

Shareholder Litigation Risk and the Information Environment: Revisiting Evidence from Two Natural Experiments*

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Abstract

A court case that reduced securities class action litigation risk led to less frequent voluntary disclosure but did not significantly alter information asymmetry among market participants. Conversely, state laws that reduced derivative litigation risk led to more frequent voluntary disclosure but resulted in significantly higher information asymmetry. To reconcile these differences, we highlight that 10b-5 securities class actions address disclosure, while derivative suits can address broader corporate wrongdoing, leading to differential effects on firm operations. Our results suggest that the observed effect of derivative litigation risk on the information environment is primarily driven by concomitant changes in firm operations.

Keywords: Information Environment, Disclosure, Shareholder Litigation, Silicon Graphics Inc. Ruling, Universal Demand Laws

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1. Introduction

A large finance and accounting literature dating back to Skinner (1994) explores how shareholder litigation risk affects corporate decisions. Studies in this area deliver mixed results due to the endogenous nature of the relation. Recent papers seek to overcome the identification problem using court cases and state laws that provide exogenous variation in the threat of litigation. Despite these econometric improvements, there is still a lack of consensus. Notably, Houston, Lin, Liu, and Wei (HLLW 2019) and Bourveau, Lou, and Wang (BLW 2018) both examine legal events that lower shareholder litigation risk but reach opposite conclusions. HLLW show that the frequency of voluntary disclosure *decreases* after the Silicon Graphics Inc. ruling (SGI Ruling) lowered the threat of 10b-5 securities class action litigation for firms headquartered in the Ninth Circuit on July 2, 1999. Conversely, BLW show that the frequency of voluntary disclosure *increases* after the passage of universal demand laws (UD Laws) lowered the threat of derivative litigation for firms incorporated in twenty-three states between 1989 and 2005.

In this paper, we revisit these legal events with three specific goals. First, we study whether the change in litigation risk meaningfully impacts investors by assessing the shareholder value implications and examining whether observed changes in corporate disclosure coincided with changes in the level of information asymmetry among market participants. Second, we probe the robustness of HLLW and BLW's inferences by replicating their main findings on voluntary disclosure quantity and extending their analyses with commonly used measures of voluntary and mandatory disclosure quality. Finally, we shed light on the economic mechanism driving the results by examining whether changes in shareholder litigation risk influence firms' real operations. Together, these tests aim to reconcile contradictory findings in the literature and offer

new insights about the dynamics between different litigation types (10b-5 class action suits and derivative lawsuits), corporate disclosure, and firms' fundamental performance.

In theory, shareholder litigation risk can either promote or stifle corporate activity. Because plaintiffs do not know when managers receive bad news, the deterrence hypothesis of Skinner (1994, 1997) posits that managers disclose more information when the threat of litigation is high to weaken the claim that they improperly withheld information. In contrast, the liability hypothesis of Johnson, Kasznik, and Nelson (2001) argues that managers disclose less information when the threat of litigation is high because inaccurate forecasts can be used as a basis to sue the firm. Moreover, the threat of litigation may stifle corporate risk-taking if managers fear that these decisions could be the subject of future litigation if outcomes do not meet expectations.

We begin with an event study to assess overall shareholder value implications. We find no significant stock price reactions to the SGI Ruling, which lowered the threat of a securities class action suit by raising pleading standards. In contrast, we find significantly higher market reactions for treated firms around the Supreme Court of Pennsylvania's Cuker v. Mikalauskas ruling, which lowered the threat of a derivative lawsuit against firms incorporated in Pennsylvania by establishing a procedure hurdle that requires shareholders to obtain board approval before initiating a derivative suit (i.e., a UD requirement). These results provide initial evidence that different *types* of shareholder litigation rights have unique effects on corporations. While investors did not perceive the weakening of securities class action litigation rights via the SGI Ruling to meaningfully impact value, stock price reactions to Cuker v. Mikalauskas suggest that there are potential benefits associated with weakening derivative litigation rights via a UD requirement.

HLLW and BLW provide granular evidence on the relation between shareholder litigation risk and corporate decision-making by examining changes in voluntary disclosure quantity around the

SGI Ruling and the adoption of UD Laws, respectively. We successfully replicate their main findings on the frequency of earnings per share (EPS) forecasts and voluntary 8-Ks, both in terms of magnitude and statistical significance. For example, our estimates imply that firms affected by the SGI Ruling become 4.7 to 7.8 percentage points less likely to issue an EPS forecast, while firms affected by UD Laws become 4.4 to 5.9 percentage points more likely to issue a forecast.

HLLW (p. 257) describe their results as “... consistent with the ‘litigation-detering’ motives of earnings forecasts. Since the treated firms would expect a lower probability of being sued by the shareholders after the ruling, they become less incentivized to provide disclosures that are used to prevent large stock price movements and corresponding litigation.” This interpretation implies that the decline in securities class action litigation risk from the SGI Ruling *deteriorated* corporate information environments. In contrast, BLW (p. 800) conclude that “[o]verall, UD laws seem to incentivize managers to share more and better quality information with shareholders.” This interpretation implies that the decline in derivative litigation risk from the passage of UD Laws *improved* corporate information environments. Given these contrasting results, we next examine changes in disclosure quality to provide a more complete view of firms’ disclosure behavior.

Our tests reveal no significant changes in forecast bias or accuracy around the SGI Ruling. Conversely, the frequency of both optimistic and pessimistic forecasts significantly increases after the adoption of UD Laws and management forecast errors increase by more than one-third of the sample mean. The deterioration in voluntary disclosure quality contrasts with BLW’s conclusions and instead supports the notion that an increase in voluntary disclosure quantity does not necessarily improve the information environment (e.g., Loughran and McDonald 2014).

Because voluntary disclosure represents just one avenue for managers to shape their firm’s information environment, we also consider how shareholder litigation risk affects the quality of

mandatory disclosure. Using the disclosure quality measure (DQ) of Chen, Miao, and Shevlin (2015) and the financial statement value relevance measure (RSQ) of Francis and Schipper (1999) as proxies for mandatory disclosure quality, we again find disparate outcomes across settings. Specifically, we fail to reject the null hypothesis of no change in mandatory disclosure quality around the SGI Ruling. In contrast, we find a significant post-UD decrease in both DQ and RSQ. The latter findings suggest that firms provide less detailed and less informative financial reports when facing lower derivative litigation risk.

So far, our replications corroborate the main findings of HLLW and BLW, but our extensions challenge their conclusions. The SGI Ruling led to a decline in voluntary disclosure frequency but did not affect the bias or accuracy of earnings forecasts as would be predicted by the litigation deterrence hypothesis. Meanwhile, UD Laws led to an increase in the *quantity* of voluntary disclosure but a decline in the *quality* of both voluntary and mandatory disclosure, suggesting that corporate information environments do not improve post-UD. Therefore, to shed additional light on these interpretations and assess the implications for investors, we examine the net effect on the information environment by testing for changes in information asymmetry.

We form proxies for information asymmetry among analysts, using the dispersion and accuracy of analyst EPS forecasts, and in the trading environment, using bid-ask spreads and trading volume, based on evidence showing that these measures improve with the informativeness of firm disclosure policies (Lang and Lundholm 1996; Leuz and Verrecchia 2000). Consistent with our disclosure quality results, we find no significant changes in information asymmetry around the SGI Ruling, but a significant increase around the adoption of UD Laws. Our estimates imply that analyst forecast dispersion and error increase by roughly 8% to 9% of a standard deviation, bid-ask spreads widen by 4.4%, and daily trading volume declines by US\$4.5 million relative to firms

operating in the same state and industry but not incorporated in a UD state. Collectively, our analyses provide no evidence that the SGI Ruling led to a significant deterioration of corporate information environments beyond a decline in voluntary disclosure quantity. By contrast, after the adoption of UD Laws, disclosure quality falls and information asymmetry worsens.

Our findings raise an important question: what economic mechanism is driving these starkly different results across natural experiments? The direct mechanism through which a reduction in litigation risk influences the information environment is by shifting managers' incentive to disclose. We argue, however, that some types of litigation risk potentially influence the information environment through an indirect mechanism. Dechow, Ge, and Schrand (2010) note that variables intended to measure the quality of the information environment could reflect benign changes in fundamental performance. We argue that this issue is particularly salient for interpreting changes in the information environment around the adoption of UD Laws because derivative suits address breaches of duty that harm the entire firm. Consequently, derivative litigation covers a wide range of offenses including illegal activities, self-dealing, and other poor business practices (e.g., announcing an acquisition without adequate due diligence). This broad scope differs from the 10b-5 securities class action suits studied by HLLW, which pertain to the duty under securities law to provide accurate value-relevant information about firm activity.

Motivated by these legal distinctions, we examine the effect of shareholder litigation rights on firm operations. Consistent with the idea that derivative suits can address a wider set of issues than 10b-5 securities class actions, we show that firm risk-taking (proxied by R&D expense, acquisition expenditure, and cash flow volatility) increases after UD Laws lower the threat of a derivative suit but does not significantly change after the SGI Ruling lowers the threat of a securities class action. These findings are consistent with prior research that shows derivative litigation risk influences

operating decisions (Lin, Liu, and Manso 2021; Ni and Yin 2018) and shed new light on the limited role that securities class action litigation risk plays in corporate decision-making.

Based on this evidence, we construct an operational change variable that measures material upticks in risk-taking by indicating increases (from the three years before to the three years after a UD adoption event) in characteristics that directly affect firm value: average R&D expense, acquisition expenditure, or cash flow volatility. We use this operational change indicator and the triple-difference methodology of Gormley and Matsa (2011) to investigate the underlying mechanism driving changes in the information environment. Our results show that the effect of UD Laws is concentrated among firms that experience a material change in operations, suggesting that observed changes in the information environment indirectly stem from UD-induced changes in operations and not from a direct change in managerial disclosure incentives.¹ Further, we find that the effect of UD Laws does not appear to depend on the quality of alternative governance mechanisms, suggesting that shareholder litigation plays a unique, complementary, role in a firm's corporate governance.

Our main contributions are as follows. First, we provide a parsimonious rationale for seemingly contradictory results in the literature by highlighting important differences between 10b-5 securities class action lawsuits (affected by the SGI Ruling) and derivative suits (affected by UD Laws). Disparate findings emerge because 10b-5 securities class action suits address disclosure choices while derivative suits can address broader corporate wrongdoing.²

¹ This interpretation is in line with Brown and Tucker (2011), who show that firms are more likely to modify their disclosure behavior after large economic changes, and He and Plumlee (2020), who show that voluntary 8-K frequency is positively associated with R&D expense and volatility.

² Our findings suggest that papers studying litigation types that cover broad corporate malfeasance (e.g., Donelson and Yust 2014; Barzuza and Smith 2015; Levy, Shalev, and Zur 2018; Bourveau et al. 2018; Houston et al. 2018; Ni and Yin 2018; Basu and Liang 2019) may differ from papers studying litigation types with a more narrow focus on improper disclosure (e.g., Johnson, Kasznik, and Nelson 2001; Sikochi 2016; Hopkins 2018; Licht, Poliquin, Siegel, and Li 2018; Dong and Zhang 2018; Houston et al. 2019; Naughton, Rusticus, Wang, and Yeung 2019) because their

Second, our work helps unify BLW's findings with Houston, Lin, and Xie (2018), Ni and Yin (2018), and Huang, Li, Yu, and Zhou (2020), and casts doubt on BLW's conclusion that reducing derivative litigation risk incentivizes managers to improve disclosure. Instead, our results support an augmented view of Johnson et al.'s (2001) liability hypothesis: a lower risk of derivative litigation appears to incentivize managers to increase real activity like R&D and M&A, leading to more frequent but less accurate disclosure and higher information asymmetry.

Finally, we show that firms affected by the SGI Ruling exhibit no significant changes in value, disclosure quality, or information asymmetry. This new evidence casts doubt on the extent to which the post-SGI Ruling drop in disclosure quantity, documented by HLLW, materially affects investors. In sum, our findings provide a more nuanced view of how shareholder litigation risk influences corporate decision-making, information environments, and firm value.

2. Institutional background

The endogenous nature of shareholder litigation inhibits the ability to make causal inferences from changes around actual lawsuits (Field, Lowry, and Shu 2005). Therefore, we study two legal events – the SGI Ruling and the adoption of UD Laws – that exogenously lowered the threat of shareholder litigation. Below, we highlight that these events affect different types of shareholder litigation and argue that legal distinctions produce seemingly contradictory corporate outcomes. Specifically, HLLW find that the SGI Ruling (reducing securities class action litigation risk) decreased voluntary disclosure while BLW find that the passage of UD Laws (reducing derivative litigation risk) increased voluntary disclosure.

results may be driven by fundamental changes in firm activities, and may not reflect deliberate decisions of management to alter firm disclosure.

2.1. 10b-5 securities class action lawsuits and the SGI Ruling

Rule 10b-5, formally known as the Employment of Manipulative and Deceptive Practice, is a regulation under the Securities Exchange Act of 1934 that requires firms to provide shareholders with material information about firm activity in a timely manner. Starting with Skinner (1994), most research that examines litigation risk and the information environment focuses on Rule 10b-5 because it directly links litigation with management disclosure incentives. Specifically, the SEC states that, under Rule 10b-5, a manager “has an obligation to make full and prompt announcements of material facts regarding the company's financial condition” and “[n]ot only must material facts affecting the company’s operations be reported; they must also be reported promptly” (Sec. Exch. Act Rel. 8995 (1970)). Moreover, “there is a duty to correct statements made in any filing ... if the statements either have become inaccurate by virtue of subsequent events, or are later discovered to have been false and misleading from the outset ...” (Sec. Act Rel. 6084, 17 SEC Dock. 1048, 1054 (1979)). If managers fail to uphold these standards, a group of shareholders can jointly file a lawsuit to recover damages (i.e., a securities class action).

The Silicon Graphics Inc. ruling on July 2, 1999 reduced the threat of this type of litigation for firms located in the jurisdiction of the U.S. Ninth Circuit Court of Appeals. Shareholders in the case alleged that management issued misleading statements to inflate Silicon Graphics’ stock price while profitably selling their own shares. The Ninth Circuit Court dismissed the suit and raised pleading standards for future cases, concluding that “general allegations regarding negative internal reports and stock sales do not give rise to a strong inference of fraudulent intent...” Instead, plaintiffs must establish that alleged improper disclosure was made with “... deliberate recklessness” (183 F.3d 970). HLLW show that this procedural hurdle led to a roughly fifty percent relative decline in class action lawsuits against firms headquartered in the Ninth Circuit.

2.2. Derivative lawsuits and Universal Demand Laws

In contrast to 10b-5 securities class actions which focus narrowly on disclosure, derivative suits address broad breaches of fiduciary duty including the duty of loyalty (i.e., directors and officers furthering their own interests at the expense of the corporation) and the duty of care (i.e., incompetence/negligence running the corporation). While the Business Judgement Rule provides directors with immunity from liability when a plaintiff sues about operational decisions that are made (i) in good faith, (ii) with the care that a reasonably prudent person would use, and (iii) with reasonable belief that the director is acting in the best interests of the corporation, the court will not uphold the Business Judgement Rule if the director acted in gross negligence, bad faith, or had a conflict of interest.³ Thus, derivative lawsuits can allege a wide range of offenses and are typically triggered by value-destroying investment decisions, mishandling of information, and other bad business practices (Ferris, Jandik, Lawless, and Makhija 2007).

Shareholders initiate derivative suits on behalf of the entire corporation because “officers and directors, who normally decide whether corporations should file lawsuits, are often implicated in the alleged wrongdoing and cannot be trusted to make unbiased decisions regarding the merits of these suits” (Erickson 2009). The suits, however, cannot proceed without board approval (i.e., the demand requirement). Unsurprisingly, boards (either directly or through a special litigation committee) often deny the request and halt litigation (Swanson 1992). The futility exception shifts power back to shareholders by waiving the demand requirement if there exists reasonable doubt that the board can make an independent good faith decision on the suit. Plaintiffs frequently name directors as defendants, so the futility exception enables shareholders to circumvent the demand requirement and file a derivative lawsuit without needing board approval.

³ See https://www.law.cornell.edu/wex/business_judgment_rule

Between 1989 and 2005, 23 states eliminated the futility exception with a Universal Demand Law. As noted by the American Bar Association, the universal demand requirement imposes a significant hurdle on derivative litigation by always requiring board approval, barring irreparable harm (Jost 1994). Houston, Lin, and Xie (2018) and Appel (2019) show that this hurdle led to a roughly forty percent decline in derivative lawsuits against firms incorporated in UD states.⁴

The staggered adoption of UD Laws provides an empirical setting to examine the average effect of a lower ex-ante threat of derivative litigation. However, there are likely heterogeneous ex-post effects of realized derivative litigation depending on the nature of the suit. We cannot analyze heterogeneous ex-post effects across derivative suits because complaint documents typically allege multiple breaches of fiduciary duty that relate to *both* operations and disclosure. For example, a derivative lawsuit against the executives and directors of Schering-Plough alleged that “in violation of their fiduciary duties, defendants permitted and/or caused Schering to conduct its business in an unsafe, imprudent, illegal and/or dangerous manner by failing to timely or adequately correct deficiencies in the quality control and regulatory compliance functions of Schering’s manufacturing facilities, by failing to fully and/or accurately report the Company’s true financial condition and, by using non-public corporate information for their own personal benefit.”⁵ Similarly, a derivative lawsuit against the executives and directors of Oracle Corp.

⁴ The extent to which UD laws reduce derivative litigation is subject to debate. While Houston et al. (2018) and Appel (2019) show that derivative litigation rates fall after the adoption of UD laws using litigation data collected directly from firm 10-K’s, Donelson et al. (2021) find no relation between UD laws and derivative suits using data from a third-party provider, Advisen, and a later sample period. Our analysis merely requires that managers *perceive* a reduction in litigation risk and change their behavior accordingly, regardless of realized suit frequency. A host of recent papers show that firm behavior indeed changes around the passage of UD laws, including Manchiraju, Pandey, and Subramanyam (2021) and Chen, Li, and Xu (2019) on conditional conservatism; Adhikari, Agrawal, and Sharma (2019) and Jung, Nam, Shu (2018) on insider trading; Houston, Lin, Xie (2018) on the implied cost of capital; Ni and Yin (2018) on the cost of debt; Lin, Liu, and Manso (2021) on corporate innovation; Le, Nguyen, and Sila (2021) on idiosyncratic volatility; Chu and Zhao (2021) on mergers and acquisitions; Nguyen, Phan, and Sun (2018) on cash holdings; and Nguyen, Phan, and Lee (2020) on capital structure.

⁵ See <https://www.law360.com/articles/39369/schering-plough-officers-settle-shareholder-suit>

alleged a breach of the duty of loyalty due to an unfair pricing structure in the acquisition of Pillar Data System, as Pillar was majority-owned by Oracle’s CEO Lawrence Ellison.⁶

We also note that some similarities between derivative and class action lawsuits (for example as a tool to redress improper disclosure) can render derivative lawsuits duplicative. In 2016, for example, Twitter faced both a derivative and securities class action lawsuit alleging that its executives provided misleading disclosures to hide poor performance while selling millions of dollars of personally held stock. Underscoring the redundancy of the two types of lawsuits, attorneys for Twitter’s Board of Directors argued that “without a stay, the company would be in the "precarious position" of having to accuse its directors of violating federal securities laws in Delaware, while at the same time defending itself against those same allegations in California.”⁷ Indeed, Donelson, Kettell, McInnis, and Toyne (2021) find that over 90% of financial reporting-related derivative suits involve parallel litigation from security class actions or SEC enforcement actions, and show that stand-alone derivative suits primarily address non-financial reporting breaches of duty, such as improper M&A. We argue that legal differences between securities class action and derivative lawsuits, along with the fact that UD Laws do not inhibit the filing of class actions, renders prior research claiming that UD Laws *directly* affect disclosure/financial reporting practices somewhat surprising. Throughout our paper, we explore an indirect mechanism behind the observed changes in the information environment based on post-UD changes in real activities.

3. Shareholder litigation rights and firm value

We begin with an event study to assess the value implications of weakening shareholder litigation rights. Although shareholder litigation is a well-known governance mechanism, the value

⁶ See <https://www.law360.com/articles/275022/oracle-investors-sue-larry-ellison-over-pillar-purchase>

⁷ See <https://fortune.com/2016/10/26/twitter-shares-lawsuit/> and <https://finance.yahoo.com/news/twitter-derivative-suit-del-stayed-080527016.html>

implications of altering the strength of this governance mechanism remains an open question. On one hand, strong shareholder litigation rights may be beneficial if the threat of litigation disciplines management. On the other hand, strong litigation rights may inhibit risk-taking and distort disclosure policy if managers are unduly influenced by the fear of future litigation. Moreover, strong litigation rights may engender frivolous suits that increase legal costs.

Panel A of Table 1 reports ordinary least squares (OLS) regression estimates of 3-day percentage cumulative abnormal returns (CARs) associated with the SGI Ruling by the U.S. Ninth Circuit Court of Appeals on July 2, 1999. The SGI Ruling lowered the threat of a 10b-5 securities class action lawsuit against firms headquartered in the jurisdiction by imposing higher pleading standards. The variable of interest in Panel A is an indicator that equals one for firms headquartered in states under the jurisdiction of the Ninth Circuit Court (treated firms), and zero for firms headquartered outside of the Ninth Circuit (control firms). The treatment's unit of variation is the headquarter-state level, so we cluster standard errors by headquarter state to correct for potential cross-sectional correlation among abnormal returns.

Column (1) displays a simple regression of CARs on the SGI Ruling indicator, akin to a difference-in-means test. Columns (2) and (3) layer in incorporation state-year and industry-year fixed effects to control for potential unobserved heterogeneity. Across all three specifications, we find no significant differences in stock price reactions to the SGI Ruling for treated firms relative to control firms.⁸ Together, these (non)results imply that we cannot reject the null hypothesis that weakening securities class action litigation rights via the SGI Ruling had no effect on firm value.

⁸ On the surface, our findings contrast with Johnson, Nelson, and Prichard (2000), who find that limiting the ability to file securities class action lawsuits increases shareholder value. However, we note that their analysis of the SGI Ruling hand-picks a sample of 277 firms (93 treated, 184 control) in an ad-hoc manner. In contrast, we examine the full sample of 4,842 firms (1,094 treated, 3,748 control) that had available stock price data around the SGI Ruling.

Panel B reports OLS estimates of percentage CARs associated with the Cuker v. Mikalauskas ruling by the Supreme Court of Pennsylvania on April 21, 1997. Since there is no clean event date for UD Laws that were passed by state legislatures, Cuker v. Mikalauskas provides the best possible empirical setting to assess their value implication because the ruling lowered the threat of a derivative lawsuit against firms incorporated in Pennsylvania by adopting a universal demand requirement. The variable of interest in Panel B is an indicator that equals one for firms incorporated in Pennsylvania (treated firms), and zero for firms incorporated elsewhere (control firms). The treatment's unit of variation is the incorporation-state level, so we cluster standard errors by incorporation state. Column (1) displays a simple regression of CARs on the UD Ruling indicator, and Columns (2) and (3) layer in headquarter state-year and industry-year fixed effects.

Across all three specifications, our estimates show that the court's decision to weaken derivative litigation rights was met with significantly higher investor reactions for firms affected by the ruling than control firms. Notably, the coefficient in Column (3) implies that the ruling increased shareholder value by \$13.11 million dollars for the average Pennsylvania firm (0.944% CAR * \$1,388.72 million average market capitalization) relative to firms incorporated elsewhere. Together, these results imply that weakening derivative litigation rights via the UD Ruling had a positive effect on firm value.

4. Sample characteristics and empirical design

4.1. Sample construction

We begin with the full set of U.S. firm-year observations with data available in the CRSP-COMPUSTAT merged database and I/B/E/S between 1987 and 2007. We exclude utilities (SIC 4900-4999), financials (SIC 6000-6999), and public administration (SIC 9000-9999) because these firms are subject to additional regulation and financial reporting requirements. These steps yield a

panel of 61,857 firm-year observations from which we form our final sample for each analysis depending on data availability and empirical specification.

We construct our SGI Ruling sample following HLLW. Specifically, we restrict the sample period to fiscal years 1994-1998 and 2000-2003 and exclude firms with more than two years of missing data pre- or post-ruling. We then assign firms to treatment or control groups based on whether the firm is headquartered in the Ninth Circuit in 1999 and estimate the probability of treatment using pre-ruling average size, leverage, market-to-book, return on assets, stock volatility, analyst coverage, institutional ownership, and management forecast frequency.⁹ Finally, we match treated and control firms on a one-to-one basis using the nearest propensity score and allowing for replacement. This process yields a sample of 5,346 firm-year observations from 642 firms.

We construct our UD Law sample following BLW. The full sample consists of 57,690 firm-year observations from 7,511 firms with non-missing data between 1987 and 2007 – two years pre/post the adoption of the first/last UD Law. This sample period creates a symmetric panel and avoids confounding effects in the information environment prior to SFAS 95 and during the great recession.¹⁰ However, since voluntary disclosure data are not widely available before electronic filing became prevalent in the mid-1990s, our voluntary 8-K sample is restricted to 33,260 firm-year observations from 5,286 firms between 1995-2007 that can be linked to EDGAR using WRDS SEC Analytics Suite, and our management forecast sample is restricted to 29,599 firm-year observations from 5,017 firms between 1998-2007.

⁹ As in HLLW, we use historical headquarter data from 10-K filings compiled by Bill McDonald (<https://sraf.nd.edu>).

¹⁰ Statement of Financial Accounting Standards No. 95 (SFAS 95) established a new standard for cash flow reporting that requires firms to classify receipts and payments according to operating, investing, and financing activities.

4.2. Sample description

Panel A of Appendix 2 displays the distribution of observations by headquarter and incorporation state for our full sample of firm-years. Twenty-three percent of observations are headquartered within the jurisdiction of the Ninth Circuit Court of Appeals (Alaska, Arizona, California, Hawaii, Idaho, Montana, Nevada, Oregon, and Washington) and fifteen percent are incorporated in a state that passed a UD Law.¹¹ Notably, 73 percent of our sample firm-year observations are headquartered and incorporated in different states and only three states in the Ninth Circuit adopted a UD Law during our sample period (Hawaii, Idaho, and Montana). This feature of the data enables us to separately estimate the effect of the SGI Ruling and UD Laws.

Panels B and C report summary statistics for our outcome variables. Because First Call merged with I/B/E/S, we retrieve management forecasts from the I/B/E/S Guidance database rather than from First Call's Company Issued Guidance database as in HLLW and BLW. Nevertheless, summary statistics in Panels B and C resemble those reported in prior studies. For example, 20 percent of firms in our SGI Ruling sample issue a management earnings per share forecast during a given fiscal year, close to the 22 percent pre-ruling average reported by HLLW. Similarly, our UD sample's 1.08 mean value for *FreqVol8k* closely matches the 1.10 reported by BLW.

As there is no single measure that fully encapsulates the corporate information environment, we analyze a variety of proxies that contribute to its various aspects. Specifically, we study measures of voluntary disclosure quantity and quality, mandatory disclosure quality, and information asymmetry among analysts and in the trading environment. Balance tests reported in

¹¹ For consistency with BLW, we code Utah as a UD state starting in 1992 and Pennsylvania as a UD state starting in 1997. However, we note that PA adopted ALI Principles Sec. 7.03 (see *Cuker v. Mikalauskas*, 692 A.2d 1042), which is a less stringent provision than other states, and Utah did not fully enact a UD law until 2000 (see 1992 Ut. HB 50 and 2000 Ut. HB 86). In untabulated analyses, we find that our results are robust to dropping PA and UT from the sample.

Appendix 3 provide support for the parallel trends assumption. We find that the average annual change in these outcome variables during the three years before the legal events do not significantly differ between treated and control firms.

4.3. Empirical design

We study two natural experiments to better understand the effect of shareholder litigation. First, we analyze the Ninth Circuit Court of Appeals’ Silicon Graphics ruling on July 2, 1999 using the matching-based difference-in-differences (DiD) specification of HLLW, which compares within-firm changes for firms headquartered in the Ninth Circuit (the treatment group) and firms headquartered outside of the circuit (the control group). Specifically, we estimate the following model using OLS regression analysis,

$$y_{ijt} = \beta_1 \cdot SGI\ Ruling_{lt} + \alpha_i + \delta_{jt} + \varepsilon_{ijt} \quad (1)$$

In equation (1), y_{ijt} is the outcome of interest for firm i , operating in industry j , headquartered in state l , in year t . $SGI\ Ruling_{lt}$ is an indicator that equals one if the firm’s headquarter state l is under the jurisdiction of the Ninth Circuit Court of Appeals and the time t is after the Silicon Graphics Inc. ruling of 1999. α_i denotes firm fixed effects that control for unobserved, time-invariant differences across firms and δ_{jt} denote either year fixed effects or industry-by-year fixed effects that control for unobserved, time-varying changes at the macro or two-digit SIC industry level depending on the specification. Considering the date of the SGI Ruling, the inclusion of industry-by-year fixed effects is important because they absorb time-varying factors (such as the tech bubble and Reg FD) that differentially impact certain industries and might otherwise produce spurious correlations. Thus, our most stringent specification compares within-firm changes around the SGI Ruling for a propensity-matched set of firms operating in the same industry, where some firms are headquartered in the Ninth Circuit and others are not. Importantly, HLLW find no

significant difference in mean characteristics between treated and control firms prior to the SGI Ruling, show that disclosure behavior prior to the SGI Ruling is not related to treatment status, and find that treated and control firms follow similar trends prior to the SGI Ruling and do not diverge until afterward.

Second, we test for changes around the staggered adoption of Universal Demand Laws by twenty-three states between 1989 and 2005 using the staggered difference-in-differences specification of BLW. Specifically, we estimate the following OLS regression model,

$$y_{ijl_{st}} = \beta_1 \cdot UD\ Law_{st} + \alpha_i + \theta_{lt} + \delta_{jt} + \varepsilon_{ijl_{st}} \quad (2)$$

In equation (2), $y_{ijl_{st}}$ is the outcome of interest for firm i , operating in industry j , headquartered in state l , incorporated in state s , in year t . $UD\ Law_{st}$ is an indicator set to one if a Universal Demand Law is effective in incorporation state s at time t . Firm fixed effects, α_i , control for unobserved, time-invariant differences across firms; state-by-year fixed effects, $\theta_{l,t}$, account for unobserved, time-varying differences across headquarter states; and industry-by-year fixed effects, δ_{jt} , control for unobserved, time-varying differences across two-digit SIC industries. Thus, our most rigorous specification compares within-firm changes around the adoption of a UD Law for firms headquartered in the same state and operating in the same industry, where some firms are incorporated in a state that adopts UD and others are not. Notably, BLW show that disclosure behavior is not related to treatment status prior to the adoption of a UD law and does not begin to change until the year of UD adoption.

We cluster standard errors in all specifications based on the treatment's unit of variation. Thus, estimations of equation (1) cluster standard errors at the headquarter state level and estimations of equation (2) cluster standard errors at the incorporation state level to account for potential cross-firm correlation within states, serial correlation, and heteroscedasticity (Petersen 2009).

5. Shareholder litigation rights and the information environment

5.1. Voluntary disclosure quantity

We begin our empirical analysis by replicating the main results of HLLW that show a reduction in securities class action litigation risk leads to a decrease in voluntary disclosure quantity. Our OLS estimates in columns (1)-(2) of Table 3, Panel A imply that firms located in the Ninth Circuit are 4.7 to 7.8 percentage points less likely to issue a management EPS forecast post-SGI Ruling, confirming the 6.8 percentage point decline reported by HLLW. Columns (3)-(6) corroborate the decline in voluntary disclosure quantity on the intensive margin. We find that the frequency of EPS forecasts and voluntary 8-Ks decreases by 32.9% and 12.2% relative to their respective sample means.¹² Together, these results confirm HLLW's finding that voluntary disclosure frequency is positively related to shareholder litigation risk and support Skinner's (1994, 1997) litigation deterrence hypothesis arguing that firms preemptively increase disclosure to deter securities class action lawsuits that would otherwise target the omission of material information. This interpretation echoes HLLW (p. 266-267), who state "voluntary 8-K filings decrease after the SGI Ruling among the treated firms compared to the control firms, which is consistent with the 'litigation-detering' motives of voluntary disclosure."

The evidence in Panel B of Table 3, however, suggests that the opposite is true after UD Laws lower the threat of derivative litigation. Columns (1)-(2) imply that firms are 4.4 to 5.9 percentage points more likely to issue a management EPS forecast post-UD. Moreover, columns (4) and (6) show that the frequency of EPS forecasts and voluntary 8-Ks increases by 33.3% and 7.6% relative to their sample means. These findings resemble the increases of 23.9% and 7.2% that BLW report

¹² Based on model (4) $(-0.091 / 0.277) * 100 = 7.6\%$ and model (6) $(-0.083 / 0.680) * 100 = 33.3\%$ in Table 3 Panel A.

for the same variables.¹³ Hence, our evidence confirms BLW’s finding that voluntary disclosure frequency is negatively related to derivative litigation risk and supports the liability hypothesis of Johnson et al. (2001) that argues litigation risk suppresses voluntary disclosure because inaccurate forecasts can later be used against managers in court.

5.2. *Voluntary disclosure quality*

Based on the post-UD increase in voluntary disclosure frequency, BLW (p.800) conclude that “[o]verall, UD laws seem to incentivize managers to share more and better quality information with shareholders rather than exercise more opportunistic disclosure behavior.” In contrast, HLW (p.259) do not weigh in on the matter and instead “focus on the intensity of earnings forecasts, which reflects the first-order decision in a firm’s disclosure policy.” Therefore, to provide a more complete view of voluntary disclosure behavior, we examine changes in the accuracy of management forecasts around the SGI Ruling and adoption of UD Laws.

Table 4 reports regressions in which the dependent variable is the frequency of optimistic forecasts in columns (1)-(2), the frequency of pessimistic forecasts in (3)-(4), and management forecast error in (5)-(6). Although firms affected by the SGI Ruling reduce voluntary disclosure quantity on average, estimates in Panel A provide no evidence that the ruling altered the relative frequency of pessimistic/optimistic forecasts or the average forecast accuracy. These insignificant findings are consistent with HLLW, who comment in footnote 20 (p. 259) that they do not find any significant effect regarding the directional bias or absolute accuracy of earnings forecasts.¹⁴ Notably, that lack of statistical significance contrasts with the litigation deterrence hypothesis of

¹³ Based on model (4) $(0.126 / 0.378) * 100 = 33.3\%$ and model (6) $(0.143 / 1.076) * 100 = 13.3\%$ from Table 3 Panel B in our paper and model (2) $(0.1433 / 0.5997) * 100 = 23.9\%$ and model (8) $(0.0792 / 1.1018) * 100 = 7.2\%$ from Table 3 in Bourveau et al. (2018).

¹⁴ HLLW do provide some evidence that forecast accuracy declines relative to control firms using a discrete measure that sorts forecasts into accuracy quintiles, but state that “these results are not robust” (pg. 259).

Skinner (1994, 1997), which predicts that a reduction in shareholder litigation risk would lead to less frequent and less accurate disclosure, particularly for pessimistic forecasts.

Columns (1)-(4) in Panel B validate BLW's finding that both optimistic and pessimistic forecast frequency increases after the adoption of a UD Law. We note, however, that given their definition of optimistic/pessimistic forecasts (those with actual earnings surprises higher than 10% and lower than -10%, respectively) the findings suggest that firms covered by UD laws issue inaccurate forecasts more frequently. We formally test this conjecture in Columns (5) and (6) of Panel B by examining the absolute difference between management forecasts and actual earnings. The tests reveal that management forecast errors increase by more than one third, on average, following the passage of UD laws. This evidence casts doubt on BLW's interpretation that the reduction in shareholder litigation risk incentivized managers to share higher quality information. Rather, our results align with the view that longer and more frequent disclosure might obfuscate, rather than improve, the information supplied to investors (e.g., Li 2008; Bloomfield 2008; Loughran and McDonald 2014).

5.3. Mandatory disclosure quality

Given the conflicting results regarding the effect of shareholder litigation risk on voluntary disclosure behavior, we next examine mandatory disclosure quality as an alternative avenue through which managers can influence the information environment (Bertomeu, Vaysman, and Xue 2021). Table 5 reports regressions in which the dependent variable is the disclosure quality measure (DQ) of Chen, Miao, and Shevlin (2015) in columns (1)-(2), the financial statement value relevance measure (RSQ) of Francis and Schipper (1999) in columns (3)-(4), and the nominal and absolute value of discretionary accruals (DA) in columns (5)-(6) and (7)-(8) respectively.

DQ is based on the notion that more detailed information is of higher quality and is constructed by counting the number of non-missing items in annual financial statements, as captured by Compustat, and comparing this to the total number of items that the firm could have reported given its operations.¹⁵ Thus, DQ reflects discretionary choices managers make within mandatory filings, such as shifting expenses between core accounts and special items or whether/how corporate R&D is disclosed. Our sample mean value of DQ is 0.62, close to the 0.58 reported by Chen et al. (2015).

RSQ is the adjusted R-squared from a firm-specific time-series regression of price on earnings and book value of equity. We follow Armstrong, Balakrishnan, and Cohen (2012) and estimate the following equation as a rolling regression from time $t-10$ to t , requiring that firms have a minimum of five annual observations.

$$P_{it} = \beta_{0i} + \beta_{1i} \cdot E_{it} + \beta_{2i} \cdot BV_{it} + \varepsilon_{it} \quad (3)$$

In equation (3), P_{it} is the price per share of firm i three months after fiscal year end t , E_{it} is the earnings per share of firm i during year t , and BV_{it} is the book value per share of firm i at the end of year t . Hence, RSQ provides a comprehensive proxy for financial statement informativeness based on the explanatory power of accounting information (Frankel and Li 2004). The mean value of RSQ in our sample is 0.42, in line with the 0.35 in Armstrong, Balakrishnan, and Cohen (2012).

Results reported in Table 5 show that the SGI Ruling and UD Laws once again produce starkly different inferences. Coefficients for the SGI Ruling indicator in Panel A have confidence intervals tightly bound around zero, failing to reject the null of no change in mandatory disclosure quality. Importantly, this null result does not support the litigation deterrence hypothesis, which predicts

¹⁵ Because Compustat might code an item as missing either because the firm fails to report it or because the firm does not have operations that would produce such an item, we carefully screen the data applying the fact that balance sheet line items sum to larger accounts (see Chen et al. 2015 for details). Alternatively, an item could be missing in Compustat as a result of a coding error. However, Chen et al. (2015) argue that Compustat data are of very high quality and unlikely to be systematically biased.

that a decrease in shareholder litigation risk leads to lower quality disclosure.

Meanwhile, coefficients in Panel B suggest that UD Laws led to a decline in both the granularity and value relevance of mandatory disclosure. According to these estimates, the average treated firm in our UD sample suppresses between 0.6% and 1.1% of their data items and the informativeness of their financial statements falls between 9.7% and 10.3% of the sample mean. Given the limited flexibility afforded by Regulation S-X, this post-UD decline in mandatory disclosure quality may heighten uncertainty and information risk borne by investors.¹⁶

Finally, we use the modified Jones (1991) model proposed by Dechow, Sloan, and Sweeney (1995) to estimate discretionary accruals and obtain statistically insignificant coefficients for the SGI Ruling. As in Bourveau et al. (2018), we document a negative and significant effect of UD Laws on the *nominal* value of discretionary accruals in column (6). However, when we repeat the specification using the *absolute* value of discretionary accruals, we obtain a positive and significant coefficient in column (8). Given that the modified Jones (1991) model measures how well accruals are explained by a linear projection on firm-level observables (Gerakos 2012), we interpret these results as evidence of lower quality mandatory disclosure post-UD.

5.4. Information asymmetry among market participants

So far, we have replicated and extended the analyses of HLLW and BLW on the relation between litigation risk and disclosure. Our extensions challenge their interpretation. The SGI Ruling led to a decline in voluntary disclosure frequency but did not affect the bias or accuracy of earnings forecasts, as would be predicted by the litigation deterrence hypothesis. Meanwhile, UD

¹⁶ Other research on mandatory disclosure shows that i) conditional conservatism increases (Manchiraju, Pandey, and Subramanyam 2021) or decreases (Chen, Li, and Xu 2019) post-UD, ii) real earnings management increases post-UD and post-SGI (Huang, Roychowdhury, and Sletten 2019), iii) restatements increase post-SGI (Hopkins 2018), and (iv) non-GAAP reporting increases post-SGI (Cazier, Christensen, Merkley, and Treu 2019).

Laws led to an increase in the frequency of voluntary disclosure but a decline in the quality of both voluntary and mandatory disclosure, suggesting that managers do not share higher quality information post-UD. To gain additional insight and assess the implications for investors, we next examine whether the SGI Ruling and UD Laws altered the level of information asymmetry among analysts and in the trading environment.

Information produced by sell-side analysts both reflects and influences the corporate information environment. Notably, the precision of analysts' forecasts relies on information in voluntary and mandatory disclosures. Therefore, if disclosure quality decreases after a reduction in shareholder litigation risk, we would expect more disagreement among analysts and a decline in the accuracy of their reports. We study analyst information production with one-year-ahead annual EPS estimates in the most recent I/B/E/S forecast summary before the fiscal year end. As in Armstrong, Balakrishnan, and Cohen (2012), we define forecast dispersion as the standard deviation of these estimates, and define forecast error as the absolute difference between the mean estimate and the actual EPS reported in I/B/E/S. Like Cheong and Thomas (2011), we do not deflate dispersion or forecast error by a scale variable to ensure that our results are driven by changes in analyst disagreement and accuracy and not by changes in the scale variable.¹⁷

Estimates in columns (1)-(4) of Table 6 Panel A indicate that neither the dispersion nor the accuracy of analyst forecasts changes after the SGI Ruling. These null results comport with our inability to reject the null of no change in the quality of voluntary or mandatory disclosure, and suggest that the post-SGI drop in voluntary disclosure frequency did not meaningfully impact the overall information environment. In contrast, Panel B displays a significant positive relation

¹⁷ The magnitudes of our analyst proxies are comparable to those reported elsewhere. For example, the median (mean) analyst forecast error in our UD sample, 0.04 (0.22), is similar to the magnitude reported at the analyst-level in Harford, Jiang, Wang, and Xie (2019) of 0.07 (0.25).

between UD Laws and proxies of information asymmetry. The increase in forecast dispersion and error reported in columns (1)-(4) are statistically significant and economically important. After the adoption of a UD Law, analyst forecast dispersion and error increase by roughly 9% and 8% of a standard deviation, respectively.¹⁸ This evidence suggests that curtailing derivative litigation rights leads to the deterioration of corporate information environments.

Prior research finds that market liquidity improves in the presence of more corporate disclosure (Leuz and Verrecchia 2000) and lower analyst forecast dispersion (Sadka and Scherbina 2007). Thus, to the extent reduced litigation risk affects corporate disclosure by managers and information production by analysts, we expect changes in the trading environment (Diamond and Verrecchia 1991). Likewise, an increase in information asymmetry between managers and shareholders likely exacerbate the adverse selection problem between these parties, which should manifest in a decline in market liquidity (Easley and O'Hara 2004; Beyer, Cohen, Lys, and Walther 2010).

We evaluate our conjectures in Table 6 using bid-ask spreads in columns (5)-(6) and average daily (dollar) trading volume in columns (7)-(8) as dependent variables to track market liquidity. Once again, we find no empirical support for the conjecture that the post-SGI drop in voluntary disclosure frequency coincides with an increase in information asymmetry. Point estimates in columns (5)-(8) of Panel A are negative and have large standard errors. In contrast, the regressions in Panel B suggest that the trading environment deteriorates after UD Laws. The average treated firm exhibits a bid-ask spread increase of 4.4% based on column (6) [$(EXP(0.043) - 1) * 100 = 4.39\%$] and a decline in its daily trading volume of US\$4.5 million according to column (8). These findings, combined with our analyst forecast results, suggest that the passage of UD Laws leads to an increase in overall level of information asymmetry and a decrease in market liquidity.

¹⁸ Based on model (6), $(0.031 / 0.3398) * 100 = 9.12\%$, and based on model (9), $(0.062 / 0.7433) * 100 = 8.34\%$.

While the post-UD increase in information asymmetry is an expected repercussion of more frequent but lower quality disclosure, the absence of a change in information asymmetry after the SGI Ruling is somewhat surprising. Intuitively, information asymmetry should increase if managers provide less disclosure, particularly if the foregone disclosures were intended to preempt litigation by keeping investors apprised of all material information. We note, however, that the economic magnitude of the SGI Ruling-induced drop in disclosure is relatively small. According to estimates in Figure 1 of HLLW (p.260), firms headquartered in the Ninth Circuit provided roughly 2.1 forecasts per year following the ruling, compared to 2.7 forecasts by control firms. Our analyses suggest that the relative decline of 0.6 forecasts per year, unaccompanied by a change in disclosure quality, did not generate a meaningful enough change in the information environment to worsen information asymmetry.

6. Economic mechanism

Stark disparities in results across natural experiments raise important questions regarding the economic mechanism driving these outcomes. We test the hypothesis that disparities are driven by institutional differences in the *type* of litigation risk affected by the SGI Ruling and UD Laws. Specifically, we note that UD Laws inhibit derivative lawsuits, which remedy a wide range of corporate wrongdoing. Conversely, the SGI Ruling inhibits 10b-5 securities class actions, which pertain only to managers' requirement to provide shareholders with value-relevant information about firm activity. Thus, the post-UD change in the information environment may reflect changes in fundamental performance that were caused by the UD-induced drop in derivative litigation risk rather than by changes in managerial incentives to disclose.

6.1. Shareholder litigation rights and firm operations

We begin our exploration into the economic mechanism by examining the effect of shareholder litigation risk on firm operations. Consistent with prior research that shows derivative litigation risk influences operating decisions (Lin, Liu, and Manso 2021; Ni and Yin 2018), Table 6 shows that firm risk-taking proxied by variables that directly affect shareholder wealth (i.e., R&D expense, acquisition expenditure, and cash flow volatility) increases after the adoption of a UD Law. However, we find no evidence that these activities significantly change after the SGI Ruling, highlighting the limited role that securities class action litigation risk plays in decision-making about real corporate activities. Together, these results provide initial support for our interpretation that changes observed in the information environment after the adoption of UD Laws are driven by UD-induced changes in firms' real operations.

6.2. The role of changing operations

In this section, we ask whether a change in real activities is the channel through which a drop in derivative litigation risk affects the information environment. Doing so also helps ascertain the validity of UD Laws as a shock that *directly* affects corporate information environments, as questioned by Donelson et al. (2021). It is plausible that operational changes could lead to both greater disclosure quantity and information asymmetry. Indeed, Brown and Tucker (2011) show that firms are more likely to modify disclosure after large economic changes and He and Plumlee (2020) show that voluntary 8-K frequency is associated with R&D expense and volatility.

Based on these findings, we create an Operational Change indicator that equals one if the firm exhibits an above-median change in average R&D expense, acquisition expenditure, or cash flow volatility from the three years before to the three years after the UD adoption event. Due to the staggered nature of UD Law enactment across states, there is no clean “pre” and “post” period.

Therefore, we follow the triple-difference methodology of Gormley and Matsa (2011) and construct cohorts of treated and control firms for six years around each UD adoption event, requiring control firms to not have been previously treated by another state. We then pool the data across cohorts, and regress outcome variables on the UD Law indicator, interaction term, firm-cohort, headquarter state-year-cohort, and industry-year-cohort fixed effects.

Table 7 displays cross-sectional variation in the effect of UD Laws depending on whether a firm exhibits operational changes post-UD. Because the Operational Change indicator classifies firms as a “non-changer” or a “changer” based on the difference in their behavior pre vs. post UD adoption, the variable takes a value of zero or one for all six years within the cohort and is therefore subsumed by the firm-cohort fixed effects. Consequently, the table displays coefficients for UD Law, which switches from zero to one after a firm’s state of incorporation adopts a UD Law and captures the (stand-alone) effect of UD Laws on firms that have a below-median change in operations after the UD adoption year. The interaction term captures the incremental effect of UD Laws for firms that have an above-median change in operations. Therefore, summing up the coefficients on UD Law and the interaction term gives the total effect of UD Laws on firms that have an above-median change in operations following the UD adoption year.

Table 7 shows that the effect of UD Laws is often significantly higher for firms with an above-median change in real activities. According to the estimates, the frequency of management forecasts increases by approximately 29% relative to the sample mean for firms with a post-UD operational change but no significant change for firms that do not experience an operational change post-UD.¹⁹ Moreover, comparing coefficients in Panels A and B, we see that changes in the

¹⁹ Based on model (2), $(0.108 / 0.378) * 100 = 28.571\%$.

information environment are concentrated among firms with an above-median change in operations around UD laws but not for the SGI Ruling.

We conjecture that changes in the information environment should be concomitant with changes in firm operations. Notably, Heinle and Smith (2017) develop a model in which investors are uncertain about the variance of a firm's cash flows and show that firms disclose more information when their cash flow risk is greater than expected. In our setting, this model predicts that firms will increase disclosure simultaneously with an increase in risk-taking. Appendix 4, Panel B provides empirical evidence in line with this prediction. Coefficient dynamics for regressions of our key disclosure outcome variable on UD Law timing indicators exhibit no pre-trends leading up to an adoption of a UD law and increase sharply following the passage of the law. Consistent with the model, we find that the effect of UD Laws on cash flow volatility exhibits similar dynamics.

Taken together, our results suggest that post-UD changes in the information environment stem from shifts in firm fundamentals and not necessarily from a direct change in managerial disclosure incentives. This economic mechanism helps reconcile conflicting findings across natural experiments as UD Laws reduce liability risk for *both* disclosure and operational choices whereas 10b-5 class action suits *only* affect the liability risk for disclosure choices.

6.3. The role of managerial disclosure incentives

Although the effect of the SGI Ruling is often statistically insignificant, on average, these effects could differ across firms depending on the quality of corporate governance if litigation substitutes for other monitoring channels. Conversely, shareholder litigation rights may play a unique, complementary, role in the information environment such that the effect of the SGI Ruling might not vary based on ex ante governance. Indeed, Duchin, Matsusaka, and Ozbas (2010) show

that outsiders require accurate information to be effective monitors. We test these hypotheses in Table 8 using a triple-difference design that interacts the SGI Ruling indicator with proxies of weak governance that equals one if the firm had a poison pill or did not have a blockholder in the three years before the event. We base these “weak governance” proxies on Boone and White (2015) and Ferreira and Laux (2007), who find, respectively, that greater institutional ownership and fewer antitakeover provisions is associated with a more informative information environment. Panel A shows no consistent evidence to suggest that the effect of the SGI Ruling depends on the quality of alternative corporate governance. These (non)results are consistent with the notion that shareholder litigation plays a unique, complementary, role in a firm’s corporate governance.

Similarly, Panel B provides no consistent evidence to suggest that the effect of UD Laws depends on the quality of alternative corporate governance. These (non)results support our conclusion that UD laws primarily influence the information environment through an indirect channel (changing firm operations) rather than through managerial disclosure incentives, and help explain the counterintuitive result that UD Laws increase disclosure quantity while decreasing disclosure quality and contributing to a higher level of information asymmetry.

7. Conclusion

We confirm that voluntary disclosure frequency *decreased* after the SGI Ruling lowered securities class action litigation risk. Although this decline supports the litigation deterrence hypothesis of Skinner (1994), we find no evidence that the ruling led to significant changes in firm value, disclosure quality, or information asymmetry among market participants. Consequently, our evidence casts doubt on the degree to which the post-SGI decline in voluntary disclosure frequency impacts investor welfare.

Conversely, while we verify that voluntary disclosure frequency *increased* after UD Laws lowered derivative litigation risk, our analyses indicate that the increase in disclosure quantity coincides with a *decrease* in the quality of both voluntary and mandatory disclosure and an increase in information asymmetry. As a result, the totality of our findings does not support the notion that UD Laws incentivize managers to provide more and higher quality information.

To reconcile these contradictory findings, we note that the SGI Ruling and UD Laws reduce different types of shareholder litigation risk. In 10b-5 securities class action lawsuits (affected by the SGI Ruling), shareholders sue the firm on behalf of themselves, alleging harm from misleading or omitted material information. Conversely, in derivative lawsuits (affected by UD Laws), shareholders sue managers and directors on behalf of the firm, alleging that a bad business practice harmed the entire corporation.

Motivated by these legal distinctions, we study the channel through which UD Laws affect corporate information environments and find that observed changes in voluntary disclosure frequency are driven by UD-induced changes in firm operations. This new evidence contributes to the literature that uses UD Laws as a shock to shareholder litigation risk by identifying an indirect mechanism through which the laws affect the information environment. This evidence also helps reconcile contrasting results across different dimensions of the information environment (e.g., the quantity and quality of disclosure) affected by UD Laws as well as contrasting results across papers that use different natural experiments to study the relation between litigation risk and disclosure. Together, our results support the hypothesis that derivative litigation rights affect real operations – and therefore firm value and disclosure behavior – because managers take fewer risks when derivative litigation risk is high.

Our findings have important implications for the interpretation of other research that studies exogenous shocks and uncovers changes in the information environment in the presence of various monitors/provisions (e.g., institutional owners, analysts, independent boards, antitakeover defenses, etc.). We caution that changes observed in the information environment may indirectly be driven by the shock's effect on firm fundamentals rather than by a direct effect on managerial disclosure incentives.

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Table 1: Shareholder litigation rights and firm value. This table reports stock price reactions to court decisions that lowered the threat of shareholder litigation. Panel A reports percentage cumulative abnormal returns (CARs) associated with the Silicon Graphics Inc. ruling (183 F.3d 970) by the U.S. Ninth Circuit Court of Appeals on July 2, 1999. The Silicon Graphics Inc. ruling (SGI Ruling) lowered the threat of a 10b-5 securities class action lawsuit against firms headquartered in the jurisdiction by imposing higher pleading standards, which required plaintiffs to establish that alleged misleading statements were “deliberately recklessness.” Panel B reports percentage CARs associated with the Cuker v. Mikalauskas ruling (692 A.2d 1042) by the Supreme Court of Pennsylvania on April 21, 1997. The Cuker v. Mikalauskas ruling (UD Ruling) lowered the threat of a derivative lawsuit against firms incorporated in Pennsylvania by adopting a universal demand requirement, which established a procedure hurdle that requires shareholders to obtain board approval before initiating a derivative lawsuit. The samples in Panel A and Panel B consist of 4,842 and 5,277 U.S. public firms with data in the CRSP-COMPUSTAT merged database, respectively, excluding utilities (SIC 4900-4999), financials (SIC 6000-6999) and public administration/non-classifiable firms (SIC 9000-9999). We calculate market model cumulative abnormal stock returns (CAR) in the three trading days around each court ruling using CRSP value-weighted index returns and a one-year estimation window (252 trading days) ending one month (20 trading days) before the [-1, +1] event window. CARs are winsorized at the 1/99 percent tails. Heteroskedasticity-consistent standard errors, reported in parentheses, are clustered by headquarter state in Panel A and incorporation state in Panel B. The symbols *, **, and *** indicate significance at the 10%, 5%, and 1% level, respectively. Appendix 1 provides variable definitions.

Panel A: Lower threat of securities class action litigation

	<i>3-Day CAR</i>		
	(1)	(2)	(3)
SGI Ruling	0.050 (0.349)	0.030 (0.313)	0.058 (0.257)
Incorporation state-year FE	No	Yes	Yes
Industry-year FE	No	No	Yes
Observations	4,842	4,842	4,842
Adjusted R-squared	0.000	0.003	0.002

Panel B: Lower threat of derivative litigation

	<i>3-Day CAR</i>		
	(1)	(2)	(3)
UD Ruling	0.995*** (0.065)	1.037*** (0.296)	0.944*** (0.308)
Headquarter state-year FE	No	Yes	Yes
Industry-year FE	No	No	Yes
Observations	5,277	5,277	5,277
Adjusted R-squared	0.000	0.005	0.009

Table 2: Voluntary disclosure quantity. This table displays ordinary least squares (OLS) estimates of the change in voluntary disclosure frequency around two natural experiments that lowered the threat of shareholder litigation. Panel A reports the estimated impact of the SGI Ruling using the matching-based difference-in-differences specification of Houston, Lin, Liu, and Wei (2019). Panel B reports the estimated impact of UD laws using the staggered difference-in-differences specification of Bourveau, Lou, and Wang (2018). Heteroskedasticity-consistent standard errors, reported in parentheses, are clustered by headquarter state in Panel A and incorporation state in Panel B. The symbols *, **, and *** indicate significance at the 10%, 5%, and 1% level, respectively. Appendix 1 provides variable definitions.

Panel A: Lower threat of securities class action litigation

	<i>Disclosure</i>		<i>FreqMF</i>		<i>FreqVol8k</i>	
	(1)	(2)	(3)	(4)	(5)	(6)
SGI Ruling	-0.047** (0.023)	-0.078*** (0.024)	-0.069* (0.041)	-0.091** (0.043)	-0.077* (0.046)	-0.083* (0.049)
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	No	Yes	No	Yes	No
Industry-year FE	No	Yes	No	Yes	No	Yes
Observations	5,346	5,346	5,346	5,346	5,346	5,346
Adjusted R-squared	0.407	0.414	0.428	0.453	0.556	0.560

Panel B: Lower threat of derivative litigation

	<i>Disclosure</i>		<i>FreqMF</i>		<i>FreqVol8k</i>	
	(1)	(2)	(3)	(4)	(5)	(6)
UD Law	0.059*** (0.008)	0.044*** (0.010)	0.149*** (0.016)	0.126*** (0.015)	0.133*** (0.043)	0.150*** (0.043)
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Headquarter state-year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry-year FE	No	Yes	No	Yes	No	Yes
Observations	29,599	29,599	29,599	29,599	29,599	29,599
Adjusted R-squared	0.523	0.530	0.564	0.576	0.497	0.513

Table 3: Voluntary disclosure quality. This table displays OLS estimates of the change in voluntary disclosure accuracy around two natural experiments that lowered the threat of shareholder litigation. Panel A reports the estimated impact of the SGI Ruling using the matching-based difference-in-differences specification of Houston, Lin, Liu, and Wei (2019). Panel B reports the estimated impact of UD laws using the staggered difference-in-differences specification of Bourveau, Lou, and Wang (2018). Heteroskedasticity-consistent standard errors, reported in parentheses, are clustered by headquarter state in Panel A and incorporation state in Panel B. The symbols *, **, and *** indicate significance at the 10%, 5%, and 1% level, respectively. Appendix 1 provides variable definitions.

Panel A: Lower threat of securities class action litigation

	<i>FreqMF Optimistic</i>		<i>FreqMF Pessimistic</i>		<i>MF Error</i>	
	(1)	(2)	(3)	(4)	(5)	(6)
SGI Ruling	-0.017 (0.019)	-0.017 (0.022)	0.017 (0.023)	-0.005 (0.021)	0.002 (0.048)	0.009 (0.051)
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	No	Yes	No	Yes	No
Industry-year FE	No	Yes	No	Yes	No	Yes
Observations	5,346	5,346	5,346	5,346	904	904
Adjusted R-squared	0.189	0.202	0.274	0.298	0.143	0.190

Panel B: Lower threat of derivative litigation

	<i>FreqMF Optimistic</i>		<i>FreqMF Pessimistic</i>		<i>MF Error</i>	
	(1)	(2)	(3)	(4)	(5)	(6)
UD Law	0.036*** (0.010)	0.023* (0.013)	0.059*** (0.007)	0.055*** (0.008)	0.046*** (0.002)	0.062*** (0.011)
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Headquarter state-year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry-year FE	No	Yes	No	Yes	No	Yes
Observations	29,599	29,599	29,599	29,599	6,727	6,727
Adjusted R-squared	0.220	0.230	0.324	0.331	0.347	0.388

Table 4: Mandatory disclosure quality. This table displays OLS estimates of the change in mandatory disclosure quality around two natural experiments that lowered the threat of shareholder litigation. Panel A reports the estimated impact of the SGI Ruling using the matching-based difference-in-differences specification of Houston, Lin, Liu, and Wei (2019). Panel B reports the estimated impact of UD laws using the staggered difference-in-differences specification of Bourveau, Lou, and Wang (2018). Heteroskedasticity-consistent standard errors, reported in parentheses, are clustered by headquarter state in Panel A and incorporation state in Panel B. The symbols *, **, and *** indicate significance at the 10%, 5%, and 1% level, respectively. Appendix 1 provides variable definitions.

Panel A: Lower threat of securities class action litigation

	<i>DQ</i>		<i>RSQ</i>		<i>DA (Nominal)</i>		<i>DA (Absolute)</i>	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
SGI Ruling	-0.003 (0.006)	-0.003 (0.006)	0.006 (0.033)	-0.011 (0.034)	0.004 (0.005)	0.006 (0.006)	0.003 (0.005)	-0.000 (0.005)
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	No	Yes	No	Yes	No	Yes	No
Industry-year FE	No	Yes	No	Yes	No	Yes	No	Yes
Observations	4,382	4,382	4,382	4,382	4,349	4,349	4,349	4,349
Adjusted R-squared	0.825	0.833	0.540	0.545	0.219	0.202	0.218	0.220

Panel B: Lower threat of derivative litigation

	<i>DQ</i>		<i>RSQ</i>		<i>DA (Nominal)</i>		<i>DA (Absolute)</i>	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
UD Law	-0.011** (0.005)	-0.006* (0.004)	-0.044*** (0.013)	-0.041*** (0.014)	-0.004 (0.003)	-0.006* (0.003)	0.003 (0.003)	0.005** (0.002)
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Headquarter state-year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry-year FE	No	Yes	No	Yes	No	Yes	No	Yes
Observations	41,773	41,773	41,773	41,773	40,068	40,068	40,068	40,068
Adjusted R-squared	0.771	0.786	0.478	0.498	0.191	0.193	0.242	0.280

Table 5: Information asymmetry. This table displays OLS estimates of the change in information asymmetry around two natural experiments that lowered the threat of shareholder litigation. Panel A reports the estimated impact of the SGI Ruling using the matching-based difference-in-differences specification of Houston, Lin, Liu, and Wei (2019). Panel B reports the estimated impact of UD laws using the staggered difference-in-differences specification of Bourveau, Lou, and Wang (2018). Heteroskedasticity-consistent standard errors, reported in parentheses, are clustered by headquarter state in Panel A and incorporation state in Panel B. The symbols *, **, and *** indicate significance at the 10%, 5%, and 1% level, respectively. Appendix 1 provides variable definitions.

Panel A: Lower threat of securities class action litigation

	<i>AF Dispersion</i>		<i>AF Error</i>		<i>Bid-Ask Spread</i>		<i>Dollar Volume</i>	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
SGI Ruling	0.005 (0.007)	-0.000 (0.006)	0.018 (0.016)	-0.002 (0.018)	-0.001 (0.002)	-0.000 (0.001)	13.503 (9.520)	10.981 (6.654)
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	No	Yes	No	Yes	No	Yes	No
Industry-year FE	No	Yes	No	Yes	No	Yes	No	Yes
Observations	4,658	4,658	4,658	4,658	4,658	4,658	4,658	4,658
Adjusted R-squared	0.695	0.686	0.629	0.629	0.499	0.549	0.623	0.625

Panel B: Lower threat of derivative litigation

	<i>AF Dispersion</i>		<i>AF Error</i>		<i>Bid-Ask Spread</i>		<i>Dollar Volume</i>	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
UD Law	0.033*** (0.007)	0.032*** (0.006)	0.060*** (0.013)	0.060*** (0.015)	0.055*** (0.018)	0.043** (0.017)	-5.636** (2.719)	-4.507** (2.234)
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Headquarter state-year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry-year FE	No	Yes	No	Yes	No	Yes	No	Yes
Observations	46,369	46,369	46,369	46,369	46,369	46,369	46,369	46,369
Adjusted R-squared	0.699	0.704	0.592	0.603	0.845	0.854	0.583	0.619

Table 6: Firm operations. This table displays OLS estimates of the change in firm operations around two natural experiments that lowered the threat of shareholder litigation. Panel A reports the estimated impact of the SGI Ruling using the matching-based difference-in-differences specification of Houston, Lin, Liu, and Wei (2019). Panel B reports the estimated impact of UD laws using the staggered difference-in-differences specification of Bourveau, Lou, and Wang (2018). Heteroskedasticity-consistent standard errors, reported in parentheses, are clustered by headquarter state in Panel A and incorporation state in Panel B. The symbols *, **, and *** indicate significance at the 10%, 5%, and 1% level, respectively. Appendix 1 provides variable definitions.

Panel A: Lower threat of securities class action litigation

	<i>R&D Expense</i>		<i>Acquisition Expenditure</i>		<i>Cash Flow Volatility</i>	
	(1)	(2)	(3)	(4)	(5)	(6)
SGI Ruling	-0.006 (0.004)	-0.005 (0.005)	0.004 (0.003)	-0.001 (0.002)	-0.004 (0.009)	-0.007 (0.010)
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	No	Yes	No	Yes	No
Industry-year FE	No	Yes	No	Yes	No	Yes
Observations	5,045	5,045	5,045	5,045	4,706	4,706
Adjusted R-squared	0.765	0.758	0.140	0.154	0.734	0.741

Panel B: Lower threat of derivative litigation

	<i>R&D Expense</i>		<i>Acquisition Expenditure</i>		<i>Cash Flow Volatility</i>	
	(1)	(2)	(3)	(4)	(5)	(6)
UD Law	0.003** (0.001)	0.003** (0.001)	0.005** (0.002)	0.005*** (0.001)	0.008** (0.004)	0.005 (0.004)
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Headquarter state-year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry-year FE	No	Yes	No	Yes	No	Yes
Observations	57,690	57,690	57,690	57,690	48,628	48,628
Adjusted R-squared	0.792	0.793	0.177	0.184	0.806	0.811

Table 7: The role of changing operations. This table displays cross-sectional variation in the estimated change in the information environment around two natural experiments that lowered the threat of shareholder litigation, depending on whether the firm made operational changes after the event. In Panel A, we estimate the impact of the SGI Ruling using a matching-based triple difference-in-differences specification based on Houston, Lin, Liu, and Wei (2019). In Panel B, we follow the triple-difference methodology of Gormley and Matsa (2011) and construct cohorts of treated and control firms for six years around each UD adoption event, requiring control firms to not have been previously treated by another state. We then construct an operational change proxy, pool the data across cohorts, and regress outcome variables on the UD indicator, operational change interaction term, firm-cohort, headquarter state-year-cohort, and industry-year-cohort fixed effects. OpChange equals one if the firm had an above-median change in average R&D expense, acquisition expenditure, or cash flow volatility from the three years before to the three years after the legal event.

Panel A: Lower threat of securities class action litigation

	<i>Disclosure</i>	<i>FreqMF</i>	<i>FreqVol8k</i>	<i>FreqMF</i> <i>Optimistic</i>	<i>FreqMF</i> <i>Pessimistic</i>	<i>MF Error</i>	<i>DQ</i>	<i>RSQ</i>	<i>AF</i> <i>Dispersion</i>	<i>AF</i> <i>Error</i>	<i>Bid-Ask</i> <i>Spread</i>	<i>Dollar</i> <i>Volume</i>
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
SGI x OpChange	-0.043 (0.035)	-0.047 (0.047)	0.011 (0.040)	0.007 (0.025)	-0.015 (0.017)	-0.077* (0.046)	0.001 (0.004)	-0.006 (0.033)	0.014** (0.006)	0.005 (0.014)	0.001 (0.001)	-32.127*** (8.771)
SGI Ruling	-0.044 (0.043)	-0.054 (0.068)	-0.092 (0.068)	-0.023 (0.035)	0.007 (0.028)	0.068 (0.070)	-0.004 (0.007)	-0.007 (0.036)	-0.011 (0.007)	-0.006 (0.019)	-0.001 (0.001)	35.479*** (11.955)
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry-year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	5,346	5,346	5,346	5,346	5,346	904	4,382	4,382	4,658	4,658	4,658	4,658
Adj R-squared	0.415	0.453	0.560	0.202	0.298	0.190	0.833	0.545	0.686	0.629	0.549	0.629

Panel B: Lower threat of derivative litigation

	<i>Disclosure</i>	<i>FreqMF</i>	<i>FreqVol8k</i>	<i>FreqMF</i> <i>Optimistic</i>	<i>FreqMF</i> <i>Pessimistic</i>	<i>MF Error</i>	<i>DQ</i>	<i>RSQ</i>	<i>AF</i> <i>Dispersion</i>	<i>AF</i> <i>Error</i>	<i>Bid-Ask</i> <i>Spread</i>	<i>Dollar</i> <i>Volume</i>
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
UD x OpChange	0.034*** (0.008)	0.097*** (0.014)	0.195** (0.089)	-0.023 (0.018)	0.126*** (0.013)	0.086*** (0.025)	0.014 (0.012)	-0.047* (0.024)	-0.004 (0.009)	-0.021 (0.021)	0.051*** (0.017)	-2.597* (1.428)
UD Law	-0.013 (0.008)	0.011 (0.016)	0.109 (0.067)	0.065*** (0.007)	-0.050*** (0.009)	-0.016 (0.018)	-0.020** (0.009)	0.021 (0.021)	0.023** (0.011)	0.056*** (0.013)	-0.031 (0.025)	0.194 (0.365)
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
HQ state-year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry-year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	100,684	100,684	100,684	100,684	100,684	20,687	164,799	164,799	184,943	184,943	184,943	184,943
Ad. R-squared	0.560	0.635	0.558	0.248	0.373	0.375	0.818	0.665	0.727	0.634	0.886	0.790

Table 8: The role of managerial disclosure incentives. This table displays cross-sectional variation in the estimated change in the information environment around two natural experiments that lowered the threat of shareholder litigation, depending on the firm's ex-ante governance. In Panel A, we estimate the impact of the SGI Ruling using a matching-based triple difference-in-differences specification based on Houston, Lin, Liu, and Wei (2019). In Panel B, we follow the triple-difference methodology of Gormley and Matsa (2011) and construct cohorts of treated and control firms for six years around each UD adoption event, requiring control firms to not have been previously treated by another state. We then construct a proxy of ex-ante governance, pool the data across cohorts, and regress outcome variables on the UD indicator, governance interaction term, firm-cohort, headquarter state-year-cohort, and industry-year-cohort fixed effects. WeakGov equals one if the firm had a poison pill or did not have a blockholder in the three years before the legal event.

Panel A: Lower threat of securities class action litigation

	<i>Disclosure</i>	<i>FreqMF</i>	<i>FreqVol8k</i>	<i>FreqMF</i> <i>Optimistic</i>	<i>FreqMF</i> <i>Pessimistic</i>	<i>MF Error</i>	<i>DQ</i>	<i>RSQ</i>	<i>AF</i> <i>Dispersion</i>	<i>AF</i> <i>Error</i>	<i>Bid-Ask</i> <i>Spread</i>	<i>Dollar</i> <i>Volume</i>
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
SGI x WeakGov	0.021 (0.045)	0.070 (0.074)	-0.075 (0.081)	0.042 (0.035)	0.047 (0.045)	-0.123 (0.075)	0.020*** (0.006)	0.033 (0.053)	-0.035*** (0.008)	-0.045*** (0.011)	0.001 (0.001)	2.405 (8.280)
SGI Ruling	-0.138** (0.055)	-0.287*** (0.097)	-0.011 (0.105)	-0.088** (0.033)	-0.077* (0.043)	0.007 (0.064)	-0.014 (0.012)	0.018 (0.053)	0.016* (0.009)	0.026 (0.020)	-0.000 (0.001)	8.527 (8.495)
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry-year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2,661	2,661	2,661	2,661	2,661	436	2,427	2,427	2,520	2,520	2,520	2,520
Adj R-squared	0.433	0.474	0.566	0.261	0.296	0.263	0.861	0.501	0.738	0.534	0.526	0.674

Panel B: Lower threat of derivative litigation

	<i>Disclosure</i>	<i>FreqMF</i>	<i>FreqVol8k</i>	<i>FreqMF</i> <i>Optimistic</i>	<i>FreqMF</i> <i>Pessimistic</i>	<i>MF Error</i>	<i>DQ</i>	<i>RSQ</i>	<i>AF</i> <i>Dispersion</i>	<i>AF</i> <i>Error</i>	<i>Bid-Ask</i> <i>Spread</i>	<i>Dollar</i> <i>Volume</i>
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
UD x WeakGov	0.040 (0.042)	0.116 (0.082)	0.054 (0.101)	-0.063** (0.028)	0.040 (0.037)	-0.011 (0.030)	0.013 (0.017)	-0.029 (0.052)	0.024*** (0.008)	0.046* (0.026)	-0.089 (0.102)	5.486 (8.189)
UD Law	0.025 (0.030)	0.028 (0.056)	0.210* (0.119)	0.072*** (0.017)	0.088*** (0.022)	0.012 (0.029)	-0.021* (0.011)	-0.011 (0.051)	-0.000 (0.010)	0.010 (0.034)	0.004 (0.050)	-4.743 (5.782)
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
HQ state-year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry-year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	34,936	34,936	34,936	34,936	34,936	8,205	52,983	52,983	51,043	51,043	51,043	51,043
Ad. R-squared	0.661	0.702	0.541	0.281	0.393	0.408	0.823	0.650	0.717	0.609	0.896	0.823

Appendix 1: Variable definitions. This table lists variable definitions and data sources. Compustat denotes Compustat’s North America Fundamentals Annual File. CRSP denotes CRSP’s Daily Stock File. TFN denotes Thomson Reuters’ Institutional Managers (13f) Holdings S34 File. I/B/E/S denotes I/B/E/S’ Summary History with Actuals File and Guidance – Detail File. ISS denotes ISS’ (formerly RiskMetrics) Governance Legacy Data.

<i>Variable</i>	<i>Source</i>	<i>Description</i>
SGI Ruling	Houston, Lin, Liu, and Wei (2019)	Indicator that equals one if the firm is headquartered within the jurisdiction of the Ninth Circuit Court of Appeals and the year is after the Silicon Graphics Inc. (SGI) ruling (183 F.3d 970) of 1999. The SGI Ruling increased pleading standards for securities class action lawsuits by requiring plaintiffs to establish that the alleged misleading statements were “deliberately recklessness”
UD Law	Bourveau, Lou, and Wang (2018)	Indicator that equals one if the firm is incorporated in a state that passed a universal demand (UD) law. UD laws establish a procedure hurdle that requires shareholders to obtain board approval before initiating a derivative lawsuit
Disclosure	I/B/E/S	Indicator that equals one if the firm issues a management earnings per share (EPS) forecast during the fiscal year
FreqMF	I/B/E/S	Natural logarithm of one plus the number of management EPS forecasts issued during the fiscal year
FreqVol8k	WRDS SEC Analytics	Natural logarithm of one plus the number of voluntary 8-Ks filed during the fiscal year
FreqMF Optimistic (Pessimistic)	I/B/E/S	Natural logarithm of one plus the number of optimistic (pessimistic) management EPS forecasts issued during the fiscal year. Following Bourveau, Lou, and Wang (2018), we define an optimistic (pessimistic) forecast as a forecast with actual earnings surprise greater than 10% (lower than -10%). Actual earnings surprise is the difference between the management forecast and the actual earnings, scaled by the absolute value of actual earnings
MF Error	I/B/E/S	The absolute difference between the last management EPS forecast before the forecast period end and the actual EPS reported in I/B/E/S, averaged over the fiscal year. We use the midpoint of the upper and lower estimates if a guidance range is given
DQ	Compustat	The natural logarithm of the value-weighted ratio of non-missing to total Compustat line items, calculated following Chen, Miao, and Shevlin (2015)
RSQ	Compustat + CRSP	The adjusted R-squared from a firm-specific time-series regression of price on earnings and book value of equity. We estimate $P_{i,t} = \beta_{0i} + \beta_{1i}E_{i,t} + \beta_{2i}BV_{i,t} + \varepsilon_{i,t}$ as a rolling regression from time $t-10$ to t , requiring firms to have at least five observations. $P_{i,t}$ is the price per share of firm i three months after fiscal year end t , $E_{i,t}$ is the earnings per share of firm i during year t , and $BV_{i,t}$ is the book value per share of firm i at the end of year t

Appendix 1: Variable definitions (Cont.)

<i>Variable</i>	<i>Source</i>	<i>Description</i>
Discretionary Accruals (DA)	Compustat	We estimate discretionary accruals using the modified Jones model (Dechow et al., 1995). The modified Jones model is: $\frac{TAC_{i,t}}{AT_{i,t}} = \alpha_{j,t} \frac{1}{AT_{i,t-1}} + B_{j,t} \frac{\Delta Sale_{i,t} - \Delta RECT_{i,t}}{AT_{i,t-1}} + \gamma_{j,t} \frac{PPENT_{i,t}}{AT_{i,t-1}} + \varepsilon_{i,t},$ where TAC = total accruals defined as earnings before extraordinary items and discontinued operations minus operating cash flow, AT = total assets, $\Delta Sale$ = sales in year t minus sales in year t-1, $\Delta RECT$ = account receivables in year t minus receivables in year t-1, and PPENT = net value of property, plant, and equipment. We estimate the model for each 2-digit SIC industry-year with at least 10 observations and use both the nominal and the absolute value of the residual $\hat{\varepsilon}_{i,t}$ as measures of earnings management
AF Dispersion	I/B/E/S	The standard deviation of annual EPS estimates in the last I/B/E/S analyst forecast summary before the fiscal year end
AF Error	I/B/E/S	The absolute difference between the mean annual EPS estimate in the last analyst forecast summary before the fiscal year end and the actual EPS reported in I/B/E/S
Bid-Ask Spread	CRSP	The natural logarithm of the fiscal year average daily closing ask price minus closing bid price divided by the midpoint of the closing ask and bid prices in CRSP
Dollar Volume	CRSP	Daily trading volume multiplied by the closing price, averaged over the fiscal year and reported in millions of U.S. dollars
R&D Expense	Compustat	Research and development expense divided by total assets
Acquisition Expenditure	Compustat	Acquisition expenditure divided by total assets
Cash Flow Volatility	Compustat	Standard deviation of the ratio of operating income before depreciation to assets from year t to t-4
OpChange	Compustat + CRSP	Indicator that equals one if the firm had an above median increase in average R&D expense, acquisition expenditure, or cash flow volatility from the three years before to the three years after the legal event
WeakGov	TFN + ISS	Indicator that equals one if the firm had a poison pill or did not have blockholder (i.e., an institutional investor owning more than 5% of shares outstanding) in the three years before the legal event
3-Day CAR		Market model cumulative abnormal stock returns (CAR) in the three trading days around each court ruling, estimated using CRSP value-weighted index returns and a one-year estimation window (252 trading days) ending one month (20 trading days) before the [-1, +1] event window

Appendix 2: Sample description. This table describes the samples used to analyze changes in the information environment around the Silicon Graphics Inc. (SGI) ruling (183 F.3d 970) by the Ninth Circuit Court of Appeals in 1999, which lowered the threat of a securities class action lawsuit for firms located in the circuit, and the staggered adoption of universal demand (UD) laws by twenty-three states between 1989 and 2005, which lowered the threat of a derivative lawsuit for firms incorporated in the states. Panel A displays the distribution of observations by headquarter and incorporation state for the full sample of 57,690 firm-year observations from 7,511 firms between 1987 and 2007 with data available in the CRSP-COMPUSTAT merged database and I/B/E/S. We exclude utilities (SIC 4900-4999), financials (SIC 6000-6999) and public administration firms (SIC 9000-9999). Grey bars highlight the nine states located in the Ninth Circuit. Panels B and C report summary statistics for our SGI Ruling and UD Law samples, respectively. Sample sizes vary across outcome variables depending on data availability and empirical specification. Variables are winsorized at the 1/99 percent tails. Appendix 1 provides variable definitions.

Panel A: Distribution

State	UD Law Adopted	HQ State Firm-Years	Incorp. State Firm-Years	State	UD Law Adopted	HQ State Firm-Years	Incorp. State Firm-Years
AK		24	12	MT	1992	30	13
AL		355	58	NC	1995	1,224	455
AR		308	36	ND		6	2
AZ	1996	880	75	NE	1996	216	67
CA		10,000	1,495	NH	1993	284	7
CO		1,436	299	NJ		2,249	680
CT	1997	1,300	180	NM		33	7
DC		84	17	NV		466	1,054
DE		192	36,643	NY		3,640	1,430
FL	1990	2,189	1,069	OH		2,251	1,390
GA	1989	1,792	830	OK		369	123
HI	2001	59	23	OR		635	478
IA	2003	301	153	PA	1997	2,507	1,225
ID	1998	136	3	RI	2005	166	53
IL		2,716	158	SC		282	112
IN		636	608	SD	2005	75	35
KS		337	113	TN		1,023	473
KY		327	99	TX	1997	5,913	1,034
LA		357	167	UT	1992	428	219
MA	2004	3,317	1,251	VA	1992	1,637	827
MD		896	547	VT		29	21
ME	1997	26	33	WA		1,068	720
MI	1989	1,212	613	WI	1991	1,020	707
MN		1,979	1,619	WV		39	11
MO		1,097	377	WY	1997	0	20
MS	1993	144	49	Total		57,690	57,690

Panel B: Summary statistics for SGI Ruling sample

	Mean	S.D.	P25	Median	P75	Obs
Voluntary Disclosure Quantity						
<i>Disclosure</i>	0.1951	0.3963	0.0000	0.0000	0.0000	5,346
<i>FreqMF</i>	0.2769	0.6317	0.0000	0.0000	0.0000	5,346
<i>FreqVol8k</i>	0.6804	0.8367	0.0000	0.0000	1.3863	5,346
Voluntary Disclosure Quality						
<i>FreqMF Optimistic</i>	0.0880	0.3247	0.0000	0.0000	0.0000	5,346
<i>FreqMF Pessimistic</i>	0.1040	0.3498	0.0000	0.0000	0.0000	5,346
<i>MF Error</i>	0.1118	0.2224	0.0102	0.0325	0.1000	904
Mandatory Disclosure Quality						
<i>DQ</i>	-0.4881	0.1319	-0.5552	-0.4778	-0.3967	4,382
<i>RSQ</i>	0.4211	0.3905	0.1236	0.4749	0.7639	4,382
<i>DA (Nominal)</i>	-0.0240	0.1085	-0.0613	-0.0089	0.0352	4,349
<i>DA (Absolute)</i>	0.0904	0.1007	0.0254	0.0582	0.1162	4,349
Information Asymmetry						
<i>AF Dispersion</i>	0.0747	0.2392	0.0100	0.0200	0.0500	4,658
<i>AF Error</i>	0.1352	0.4564	0.0100	0.0300	0.0800	4,658
<i>Bid-Ask Spread</i>	-4.4914	1.0441	-5.0488	-4.3183	-3.7691	4,658
<i>Dollar Volume</i>	28.9594	83.0000	1.1602	4.4121	17.2900	4,658
Firm Operations						
<i>R&D Expense</i>	0.0810	0.1194	0.0000	0.0284	0.1203	5,045
<i>Acquisition Expenditure</i>	0.0234	0.0575	0.0000	0.0000	0.0133	5,045
<i>Cash Flow Volatility</i>	0.1793	0.2004	0.0405	0.0741	0.3025	4,706

Panel C: Summary statistics for UD Law sample

	Mean	S.D.	P25	Median	P75	Obs
Voluntary Disclosure Quantity						
<i>Disclosure</i>	0.2612	0.4393	0.0000	0.0000	1.0000	29,599
<i>FreqMF</i>	0.3782	0.7107	0.0000	0.0000	0.6931	29,599
<i>FreqVol8k</i>	1.1100	0.9087	0.0000	1.0986	1.7918	29,599
Voluntary Disclosure Quality						
<i>FreqMF Optimistic</i>	0.1224	0.3739	0.0000	0.0000	0.0000	29,599
<i>FreqMF Pessimistic</i>	0.1306	0.3845	0.0000	0.0000	0.0000	29,599
<i>MF Error</i>	0.1512	0.3960	0.0150	0.0369	0.1050	6,727
Mandatory Disclosure Quality						
<i>DQ</i>	-0.4886	0.1755	-0.5782	-0.4960	-0.3787	41,773
<i>RSQ</i>	0.4261	0.3883	0.1353	0.4845	0.7624	41,773
<i>DA (Nominal)</i>	-0.0148	0.0935	-0.0512	-0.0062	0.0344	40,068
<i>DA (Absolute)</i>	0.0808	0.0913	0.0224	0.0514	0.1037	40,068
Information Asymmetry						
<i>AF Dispersion</i>	0.1077	0.3513	0.0100	0.0200	0.0700	46,369
<i>AF Error</i>	0.2255	0.7943	0.0100	0.0400	0.1200	46,369
<i>Bid-Ask Spread</i>	-4.4647	1.2543	-5.1439	-4.1184	-3.5788	46,369
<i>Dollar Volume</i>	13.2461	34.7317	0.5599	2.1172	8.6237	46,369
Firm Operations						
<i>R&D Expense</i>	0.0565	0.1084	0.0000	0.0015	0.0692	57,690
<i>Acquisition Expenditure</i>	0.0269	0.0653	0.0000	0.0000	0.0155	57,690
<i>Cash Flow Volatility</i>	0.1833	0.2420	0.0347	0.0627	0.3006	48,628

Appendix 3: Balance tests. This table reports balance tests for the samples used to analyze changes in the information environment around the Silicon Graphics Inc. ruling and the adoption of a universal demand law. Panels A and B report the average annual change for outcome variables in the three years prior to the SGI Ruling and adoption of a UD law, respectively. To assess pre-trends, we report the number of sample firms with available data, the average change prior to the legal event for treated and control firms, and p -values corresponding to difference-in-means tests. Appendix 1 provides variable definitions.

Panel A: Balance test for SGI Ruling sample

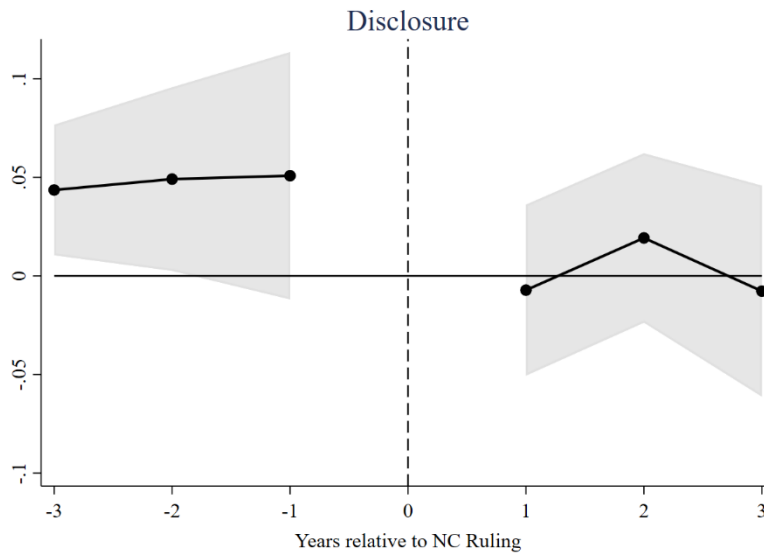
	Obs	Non-Ninth	Ninth	Difference	p -value
		Circuit Firms	Circuit Firms		
		Mean	Mean		
<i>Disclosure</i>	628	0.1126	0.1148	-0.0022	0.902
<i>FreqMF</i>	628	0.1237	0.1126	0.0111	0.571
<i>FreqVol8k</i>	628	0.1457	0.1190	0.0267	0.344
<i>FreqMF Optimistic</i>	628	0.0402	0.0385	0.0017	0.872
<i>FreqMF Pessimistic</i>	628	0.0245	0.0376	-0.0131	0.158
<i>MF Error</i>	16	0.1095	0.0125	0.0971	0.361
<i>DQ</i>	434	-0.0022	-0.0006	-0.0015	0.656
<i>RSQ</i>	434	-0.0101	0.0110	-0.0211	0.232
<i>DA (Nominal)</i>	429	-0.0065	-0.0041	-0.0024	0.793
<i>DA (Absolute)</i>	429	0.0037	-0.0022	0.0059	0.408
<i>AF Dispersion</i>	566	0.0020	0.0035	-0.0015	0.900
<i>AF Error</i>	566	-0.0008	0.0214	-0.0222	0.302
<i>Bid-Ask Spread</i>	566	-0.1204	-0.1952	0.0748	0.007
<i>Dollar Volume (US\$M)</i>	566	4.4115	3.9753	0.4362	0.801
<i>R&D Expense</i>	581	0.0024	0.0078	-0.0054	0.134
<i>Acquisition Expenditure</i>	581	0.0044	0.0041	0.0003	0.942
<i>Cash Flow Volatility</i>	491	-0.0011	-0.0032	0.0021	0.741

Panel B: Balance test for UD Law sample

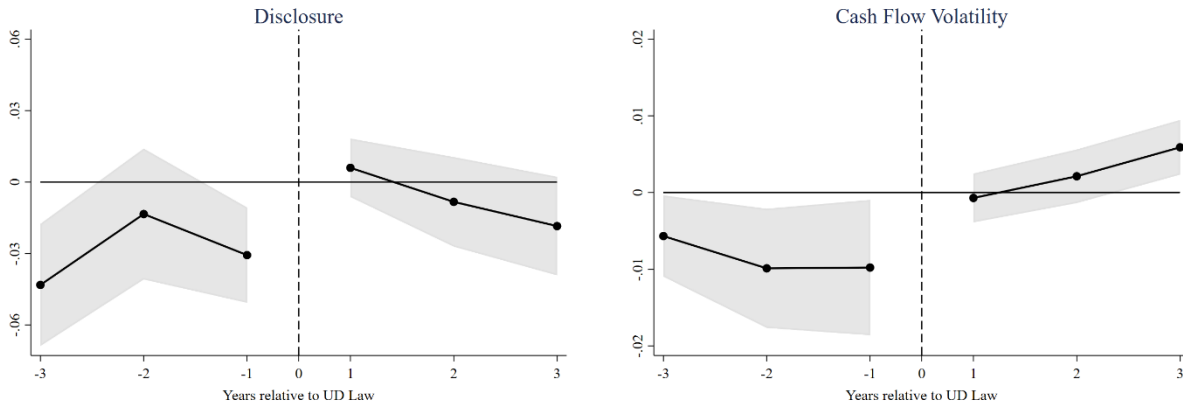
	Obs	Non-UD Firms	UD Firms	Difference	p -value
		Mean	Mean		
<i>Disclosure</i>	5,006	0.0053	0.0116	-0.0062	0.763
<i>FreqMF</i>	5,006	0.0284	0.0523	-0.0239	0.396
<i>FreqVol8k</i>	5,006	0.1678	0.1489	0.0189	0.689
<i>FreqMF Optimistic</i>	5,006	0.0055	-0.0036	0.0090	0.626
<i>FreqMF Pessimistic</i>	5,006	0.0174	0.0277	-0.0103	0.546
<i>MF Error</i>	1,669	-0.0039	0.0355	-0.0395	0.244
<i>DQ</i>	5,925	0.0109	0.0018	0.0091	0.000
<i>RSQ</i>	5,925	0.0007	-0.0004	0.0010	0.833
<i>DA (Nominal)</i>	5,853	0.0014	-0.0002	0.0016	0.404
<i>DA (Absolute)</i>	5,853	-0.0016	-0.0006	-0.0010	0.559
<i>AF Dispersion</i>	6,377	-0.0041	0.0023	-0.0064	0.178
<i>AF Error</i>	6,377	-0.0086	-0.0056	-0.0030	0.782
<i>Bid-Ask Spread</i>	6,377	-0.1045	-0.0097	-0.0948	0.000
<i>Dollar Volume (US\$M)</i>	6,377	0.1556	-0.0832	0.2388	0.249
<i>R&D Expense</i>	7,048	-0.0006	0.0002	-0.0008	0.437
<i>Acquisition Expenditure</i>	7,048	-0.0000	0.0001	-0.0001	0.927
<i>Cash Flow Volatility</i>	6,564	-0.0002	0.0015	-0.0017	0.452

Appendix 4: Coefficient dynamics. This figure plots the timing of the effect of two legal changes that lowered the threat of shareholder litigation. Panel A plots the dynamic effect of the Silicon Graphics Inc. ruling using the same regression specification as Table 2, Panel A, Column (1), except that the Ninth Circuit headquarter state indicator is interacted with annual dummies instead of a post 1999 indicator. Panel B plots the dynamic effect of UD Laws using the stacked regression specification similar to Table 2, Panel, B, Column (1). Specifically, we construct cohorts of treated and control firms for six years around each UD adoption event, requiring control firms to not have been previously treated by another state, pool the data across cohorts, and regress outcome variables on the UD indicator, firm-cohort, headquarter state-year-cohort, and industry-year-cohort fixed effects. The gray shading represents 90% confidence intervals using heteroskedasticity-consistent standard errors clustered by headquarter state in Panel A and incorporation state in Panel B.

Panel A: Lower threat of securities class action litigation



Panel B: Lower threat of derivative litigation



Appendix 5: Stacked regressions. This table displays the estimated change in the information environment around the adoption of UD laws using a stacked regression alternative estimator. Following Gormley and Matsa (2011), we construct cohorts of treated and control firms for six years around each UD adoption event, requiring control firms to not have been previously treated by another state, pool the data across cohorts, and regress outcome variables on the UD indicator, firm-cohort, headquarter state-year-cohort, and industry-year-cohort fixed effects. This approach circumvents potential bias in staggered two-way fixed effects difference-in-differences estimators by avoiding the use of already-treated control units. Heteroskedasticity-consistent standard errors, reported in parentheses, are incorporation state. The symbols *, **, and *** indicate significance at the 10%, 5%, and 1% level, respectively. Appendix 1 provides variable definitions.

	<i>Disclosure</i>		<i>FreqMF</i>		<i>FreqVol8k</i>		<i>FreqMF Optimistic</i>		<i>FreqMF Pessimistic</i>		<i>MF Error</i>	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
UD Law	0.030*** (0.010)	0.021* (0.012)	0.112*** (0.016)	0.099*** (0.020)	0.229*** (0.030)	0.257*** (0.029)	0.060*** (0.009)	0.055*** (0.013)	0.053*** (0.007)	0.049*** (0.006)	0.034*** (0.001)	0.050*** (0.011)
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
HQ state-year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry-year FE	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Observations	101,044	101,044	101,044	101,044	101,044	101,044	101,044	101,044	101,044	101,044	21,692	21,692
Ad. R-squared	0.562	0.565	0.632	0.637	0.549	0.560	0.243	0.250	0.373	0.377	0.356	0.388

	<i>DQ</i>		<i>RSQ</i>		<i>DA (Nominal)</i>		<i>DA (Absolute)</i>		<i>AF Dispersion</i>		<i>AF Error</i>	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
UD Law	-0.013** (0.006)	-0.009*** (0.003)	-0.012 (0.010)	-0.011 (0.011)	-0.002 (0.003)	-0.003 (0.003)	0.004* (0.002)	0.006*** (0.002)	0.019*** (0.006)	0.019*** (0.007)	0.034*** (0.012)	0.038** (0.017)
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
HQ state-year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry-year FE	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Observations	165,991	165,991	165,991	165,991	161,791	161,791	161,791	161,791	186,136	186,136	186,136	186,136
Ad. R-squared	0.809	0.819	0.657	0.666	0.214	0.216	0.282	0.313	0.729	0.730	0.631	0.636

	<i>Bid-Ask Spread</i>		<i>Dollar Volume</i>		<i>R&D Expense</i>		<i>Acquis. Expend.</i>		<i>Cash Flow Volatility</i>	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
UD Law	-0.002 (0.021)	-0.001 (0.016)	-1.792 (1.071)	-1.385 (1.009)	0.001* (0.001)	0.002** (0.001)	0.006*** (0.002)	0.005** (0.002)	0.007** (0.003)	0.006 (0.004)
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
HQ state-year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry-year FE	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Observations	186,136	186,136	186,136	186,136	232,282	232,282	232,282	232,282	193,281	193,281
Ad. R-squared	0.878	0.886	0.778	0.792	0.829	0.830	0.216	0.219	0.841	0.844