levels of regulatory fragmentation (above the median) for a specific year. The control group comprises firms matched based on having low levels of regulatory fragmentation (below the median) for the same year. The propensity score is calculated using all control variables specified in Table 2. For both groups, the table reports the number of observations and the mean values of all control variables. The symbols ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

	Treatment group		Control group		Mean Diff	t-Value
	N	Mean	N	Mean		
Dispersion of Topics	7,784	0.936	7,823	0.936	0	0.109
Regulation Quantity	7,784	11.890	7,823	11.890	0	-0.032
Size	7,784	6.575	7,823	6.586	-0.011	-0.352
ROA	7,784	0.033	7,823	0.033	0	0.037
σSale	7,784	0.130	7,823	0.130	0	0.194
σCFO	7,784	0.051	7,823	0.052	-0.001	-0.950
Operating Shock	7,784	0.655	7,823	0.646	0.009	1.231
Ln(Firm Age)	7,784	2.457	7,823	2.473	-0.017	-0.926
Leverage	7,784	0.038	7,823	0.042	-0.004	-0.705
Market-to-Book	7,784	2.986	7,823	2.885	0.100	0.795
Financing Needs	7,784	0.231	7,823	0.230	0.001	0.171
Equity Issuances	7,784	0.122	7,823	0.114	0.008	1.527
Debt Issuances	7,784	0.551	7,823	0.554	-0.002	-0.313
Beat Benchmark	7,784	0.268	7,823	0.273	-0.005	-0.674
Equity Compensation	7,784	0.016	7,823	0.016	0	-0.156
Herfindahl Index	7,784	0.222	7,823	0.224	-0.003	-0.820
Dividend	7,784	0.394	7,823	0.398	-0.004	-0.484
Operating Cycle	7,784	3.839	7,823	3.834	0.005	0.154
Big 4	7,784	0.745	7,823	0.750	-0.004	-0.605
Auditor Tenure	7,784	0.575	7,823	0.578	-0.003	-0.413

Table A2. Robustness test: remove firms with substantial changes in operations

This table presents the effects of regulatory fragmentation on earnings management among US firms from 2005 to 2019, with a focus on refining the sample for more accurate analysis. In columns (1) and (2), observations are excluded if a firm's industry classification changes from the previous year, using the 500 text-based industry classifications by Hoberg and Phillips (2010, 2016) for precise industry identification. Columns (3) and (4) omit observations where the number of business segments fluctuates by more than 30% relative to the prior year. Similarly, columns (5) and (6) exclude cases where a firm's total assets either increase or decrease by more than 30% compared to the previous year. *Regulatory Fragmentation*, a text-based index, measures the complexity encountered by companies due to regulation by multiple federal agencies in a given year. The dependent variables are (1) *|AA|*, the absolute value of a firm's abnormal accruals in a specific year, and (2) *Restate*, a binary variable that is set to one if a firm is required to issue an 8-K report by the SEC in that year, and zero otherwise. All models include control variables listed in Table 2. Definitions of all variables, including the lagged one-period independent variables, are detailed in the appendix. The analysis accounts for firm fixed effects and industry $\times$ year fixed effects, based on firm IDs, Fama-French 49 industry codes, and year dummies. Standard errors are clustered at the firm and year levels. Statistical significance is denoted by ***, **, and * at the 1%, 5%, and 10% levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
	Remove Changes in Industry		*Remove Changes in Num. of Segments*		*Remove Changes in Total Assets*	
	|AA|	**Restate**	**|AA|**	**Restate**	**|AA|**	**Restate**
Regulatory Fragmentation	-0.304***	-0.136*	-0.248***	-0.203**	-0.199***	-0.311**
	(-3.704)	(-1.816)	(-4.071)	(-2.007)	(-3.314)	(-2.025)
Dispersion of Topics	0.172	0.077	0.064	0.136	0.090	0.027
	(1.189)	(0.366)	(0.563)	(0.720)	(0.688)	(0.130)
Regulation Quantity	-0.036	-0.041	-0.046**	-0.045	-0.016	-0.063*
	(-1.299)	(-1.180)	(-2.191)	(-1.389)	(-0.738)	(-2.050)
Observations	18,080	18,080	23,120	23,120	21,725	21,725
Control variables	Yes	Yes	Yes	Yes	Yes	Yes
Firm FEs	Yes	Yes	Yes	Yes	Yes	Yes
Industry $\times$ Year FEs	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.335	0.063	0.338	0.044	0.343	0.047

Table A3. Robustness test: alternative measures of abnormal accruals and restatements

This table presents the influence of regulatory fragmentation on earnings management, using alternative measures for abnormal accruals and restatements. The independent variable, *Regulatory Fragmentation*, is a text-based index assessing the complexity companies face when regulated by multiple federal agencies in a specific year. The dependent variables are: (1) *|AA|*, the absolute value of a firm's abnormal accruals for a given year, determined using a modified Jones (1991) model by Kothari et al. (2005), and (2) *Restate_GAAP*, a binary variable set to one if a firm has significant restatements (8-K released) impacting its GAAP net income. This includes categories |1|, |3|, |4|, |6|, |7|, |8|, |12|, |14|, |17|, |18|, |20|, |21|, |22|, |23|, |24|, |32|, and |69| in Audit Analytics, and is zero otherwise. All models include control variables as listed in Table 2. Definitions for all variables, including the lagged one-period independent variables, are detailed in the appendix. The analysis incorporates firm fixed effects and industry × year fixed effects, based on firm IDs, Fama-French 49 industry codes, and year dummies. Standard errors are clustered at the firm and year levels. The symbols ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

	(1) |AA| from Modified Jones (1991) Model	(2) Restate_GAAP
Regulatory Fragmentation	-0.168***	-0.231**
	(-2.955)	(-2.183)
Dispersion of Topics	0.189	0.342
	(1.580)	(1.204)
Regulation Quantity	-0.022	-0.086
	(-1.274)	(-1.759)
Observations	29,112	29,269
Control variables	Yes	Yes
Firm FEs	Yes	Yes
Industry × Year FEs	Yes	Yes
Adjusted R^2	0.346	0.038

Table A4. Robustness test: alternative measure of regulatory fragmentation

This table reports the effects of regulatory fragmentation on earnings management among US firms from 2005 to 2019. The independent variable, *High Regulatory Fragmentation*, is a binary variable assigned one if a firm's regulatory fragmentation exceeds the (Fama-French 49) industry median in a given year, and zero otherwise. The dependent variables include (1) */AA/*, representing the absolute value of a firm's abnormal accruals in a specific year, and (2) *Restate*, a binary variable set to one if a firm is obligated to issue an 8-K report as mandated by the SEC in that year, and zero otherwise. Definitions for all variables are provided in the appendix, with independent variables featuring a one-period lag. The analysis accounts for firm fixed effects and industry × year fixed effects, based on firm IDs, Fama-French 49 industry classifications, and year dummies. Standard errors are clustered at both the firm and year levels. Symbols ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

	(1) $|AA|_{t+1}$	(2) $Restate_{t+1}$
High Regulatory Fragmentation	-0.006***	-0.007**
	(-3.335)	(-2.419)
Dispersion of Topics	0.072	0.318
	(0.689)	(1.310)
Regulation Quantity	-0.024	-0.088*
	(-1.162)	(-2.115)
Observations	29,269	29,269
Control variables	Yes	Yes
Firm FEs	Yes	Yes
Industry × Year FEs	Yes	Yes
Adjusted R^2	0.352	0.043

Table A5. Robustness test: alternative clustering and fixed effects

This table presents the effects of regulatory fragmentation on earnings management for a sample of US firms from 2005 to 2019. The key independent variable, *Regulatory Fragmentation*, is a text-based index that assesses the complexity encountered by a company when its operational topics are regulated by various federal agencies in a given year. The dependent variables are: (1) *|AA|*, the absolute value of a firm's abnormal accruals within a specific year, and (2) *Restate*, a binary variable set to one if a firm is mandated to issue an 8-K report by the SEC in that year, and zero otherwise. The analysis includes control variables as outlined in Table 2. Definitions for all variables, along with a one-period lag for independent variables, are provided in the appendix. The study incorporates firm fixed effects and industry × year fixed effects, based on firm IDs, Fama-French 49 industry codes, and year dummies. Additionally, columns (3) and (4) include headquarters location fixed effects based on state dummies. Standard errors are clustered at the (Fama-French 49) industry level for columns (1) and (2), and at the firm and year level for columns (3) and (4). Symbols ***, **, and * signify statistical significance at the 1%, 5%, and 10% levels, respectively.

	(1)	(2)	(3)	(4)
	|AA|	**Restate**	**|AA|**	**Restate**
Regulatory Fragmentation	-0.274***	-0.280**	-0.274***	-0.280***
	(-4.128)	(-2.291)	(-5.254)	(-2.607)
Dispersion of Topics	0.051	0.288	0.051	0.297
	(0.383)	(1.631)	(0.480)	(1.233)
Regulation Quantity	-0.050*	-0.111***	-0.050**	-0.114**
	(-1.948)	(-3.413)	(-2.396)	(-2.392)
Observations	29,269	29,269	29,269	29,269
Control variables	Yes	Yes	Yes	Yes
Firm FEs	Yes	Yes	Yes	Yes
Industry × Year FEs	Yes	Yes	No	No
HQ State FEs	No	No	Yes	Yes
Cluster	Industry	Industry	Firm ID, Year	Firm ID, Year
Adjusted R^2	0.352	0.044	0.350	0.041

Table A6. Regulatory intensity and earnings management

This table reports the effects of regulatory intensity on earnings management, using three proxies of regulatory intensity as outlined by Kalmenovitz (2023). These proxies include: (1) the number of active federal rules pertinent to a firm, (2) the total hours required for compliance with these federal rules, and (3) the total expenditure incurred in complying with the federal rules. The natural logarithm has been applied to all three variables for analysis. The dependent variables are (1) *|AA|*, representing the absolute value of a firm's abnormal accruals in a given year, and (2) *Restate*, a binary variable assigned one if a firm needs to issue an 8-K report as per SEC requirements in a particular year, and zero otherwise. The study includes control variables listed in Table 2. Definitions of all variables, including a one-period lag for independent variables, are provided in the appendix. The analysis incorporates firm fixed effects and industry × year fixed effects, based on firm IDs, Fama-French 49 industry codes, and year dummies. Standard errors are clustered at both the firm and year levels. The symbols ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
	|AA|	**Restate**	**|AA|**	**Restate**	**|AA|**	**Restate**
Number of Rules	0.003	-0.022				
	(0.118)	(-0.849)				
Time			0.015	-0.011		
			(0.786)	(-0.512)		
Dollar					-0.008	-0.012
					(-0.867)	(-1.537)
Observations	26,357	26,357	26,357	26,357	26,357	26,357
Control variables	Yes	Yes	Yes	Yes	Yes	Yes
Firm FEs	Yes	Yes	Yes	Yes	Yes	Yes
Industry-Year FEs	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.334	0.041	0.335	0.041	0.335	0.041