Does shareholder litigation risk cause public firms to delist? Evidence from securities class action lawsuits

Does Shareholder Litigation Risk Cause Public Firms to Delist? Evidence from Securities Class Action Lawsuits

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ABSTRACT

Using three exogenous shocks to ex ante litigation risk, including federal judge ideology and two influential judicial precedents, we find that lower shareholder litigation risk reduces a firm's propensity to delist from the U.S. stock markets. The effect is at least partially driven by indirect costs of litigation and that being a private firm can significantly reduce the threat of litigation. Overall, the results suggest that mitigating excessive litigation costs for public firms is crucial to ensure the continued vibrancy of the U.S. stock market.

Keywords: Shareholder litigation, Securities class action lawsuit, Stock market listing, Delisting

JEL Classification: D04, D22, G30, G38, K22

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"The solution to the competitive problem of US capital markets lies, on the one hand, in reducing the burden of litigation."

—Report of the Committee on Capital Market Regulation (2006)[1]

"Class members who remain invested in the defendant companies are the real losers. The companies in which they're invested pay settlement and legal fees, leaving the shareholder with devalued stock."

—US Chamber of Commerce Institute of Legal Reform (2005)

Securities class action (SCA) litigation is a governance device used to discipline managers and mitigate agency problems in corporations (La Porta, Lopez-de-Silanes, Shleifer, and Vishny (1998)). Shareholders are entitled to file a lawsuit against the firm's managers and directors if they commit wrongdoing. However, mounting concerns have been raised with regard to the proliferation of abusive and meritless litigation practices (Pincus, 2018). According to Cornerstone Research's 2019 Review on SCA filings, the likelihood of litigation for US exchange-listed firms increased for seven consecutive years.[2] This rising trend has not only been observed in the frequency of litigation cases but also in the magnitude of shareholder value destruction. In the aggregate, defendant firms experienced substantial loss of their market values, up to US$280 billion in 2019, during their litigation period, more than double the 1997–2018

[1] The Committee on Capital Markets Regulation is an independent, bipartisan committee consisting of 22 corporate and financial leaders from the investor community, businesses, finance, law, accounting, and academia.

[2] We observe similar findings in our sample period. Column (3) of Panel A in Table 1 shows that the average annual litigation rate in the last five years accelerated more than 40% as compared to that of the preceding five-year period. Out of these cases, Column (5) of Panel A, Table 1, shows that an average of more than 45% of litigation cases were dismissed.

average.[3,4] This surge in litigation motivated the passage of the Private Securities Litigation Reform Act (PSLRA) in 1995 and inspired the 2017 approval by the US House of Representatives of the Lawsuit Abuse Reduction Act (LARA).[5] This paper examines the effect of SCA litigation on the delisting decisions of US publicly listed firms. As delistings explain up to 46% of the recent reduction in the number of listed firms (Doidge, Karolyi, and Stulz (2017)), this study contributes to the debate on the potential reasons for the recent shrinkage of the US stock market.

A firm will consider delisting when the costs of being public exceed the benefits (Djama, Martinez, and Serve (2014)).[6] Shareholder litigation imposes substantial direct costs, such as the legal expenses to settle a lawsuit—especially for unwarranted litigation that is expensive to defend—and related human resources involved in protracted frivolous disputes. In our sample, the average settlement amount (which excludes some other direct costs, such as legal and consulting fees) is 0.51% of an average firm's total assets. Given that the average return on assets (ROA) of firms in our sample is 3.6%, this cost is economically substantial.[7] In addition,

[3] In Cornerstone Research's 2019 review, the Disclosure Dollar Loss Index estimates the effect of all information revealed at the end of the class period (the period during which the unlawful conduct allegedly occurred) and is measured by the aggregate dollar value change in market values of defendant firms in all federal and state SCA filings between the trading day immediately preceding the end of the class period and the trading day immediately following the end of the class period.

[4] In recent decades a new practice has arisen whereby "plaintiffs' lawyers initiate and control the lawsuits using professional plaintiffs who purchased a few shares of stock in multiple companies so they would be able to sue whenever called upon by the lawyers" (Pincus, 2018).

[5] The 2017 bill was not passed by the Senate and has yet to become law.

[6] Public corporations enjoy many economic benefits, including better access to finance (Saunders and Steffen (2011)), lower costs of capital (Hail and Leuz (2006)), less information asymmetry with other market participants (Easley, Hvidkjaer, and O'Hara (2002)), higher liquidity, and a larger investor base (Merton (1987)). However, being public also carries costs. For instance, public firms must comply with strict reporting and disclosure requirements. Compliance costs, such as increased fees for hiring and retaining auditors, outside directors, and lawyers, can be substantial (Pagano, Panetta, and Zingales (1998), Ritter (1987)). Engel, Hayes, and Wang (2007) find that the frequency of U.S. firms going private increased after the passage of the Sarbanes–Oxley Act in 2002, suggesting that this regulation increased the compliance burden of public entities. Furthermore, changes in a firm's competitive environment can increase the proprietary costs of disclosing valuable information to competitors (Campbell (1979), Healy and Palepu (2001)).

[7] The effect of protracted frivolous disputes or unwarranted litigation can be substantial such that a firm could be forced to delist. In our analysis, up to approximately 14% of litigated firms delist within one year of an SCA lawsuit, potentially reflecting the impact of direct litigation costs.

defendant firms are subject to substantial indirect costs. Litigation can significantly damage the firm's reputation, erode investor confidence, and hence harm the firm's ability to access financial markets. Similarly, it could distract managers from focusing on long-term goals that maximize shareholder value. Given these reasons, we hypothesize that the burdens of shareholder litigation can exacerbate the listing costs of public firms and drive firms to delist.

We obtain data on SCA lawsuit filings from the Institutional Shareholder Services Securities Class Action Services (ISS-SCAS) database and delists from the Center for Research in Security Prices (CRSP) database. We exclude all delists due to mergers to alleviate the concern that our results could be driven by the mechanical relationship whereby firms involved in a merger are both more likely to be litigated by shareholders, and to delist due to a merger. We also follow Fernandes, Lel, and Miller (2010) and conduct new searches for delisting announcements using Factiva to identify merger delists that are misclassified as voluntary delists by CRSP; we exclude these from the sample. Our final sample includes 69,423 firm-year observations from 8,516 U.S. incorporated public firms facing 2,707 lawsuits from 1996 to 2019.

We find that firms are more likely to delist after experiencing an SCA lawsuit. Specifically, a shareholder lawsuit is associated with a statistically significant 6% increase in the probability of delisting. Our main specification includes industry-year fixed effects, where industries are based on granular four-digit Standard Industrial Classification (SIC) codes. The inclusion of industry-year fixed effects controls for time-varying industry characteristics that could affect a firm's probability of delisting, such as industry-wide investment opportunities, industry competition (Kahle and Stulz (2017)), merger waves (Cartwright and Cooper (1990), Doidge et al. (2017)), and venture capital financing cycles (Ljungvist, Persson, and Tag (2018)). Moreover, we also include several lagged control variables, including firm size, market-to-book ratio, profitability,

leverage, cash flow volatility, analyst followings, as well as the natural logarithm of gross domestic product (GDP) and GDP growth rate at the state level where a firm is located. We further show that our results are not driven by the dot-com bubble in 2001 or the financial crisis in 2008, and remain robust to alternative estimation methods of probit and Cox hazard models.

To further establish the causal effects of litigation risk on firms' propensity to delist, we use three identification approaches. The first approach exploits the surprise court ruling in the *In Re: Silicon Graphics Inc. Securities Litigation* case from the Ninth Circuit Court of Appeals on July 2, 1999.[8] The 1999 ruling made the pleading standards to initiate an SCA lawsuit significantly more restrictive, thereby reducing the litigation risk for firms located in the Ninth Circuit states.[9] Indeed, we confirm that relative to firms in other jurisdictions, firms in Ninth Circuit states are less likely to receive—and receive fewer—SCA lawsuits after the ruling.

Our treated firms are those headquartered in the Ninth Circuit states. The control firms are those headquartered in the Second Circuit[10] in which the interpretation of the pleading standards is relatively stable (Cazier, Christensen, Merkley and Treu (2016)). We further use nearest-neighbor propensity score matching to ensure that treated and control firms are comparable.

Having verified that pre-ruling firm characteristics and delisting trends are parallel and comparable between the treated and control firms, we estimate a difference-in-differences model using a matched sample. The most stringent specification includes circuit fixed effects, industry-year fixed effects, and state linear trends. The results indicate that treated firms are 6.1%

[8] The nine states in the Ninth Circuit are Alaska, Washington, Oregon, Idaho, Montana, California, Nevada, Arizona, and Hawaii.

[9] Although SCA litigation can be filed in any of the federal circuit courts because shareholders are often geographically dispersed, Cox, Thomas, and Bai (2009) show that 85% of securities fraud class actions are filed in the home circuit of the defendant firm. They also report that the circuits' pleading standards do not affect plaintiffs' choice of court venue.

[10] The three states in the Second Circuit are Connecticut, New York, and Vermont.

less likely to delist relative to comparable firms unaffected by the ruling decision. Overall, the results suggest that decreasing litigation risk reduces firms' propensity to delist.

To further demonstrate that reducing the litigation risk encourages firms to remain public, we analyze stock market reactions to delisting events following the Ninth Circuit ruling, when there was less incentive for firms to delist due to the reduced likelihood of SCA litigation. We find that the cumulative abnormal returns (CARs) around delisting events are markedly lower for treated firms. Lower CARs around delisting events are consistent with a change in composition toward lower-quality firms delisting, and support the hypothesis that lower litigation risk results in better-quality firms remaining listed.[11]

In the second approach, we confirm our findings using an alternative legislative change—the 2001 Nevada corporate law amendment. Specifically, in 2001, Nevada passed a legislation that significantly reduces the legal liabilities of corporate directors and officers of firms incorporated in Nevada (Barzuza (2012)). Under this setting, we are able to include headquarters state-year fixed effects to isolate the effect of a firm's headquarters locations on its delisting likelihood. We find that after this legislative change, firms incorporated in Nevada are less likely to delist compared to firms unaffected by the ruling. This provides further support for our argument that reducing litigation risk decreases firms' propensity to delist.

The third identification approach uses the ideology of federal judge appointments as a shock to ex ante litigation risk. When the law is ambiguous, different legitimate interpretations, driven by judicial political orientation, can influence judicial decision-making. Prior literature

[11] Better-quality firms would enjoy higher delisting CARs (Engel et al. (2007)). For example, when Elon Musk, the CEO of Tesla, expressed his intention to take Tesla private, the stock market reacted positively (Boudette and Phillips (2018)).

documents that liberal judges (i.e., those appointed by Democratic presidents) tend to support individual investors, whereas conservative judges (i.e., those appointed by Republican presidents) tend to support big business and free and less regulated markets (e.g., Fedderke and Ventoruzzo (2016), Staudt, Epstein, and Wiedenbeck (2006)). As such, liberal judges pose a higher litigation risk to firms than do conservative judges (Huang, Hui, and Li (2019)).

We follow prior literature in legal studies and accounting to construct proxies for federal judges' political ideology and employ these as an exogenous shock to ex ante litigation risk (e.g., Fedderke and Ventoruzzo (2016), Huang et al. (2019), Sunstein, Schkade, and Ellman (2004)). This identification strategy allows us to take advantage of cross-sectional and time-series variation of federal judge composition at the circuit court level to alleviate the potential confounding effects of corporate policy and performance on delisting choice. Consistent with the previous analyses, the results indicate that when the judges in a firm's circuit are more liberal (implying a higher litigation propensity), firms are more likely to delist.

We next explore the underlying reasons why litigation motivates firms to delist. We find that both the direct costs, such as the legal expenses to settle a lawsuit, and the indirect costs of litigation, such as the distraction from dealing with a lawsuit, contribute to the observed effect. First, we decompose SCA lawsuits into those that are settled and those that are dismissed, and find that both types of lawsuits increase delisting propensity. The results indicate that even in the absence of direct legal settlement costs, the indirect costs associated with dealing with an eventually dismissed lawsuit are substantial enough to encourage firms to delist. Second, we categorize the delist cases into voluntary and forced delists, and find that litigation significantly affects both types of delisting. This suggests that the main finding is not solely driven by firms being forced to delist due to the direct financial costs of the legal settlement.

This paper makes two primary contributions. First, we contribute to the literature on the impact of the U.S. class action litigation system on the stock market.[12] Johnson, Neslon and Pritchard (2000) and Spiess and Tkac (1997) show that following the enactment of the 1995 PSLRA, the market values of firms prone to meritless class action lawsuits increased. Romano (1991) and Gande and Lewis (2009) examine share price reactions to SCA lawsuits. Gagnon and Karolyi (2018) and Licht, Poliquin, Siegel and Xi (2018) investigate US cross-listed foreign firms' stock price reactions following the US Supreme Court's ruling in *Morrison* v. *National Australia Bank*, which limited the extraterritorial application of the Rule 10b-5 anti-fraud provision. Gande and Miller (2012) investigate stock price reactions of these firms following SCA lawsuits. Cheng, Srinivasan, and Yu (2014) compare the securities litigation rates between U.S. and U.S. cross-listed foreign firms.

Relatedly, the paper adds to the regulation versus deregulation debate and its implications for corporate governance and finance. The literature documents that freeing firms and their directors from legal obligations can raise firms' capital costs, lower investment efficiency, increase risk taking, and reduce the quality of information disclosure (e.g., Barzuza and Smith (2014), Donelson and Yust (2014), Houston et al. (2019)). We advance this literature by shedding light on a negative effect of shareholder litigation on firms' incentives to remain public.

Second, we contribute to the growing body of research offering explanations for the shrinkage of the U.S. stock market. Doidge et al. (2017) report that U.S. firms are increasingly delisting because the net benefits of being listed have declined. The extant literature argues that the decision to delist is influenced by the trade-offs between the costs and benefits for the economic parties concerned (Kim and Weisbach (2008), Pagano et al. (1998)). Several studies focus on the

[12] Another strand of literature documents the effects of litigation on corporate policies; for example, see Crane and Koch (2018), Houston, Lin, Liu, and Wei (2019), Johnson, Kasznik and Nelson ((2000), (2001)), Lin, Liu, and Manso (2020), Lin, Officer, Schmid, and Zou (2019)), and Rogers and Buskirk (2009).

costs and benefits of complying with US stock market regulations, such as the 2002 Sarbanes–Oxley Act (e.g., Doidge, Karolyi, and Stulz (2010); Leuz, Triantis, and Wang (2008)) and the 1933–1934 Securities Acts (e.g., Jarrell (1981), Stigler (1964)).

In a related study, Fernandes et al. (2010) investigate the market reaction to the 2007 SEC Rule 12h-6 disclosure deregulation announcement, which relaxes the requirements for firms to deregister with the SEC and terminate their reporting obligations. The authors show that investors reacted negatively to the announcement for firms located in countries with poor disclosure requirements and weak governance regimes. The result suggests that from the perspective of investors, U.S securities reporting regulation carries significant value, especially for foreign firms with weak investors protections.

In contrast, our paper uses the variation in legal burdens to examine delisting decisions from the perspective of the firm. Our empirical designs aim to establish the casual relationship between litigation and delisting using various identification strategies, including the change in pleading standards from the Ninth Circuit's ruling, the 2001 amendment of the Nevada corporate law, and the exogenous assignment of litigation threats from the random appointments of federal judges. These empirical designs collectively allow us to exploit variations in legal pressure across states and over time, and consequently offer a dynamic setting to investigate the impact of litigation risk on the delisting decisions of firms. We find that the reduction in litigation burden decreases the propensity of delisting. Overall, the results suggest that firms consider legal and regulation burdens when they decide whether or not to remain in the U.S. public markets.

More broadly, our paper highlights how the legal landscape governing the U.S. investing universe has an important role in influencing the composition of the stock market. The results suggest that the threat of excessive legal costs may diminish the attractiveness of being a

publicly traded firm. For policymakers, striking the right balance between protecting shareholder rights and limiting the costs of being a public firm is critical to ensure the continued vibrancy of the U.S. stock market.

I. Data and Summary Statistics

Our sample consists of U.S. incorporated public firms included in the merged CRSP-Compustat database between 1996 and 2019. We start in 1996 because that is when data on SCA lawsuits become widely available. The sample ends in 2019 because many recent SCA cases in 2020 and 2021 remain active with pending resolution.

We exclude financial firms (SIC 6000–6999), utilities firms (SIC 4900–4999), unclassified firms (SIC 9900–9999) and cross-listed firms from the sample. Data on cross-listed firms are obtained from CRSP, the Federal Reserve Bank of New York, and the SEC website. The final sample includes 8,516 firms and 69,423 firm-year observations. All continuous variables are winsorized at the 1st and 99th percentiles.

We obtain data on SCA lawsuit filings from the ISS-SCAS database.[13] The database includes lawsuits filed in federal and state courts and provides filing dates for each lawsuit and related information on the lawsuit's filings. According to Johnson (2012), the Securities Litigation Uniform Standards Act (SLUSA) and the Class Action Fairness Act (CAFA), enacted by Congress in 1998 and 2005, respectively, relegate SCA cases to state courts if they primarily

[13] As we are interested in the litigation cases of both publicly listed and private or over-the-counter (OTC) firms, the Stanford Securities Class Action Clearinghouse (SCAC) database, which focuses only on lawsuits filed in federal courts, does not provide sufficient data for the analysis.

involve class actions related to securities that are not nationally traded.[14] Panel A of Table 1 displays the yearly distribution of SCA lawsuits and the rates of litigation in the sample.

Insert Table 1 Here

The litigation rate equals the number of SCA lawsuits divided by the total number of firms. The average litigation rate in the sample is 3.90%. The litigation rate peaked in 2001 during the burst of the dot-com bubble. The litigation rate was then stable—between approximately 3% and 4%—from 2002 to 2011, and it rose to a range of 5% to 7% between 2012 and 2019.

In Columns (4)–(7), we group the total SCA cases into dismissed and settled cases based on the classification from the ISS-SCAS database. A lawsuit is considered dismissed when the judge decides to grant a dismissal motion or the plaintiff decides to drop the case voluntarily. A case is classified as settled when a resolution is reached between the disputing parties. The sum of the dismissed and settled cases, shown in Columns (4) and (7), does not equal the total number of SCA cases in Column (2) because there are active cases for which a resolution is still pending. On average, 48.8% of SCA cases are dismissed during the sample period. Column (8) reports the ratio of dismissed cases to settled cases. The ratio fluctuates throughout the sample. Note that in the final years of the sample, the ratio spikes upward. We do not try to interpret the data for the years following 2014 because there are still several pending cases from these years. In the sample, the average time from the date of an SCA filing to its settlement is 1.7 years, and 10% of the cases can take more than three years to settle.

[14] In particular, Johnson (2012) documents that, following the congressional restrictions embodied in SLUSA (1998) and CAFA (2005), SCAs in state courts involve: (1) claims relating to corporate governance or mergers and acquisitions (M&A) transactions that are based on the law of the defendant's state of incorporation; (2) class actions related to securities that are not nationally traded; (3) class actions with a relatively small size of plaintiff class; and (4) class actions that solely feature claims under the 1933 Securities Act.

Panel B of Table 1 shows the distribution of SCA litigation across one-digit SIC industries. We observe no meaningful differences in the litigation rate across industries. The litigation rate varies from 2.25% in agriculture, forestry, and fishing to 4.93% in the services industry. Panel C of Table 1 displays the composition of different SCA types.

We obtain the list of delisted firms based on the delisting code header (DLSTCD) from the CRSP database. We identify the delisting year based on the ending date of the stock data (ENDDAT) from CRSP. Fama and French (2004) and Doidge et al. (2017) use CRSP's delisting codes to classify delists into three categories: (1) voluntary delist (codes 570 or 573), (2) delist due to mergers (codes 200 to 399), and (3) delist due to cause, or forced delist (codes 400 and above, excluding codes 570 and 573).

An important concern in our analysis is that the relationship between delist and litigation could be mechanically driven by M&As. Specifically, the literature reports that the most likely reasons that a firm is delisted are due to a merger, and that a significant proportion of merger events coincide with litigation (Doidge et al. (2017), Krishnan, Masulis, Thomas, and Thompson (2012)). Therefore, to avoid this potential mechanical relation, we exclude all delists due to mergers from our analysis.[15] Moreover, we follow Fernandes et al. (2010) and conduct news searches for each delist announcement using Factiva. We identify 24 additional delist cases that are classified by CRSP as voluntary (codes 570 and 573), but are in fact due to mergers. We also exclude these cases from our sample.

For each year, Panel A of Table 2 reports the total number of listed firms, the number of delisting firms, and the annual delisting rate. The number of public firms in column (1) declines

[15] In our sample, 26% of merger delists coincide with filings of security class action suits. Importantly, most of these class action suits are indeed because the firm is involved in an M&A. For example, they are related to breaches of fiduciary duty to obtain the best possible sale price (the Revlon rule) or providing materially incomplete and misleading information (violations of Sections 14(a) and 20(a) of the Exchange Act).

from 3,905 in 1996 to 2,260 in 2019. The delisting rate in column (3) fluctuates over the sample. It peaks in 2000 at 7.4%, hovers around 3% for most of the 2000s, and drops to around 1.5% for the 2010s.

Insert Table 2 Here

In Columns (4)–(7), we classify delisting cases as either forced or voluntary cases. In Column (5), we observe higher voluntary delisting rates during the dot-com bubble. In Column (7), the forced delisting rate peaked at 7.1% in 2000, the period of the dot-com bubble, but stabilized at 1.5% in the 2010s. We later show in Panel B of Table 11 that our results are separately robust for voluntary and forced delists.

Panel B of Table 2 shows the distribution of delisting across one-digit SIC industries. Overall, there is reasonable representation across all industry groups. The wholesale trade industry has the highest average delisting rate of 4.65%, and manufacturing has the lowest, at 2.96%. To account for the difference in delisting rates across industries, we include industry-year fixed effects in all main regression specifications.

We obtain stock prices and returns from CRSP. Historical data on a firm's headquarters and state of incorporation are collected from the SEC Analytics database. Note that we cannot use the state of incorporation variable found in the Compustat database because it only contains information on a firm's current state of incorporation.

Table 3 reports the summary statistics for all key variables. The average delisting rate in the data is 3.45%. On average, firms have a natural logarithm of total assets of 1.13. Total assets are measured in thousands of dollars and adjusted to 2010 dollars. The average firm has a leverage ratio of 21.8%, and a market-to-book ratio of 2.17. These figures are broadly consistent with

Crane and Koch (2018), who report an average leverage ratio of 22% and an average market-to-book ratio of 1.67.

Insert Table 3 Here

II. The Relation between SCA Lawsuits and Delisting Propensity

In this section, we examine the relationship between SCA lawsuits and the likelihood of delisting. The dependent variable is 𝟙(DELIST), a dummy variable that equals one if the firm delists in a given year, and zero otherwise. The main explanatory variable is 𝟙(SCA), a dummy variable that equals one if the firm experiences an SCA lawsuit, and zero otherwise. We hypothesize that firms are more likely to delist after experiencing SCA lawsuits. Despite the binary nature of the dependent variable, we estimate the specifications using an OLS regression since we have a large number of fixed effects along several dimensions and using maximum likelihood estimators, such as a logit or probit, can produce an incidental parameters problem (Lancaster (2000), Neyman and Scott (1948)).

The most rigorous specification includes industry-year fixed effects. The industries are defined by a granular four-digit SIC code. These fixed effects absorb all variables that do not vary within a given industry and year, such as industry-wide investment opportunities and economy-wide business cycles. The inclusion of industry-year fixed effects controls for industry characteristics that could affect a firm's probability of delisting, such as competition (Kahle and Stulz (2017)), merger waves (Cartwright and Cooper (1990), Doidge et al. (2017)), and venture capital financing cycles (Ljungqvist et al. (2018)). Thus, the estimates compare in delisting propensity between firm-year with and without SCA lawsuits while controlling for any unobserved heterogeneity that varies across industries and years.

We include several lagged control variables known to affect a firm's delisting propensity (Doidge et al. (2017), Leuz et al. (2008), Marosi and Massoud (2007), Pour and Lasfer (2013)). We use FIRM_SIZE (the natural logarithm of a firm's total assets) and MARKET_TO_BOOK ratio (the market value of equity divided by book value of equity) to control for firm size and growth opportunities, respectively. The effects of firm size and growth on delisting likelihood are unclear ex ante. On the one hand, large and high-growth firms tend to receive more attention from investors and thus face a higher litigation risk (Kim and Skinner (2002)). Therefore, the costs of staying public could be higher for these firms, which could incentivize delisting. On the other hand, small and low-growth firms could be more likely to delist because they are less able to utilize the liquidity advantage of public markets relative to private markets (Bolton and von Thadden (1998), Doidge et al. (2017), Mehran and Peristiani (2011)).

We use LEVERAGE (total debt divided by total assets) and CASH_FLOW_VOLATILITY (five-year rolling standard deviation of operating income before depreciation divided by total assets) to control for firm risk because financial distress may prompt firms to delist. We further control for a firm's profitability (RETURN_ON_ASSETS) because financial performance is an important requirement to list on a stock exchange. Moreover, to account for the fact that a firm's financial visibility can affect both the firm's incentive to remain public (Mehran and Peristiani (2011)) and its likelihood of attracting an SCA lawsuit, we control for ANALYST_FOLLOWINGS (the natural logarithm of the number of stock analysts that follow a firm). Finally, we control for time-varying economic factors, including log(STATE_GDP) and STATE_GDP_GROWTH, at the state level where a firm is headquartered. Robust standard errors are clustered at the firm level. The results are reported in Table 4.

Insert Table 4 Here

In Columns (1)–(2), we use a dummy variable 𝟙(SCA), which equals one if the firm experiences an SCA lawsuit in a given year, and zero otherwise. Across both columns, the coefficients on 𝟙(SCA) are positive and statistically significant ($p < .01$), indicating that firms are more likely to delist following litigation events. The effect is also economically meaningful. For example, in the model that includes both control variables and industry-year fixed effects (Column (2)), a litigation event is associated with a 6% increase in the probability of delisting. Furthermore, the magnitude of the coefficient estimates on SCA is stable across both columns, which implies that omitted variables at the industry level or aggregate business cycles are unlikely to result in biased inferences.

In Columns (3)–(6), the dependent variable is #SCA, which is the number of SCA lawsuits that a firm experiences in a given year. Columns (3)–(4) use the full sample, while Columns (5)–(6) restrict the sample to firms that receive at least one SCA lawsuit over the 1996–2019 sample period so that we can estimate the intensive margin of the effect. The estimate in Column (6) indicates that, among firms that have been litigated at least once over our sample period, an additional SCA is associated with a 5.5% increase in delisting likelihood. Overall, the results indicate that when firms are sued by shareholders, they become more likely to delist from the stock market.[16]

We also report in each column the statistics that assess the potential bias from unobserved omitted variables using a methodology developed by Oster (2019). To estimate how large selection on unobservables relative to observables needs to be to reduce the effect of interest to

[16] In unreported results, we conduct cross-sectional tests to identify the types of firms that are most disadvantaged by the occurrence of litigation. We postulate that firms that are young, small, and/or without long-term institutional investors are more vulnerable to delisting when facing heightened litigation costs. To test these hypotheses, we interact the indicator variable 𝟙(SCA) with firm size, age, and institutional holdings. In line with our expectation, we find evidence suggesting that young, small firms and those with a lower fraction of institutional ownership are particularly susceptible to delisting pressure due to SCA litigation.

zero, we compute the degree of selection on unobservables relative to observables as δ, which equals $\frac{\beta_{Full}}{\beta_{Restrict}-\beta_{Full}} x \frac{R_{Full}-R_{Restrict}}{R_{Max}-R_{Full}}$, where $\beta_{Restrict}$ is the coefficient on SCA litigation from the model using a restricted set of controls, and β_{Full} is the coefficient on SCA litigation from the model using a full set of controls. In Column (2), for example, the restricted model includes 𝟙(SCA) as the only explanatory variable, whereas the full model includes 𝟙(SCA), all control variables, and industry-year fixed effects. Following Oster (2019), we specify R_{max} as equal to $\min\{1.3R_{full,}\ 1\}$, where R_{max} is the R^2 value from a hypothetical regression that includes both observed and unobserved controls, and R_{full} is the R^2 from a regression that includes the full set of controls.

As shown in Table 4, the estimates of δ range from 1.6 to 27.8, which are higher than the robustness benchmark of one recommended by Oster (2019). This indicates that the unobservables would need to be around 1.6–27.8 times as important as the observables to reduce the coefficient on SCA litigation to zero. This is unlikely given that our regressions already include many important determinants of delisting propensity as well as industry-year fixed effects. An alternative approach to assess robustness is to estimate a set of bounds for β, where the ratio of unobservables to observables, δ, ranges from zero to one. Following Oster (2019), the beta range is [β^*, β_{Full}], where the bias-adjusted treatment effect is $\beta^* = \beta_{Full} - (\beta_{Restrict} - \beta_{Full}) x \frac{R_{Max}-R_{Full}}{R_{Full}-R_{Restrict}}$. If the bounds do not include zero, then the estimates are robust. As seen in Table 4, all the betas are positive and their bounds do not include zero, suggesting that our results are robust.

Internet Appendix IA1 presents additional robustness tests of the findings in Table 4. We show that the results are robust to using duration and probit models instead of OLS. We also obtain similar results when excluding the 2007–2009 global financial crisis period and/or the 2001–2002 period associated with the dot-com bubble.

III. The causal relation between SCA lawsuits and delisting propensity

An important concern related to the results is that the occurrence of SCA litigation is subject to selection bias. Underperforming firms could be both more likely to be litigated against and more likely to delist due to financial difficulties. This could drive the positive association between SCA litigation and the delisting likelihood observed in Table 4. While the specification already controls for a host of time-varying factors that could influence firm performance, we further mitigate this concern by using several empirical approaches. We first use the influential ruling in the *In Re Silicon Graphics Inc. Securities Litigation* case from the Ninth Circuit Court of Appeals on July 2, 1999, as a natural experiment to establish the causal link between SCA litigation and the decision to delist. Our second approach relies on the 2001 Nevada corporate law amendments that significantly reduced the legal liabilities of corporate directors and officers. Finally, we employ federal judges' ideology to estimate a firm's ex ante litigation risk. All identification approaches show that a reduction in litigation risk decreases a firm's propensity to delist.

A. Ninth Circuit Ruling

1. The Effect of the Ninth Circuit Ruling on Delisting Propensity

In December 1995, Congress enacted the PSLRA to protect corporations from abusive and frivolous securities litigation. However, the U.S. circuit courts interpreted the pleading standard established by this law in different ways. The Ninth Circuit's interpretation in the *In Re: Silicon Graphics Inc. Securities Litigation* case on July 2, 1999, is the most stringent. According to the court, to allege facts, plaintiffs are required to establish evidence that the defendants acted with "deliberate recklessness." The *In Re Silicon Graphics Inc. Securities Litigation* ruling disproportionately affected firms headquartered in Ninth Circuit states.[17]

The Ninth Circuit ruling is plausibly exogenous to firms' propensity to delist. As discussed in Crane and Koch (2018), the Ninth Circuit ruling came from judges with lifelong appointments. Consequently, this ruling is likely based on their own views of legislation, precedent, and the Constitution, rather than on the needs of stock market participants such as owners, managers, and shareholders (see Crane and Koch (2018) for a detailed discussion). Moreover, Johnson et al. (2000) find that following the ruling technology firms located in the Ninth Circuit enjoyed positive and statistically significant announcement returns, suggesting that the ruling was unexpected. Therefore, the 1999 Ninth Circuit ruling offers a plausibly exogenous experiment through which to evaluate the influence of SCA litigation risk on the propensity to delist.[18]

[17] Even though SCA litigation can be filed in any of the federal circuit courts, Cox et al. (2009) report that it is impractical for litigants to sue a firm outside of its headquarters state because if the plaintiff does so, the defendant firm can immediately file a motion, which is likely to be approved, to relocate the suit. Hence, rather than engage in costly and potentially futile forum shopping, they file suit initially in the defendant company's home district. Indeed, Cox et al. (2009) show that 85% of securities fraud class actions are filed in the home circuit of the defendant firm.

[18] Although it is possible that firms could relocate their headquarters to mitigate their litigation risk, due to various binding constraints such as their local financial networks, knowledge hubs, or supply chain locations, firms do not frequently move their headquarters. Using data from SEC Analytics and tracking historical headquarters locations for every firm that files financial statements with the SEC, we find that only 13% of Compustat firms relocate their headquarters during the 20-year sample period from 1996 to 2019.

We employ the Ninth Circuit ruling in 1999 as a natural experiment to examine the causal link between the probability of SCA litigation and firms' propensity to delist. The treated firms are those headquartered in the Ninth Circuit states. The sample period is from 1997 to 2003, which encompasses the three years before and after the ruling. Moreover, because the litigation environment in other circuits may not always be constant, we restrict the control firms to those headquartered in the Second Circuit (which includes Connecticut, New York, and Vermont) in which the interpretation of the pleading standards is relatively stable (Cazier et al. (2016)). We then construct a matched sample of treated and control firms using nearest-neighbor propensity score matching based on all covariates in Table 4.[19] Using the matched sample, we estimate the following difference-in-differences model:

$$y_{it} = \alpha + \beta 1(9TH\,CIRCUIT)_i \times 1(¿1999)_t + 1¿¿ \quad (1)$$

the dependent variable y_{it} is a dummy variable that equals one if firm *i* delists in year *t*, and zero otherwise. $1(9TH\,CIRCUIT¿¿_i$ is a dummy variable that equals one for treated firms headquartered in the Ninth Circuit states, and zero for matched control firms headquartered in the Second Circuit states; and $1(¿1999)_t$ is a dummy variable that equals one when the fiscal year is after 1999, and zero otherwise.

Circuit fixed effects, θ_c, are included to control for time-invariant circuit characteristics. Note that the standalone term of $1(9TH\,CIRCUIT¿¿_i$ is not included in the equation because it is already absorbed by circuit fixed effects. δ_{jt}denotes industry-year fixed effects, which account for any time-varying factors at the industry level that may influence the delisting rate, such as the dot-com bubble around the year

[19] In the first step, we use a probit model to estimate the propensity of a firm being treated. The probit model includes all covariates in Table 4. We then use the propensity scores from the probit estimation to perform nearest-neighbor propensity score matching to construct the matched sample.

2000 or potential merger waves within a particular industry. Moreover, we also include a linear time trend for each state so that the trends in other determinants of the delisting rate at the regional level do not confound the results. X_{it} contains a set of control variables similar to those in Table 4.

Before presenting the main findings, Table 5 provides evidence to support the validity of the setting. First, Panel A of Table 5 displays univariate comparisons between treated and control firms in the pre-ruling period. Importantly, we detect no significant difference in the average delisting rate between treated and control firms. We also find that the mean values of other firm-level controls are not significantly different between the two samples. This indicates that the pre-ruling firm characteristics and delisting trends are comparable between the treated and control firms.

Insert Table 5 Here

Second, we perform a state-level analysis to examine whether firms' delisting rates in the pre-ruling period predict the occurrence of Ninth Circuit. Following Houston et al. (2019), we aggregate the data at the state-year level. Using a logit model, we regress 1(9*TH CIRCUIT*¿ on the delisting rate, and include the state-level log(GDP), GDP growth rate, and the number of public firms as control variables in the regression. As shown in Panel B of Table 5, the coefficient on DELISTING_RATE is statistically insignificant, indicating that firms' delisting rates do not predict the Ninth Circuit ruling.

Third, we provide firm-level evidence that the Ninth Circuit ruling indeed results in a lower number of SCAs issued against firms. Specifically, we show in Columns (1)–(2) of Panel C of

Table 5 that firms in Ninth Circuit states are less likely to receive—and receive fewer—SCA lawsuits after the ruling. Our findings therefore confirm the prediction in the *In Re Silicon Graphics Inc. Securities Litigation* ruling that firms in the Ninth Circuit states experience a reduced frequency of SCA litigation.

In Columns (3)–(4) of Panel C, we examine the effect of the Ninth Circuit ruling on the litigation propensity of OTC firms. Unlike public firms, OTC firms have a lower exposure to litigation suits for at least two reasons: (1) they have lower public visibility, thereby avoiding being targeted by opportunistic lawyers (Johnson et al. (2000), (2001)); and (2) they have a concentrated ownership structure that can mitigate conflicts among shareholders (e.g., Asker, Farre-Mensa, and Ljungqvist (2011), Gao, Harford, and Li (2013)). Therefore, we expect OTC firms to be less responsive to the Ninth Circuit ruling. We obtain data on OTC firms from Compustat-Capital IQ. The regression specifications are similar to those in Columns (1)–(2).[20] As shown in Columns (3) and (4), although the coefficients on $1(9TH\ CIRCUIT) \times 1(¿1999)$ are negative, they are not statistically significant below conventional levels. Overall, consistent with our expectations, private firms are less responsive to the Ninth Circuit ruling due to their lower exposure to SCA litigation. Combined with the finding that the Ninth Circuit ruling reduces litigation propensity for public firms, this helps validate our setting.

Having shown that the court ruling decreases lawsuits for the affected firms, we use the same difference-in-differences setup to test whether the ruling affects firms' propensity to delist. Table 6 reports the results. Model specifications vary across columns in terms of the set of fixed effects included. We start with a basic model in Column (1) that includes only circuit fixed effects. We

[20] There are two exceptions. First, we replace MARKET_TO_BOOK with SALES_GROWTH as a proxy for a firm's growth opportunities because it is difficult to establish the market value for OTC firms. Second, the regression does not control for a firm's analyst following because of the limited analyst data availability for OTC firms.

then gradually augment the regressions with state linear trends in Column (2), and industry-year fixed effects in Column (3). All specifications include control variables similar to those in Table 4. Because the law is applied at the firm's headquarters state, in all Ninth Circuit tests, we cluster standard errors at the firm's headquarters state level.

Insert Table 6 Here

Across all columns in Table 6, the interaction coefficients $1(9TH\ CIRCUIT) \times 1(¿1999)$ are negative and statistically significant ($p < .01$). In our most stringent specification in Column (3), the coefficient estimate indicates that treated firms are, on average, 6.1% less likely to delist compared to firms unaffected by the ruling decision. Therefore, the results suggest that decreasing litigation risk reduces firms' propensity to delist.[21]

Insert Table 7 Here

Next, Table 7 reports a number of robustness tests of our findings in Table 6. We start by addressing the concern that our results could be driven by the dot-com bubble around 2000, given that a large number of firms located in the Ninth Circuit, particularly in California, are high-tech firms that were disproportionately affected by the dot-com bubble. To address this, we exclude from the sample firms in high-tech industries[22] (Column (1)), firms headquartered in California (Column (2)), and both high-tech firms and California firms (Column (3)). As shown in Columns (1)–(3) of Table 7, the interaction coefficients remain negative and significant. Moreover, consistent with the dot-com bubble working against us in finding a reduction in delisting among treated firms, the interaction coefficients in Columns (1)–(3) of Table 7 are larger than our baseline estimate in Table 6. Finally, in Column (4), we employ a probit model

[21] In an unreported analysis, we conduct a falsification test. We repeat the analysis in Table 6 but instead use a sample from 1992 to 1998 and replace 𝟙(>1999) with 𝟙(>1994), which equals one when the fiscal year is after 1994, and zero otherwise. We find that the interaction coefficient 𝟙(9th Circuit) x 𝟙(>1994) is statistically insignificant, suggesting that our main results are unlikely to be driven by a broader time trend.

[22] Technology firms are defined as firms whose three-digit SIC code are 357, 837, or 367.

instead of OLS and find that our results remain robust. The marginal effects of the probit model indicate a 5.0% reduction in delisting likelihood following the ruling (Column (5)).

2. Delisting Returns Around the Ninth Circuit Ruling

So far, we have found that the Ninth Circuit's more stringent pleading standard decreases the frequency of litigation, which in turn reduces firms' propensity to delist. When litigation risk is lower, high-quality but litigation-vulnerable firms can remain public, and the composition of delisting firms will shift toward poor-performing firms that fail stock exchange requirements (i.e., lower-quality firms). Since lower-quality firms experience lower delisting CARs (Engel et al. (2007)),[23] the average delisting CAR should decrease. We therefore expect delisting returns to deteriorate following the Ninth Circuit ruling.

We obtain stock returns from CRSP and winsorize the daily returns of all stocks at the 1st and 99th percentiles. We employ the Fama and French three-factor model as the benchmark return model. The event date is the stock's delisting date. The Fama–French three-factor loadings are estimated based on trading days [−252, −21], where Day 0 is the delisting date. After estimating individual firms' CARs for various event windows, we calculate value-weighted average CARs for all stocks of delisting firms. As before, the same period is 1997–2003 and we exclude financial, utility, unclassified, and cross-listed firms. Our treatment firms are those located in the Ninth Circuit states, and the control firms are those located in the Second Circuit states. Since not every delisting firm has trading data in CRSP around its delisting date, we are only able to obtain and compute the abnormal returns for 550 corporate delistings.

[23] The argument is that delisting returns capture the potential additional value that will be generated once the firm becomes private. Therefore, high-quality firms will have a higher CAR when delisting.

In Panel A of Table 8, we report the CARs of the Ninth Circuit firms before and after 1999. CARs are calculated for various windows, from 5, 7, 9, 13, 17, or 21 days prior to the delisting up to the delisting date. As shown in Panel A, the CARs for delisted stocks in the Ninth Circuit area decline significantly after 1999. For example, for the [−7,0] CAR event window, the average CAR after 1999 is 7.8% lower than that before 1999.

Insert Table 8 Here

Panel B presents results from the regression analyses using the [−7,0] CAR event window. All regressions include industry-year fixed effects and control variables similar to those in Table 6. Because firms may stop submitting financial filings in years before their delisting, we use the latest financial data that are available for the delisting year or the year prior to the delisting date.

We find that the coefficients on $1(9TH\ CIRCUIT) \times 1(¿1999)$are negative and significantly different from zero in all regression specifications in Panel B. Thus, delisting returns are lower for stocks of firms in the Ninth Circuit area after 1999, indicating that the reduction in litigation risk means that better quality firms remain listed. Overall, we show that the Ninth Circuit's heightened pleading standards for SCA lawsuits reduce the propensity of firms in the Ninth Circuit states to delist. We find evidence suggesting that higher-quality firms delist less frequently than lower-quality firms.

B. 2001 Nevada Corporate Law Amendment

Next, following Houston et al (2019), we exploit an alternative legislative change that significantly reduces the legal liabilities of corporate directors and officers. Specifically, in 2001, Nevada took steps to protect directors and officers from liability for breaches of the duties of loyalty, good faith, and

care, or for acting for improper personal benefits (Barzuza (2012); Barzuza and Smith (2014); Donelson and Yust (2014); Houston et al. (2019)). Importantly, this change only applies to firms incorporated in Nevada, and occurs without changes in other states' liability standards. As a result, following the change, Nevada managers are now protected by higher pleading standards on all types of securities actions compared to managers in other states. We thus utilize this legal amendment to examine the link between SCA litigation risk and firms' propensity to delist.

Our sample period is from 1999 to 2005, which encompasses the three years before and after the ruling. The treated firms are those incorporated in Nevada, and we identify the matched control firms using nearest-neighbor propensity score matching based on the covariates in Table 6. The control variables and fixed effects are similar to those in Table 6. In addition, because the law change only applies to firms incorporated in Nevada, this setting allows us to further include headquarters' state-year fixed effects. We therefore compare firms located at the same place in the same time period but face different litigation risks because they are incorporated in different states. Since the law is applied in the firm's incorporation state, standard errors are clustered at the state level in which the firm is incorporated.

Insert Table 9 Here

Table 9 displays the results. We find that after the legislative change, firms incorporated in Nevada are less likely to delist compared to firms unaffected by the ruling. This provides further support for the Ninth Circuit results that decreasing litigation risk reduces firms' propensity to delist.

C. Federal Judge Philosophy

Legislation and legal statutes are not always explicit. Indeed, they are often ambiguous, giving rise to potentially inconsistent judicial interpretations when they are applied to resolve legal disputes.[24] For example, a fervently contested provision in federal securities law is the statute of "strong inference" in the PSLRA, which was crafted in an attempt to discourage meritless securities litigation. The provision demands that private plaintiffs "state with particularity facts giving rise to a strong inference that the defendant acted with the required state of mind."[25] This vague provision has generated varying judicial interpretations and applications across courts.

When the law is ambiguous, judges' views on the underlying policy of the laws can influence their decision-making in complex legal disputes. The indeterminacy of the applicable laws allows different and legitimate interpretative approaches and policy considerations in deciding legal outcomes. As a result, judges' political philosophy or their position on the political spectrum can play a role in the judicial decision-making process.[26]

Prior studies widely adopt the political affiliation of the appointing president as a proxy for judicial partisan preferences (Flemming, Holian, and Mezey (1998), Gerber and Park (1997)). Because presidents often nominate judges whose philosophy reflects the views of their party and contribute to advancing the president's political agenda, judges appointed by Democratic presidents are generally more liberal in their judicial decisions and interpretations than those

[24] According to Grundfest and Pritchard (2002), legislation is sometimes intended to be vague so that legislators can avoid excessive details and enhance flexibility and applicability. In addition, when facing legislative coalitions with divergent interests, legislators need to carefully craft ambiguous statutory language as a tool of compromise to accumulate a majority of supporting votes in Congress. Lastly, legislative ambiguity can also arise over time as a result of unforeseen economic, technological, or social developments.

[25] See 15 US Code §78u–4(b)(2).

[26] We do not imply that judges distort the law to achieve a predetermined personal agenda or political or policy goals, but rather that they choose from legitimate interpretations that are consistent with ambiguous legislation.

appointed by Republican presidents (e.g., Cross and Tiller (1998), Sunstein et al. (2004)).[27] If ideology plays a role in the selection of the judges, it may also influence their decision-making, especially regarding the statutory provisions that are vague and ambiguous.

The literature on the impact of political affiliation in the judiciary across a wide variety of court levels and litigation areas suggests that Democratic-appointed or liberal judges may be more likely to favor investors (plaintiffs), whereas Republican-appointed or conservative judges may be more protective of firms (defendants). For example, Staudt et al. (2006) find that in taxation cases in the Supreme Court, liberal (conservative) justices are more likely to vote with the government (corporate taxpayers). Focusing on the decisions of the U.S. Circuit Courts of Appeals in all criminal cases, Cross (2003) offers further evidence to support the important role of political ideology in judicial decision-making. Pinello (1999) conducts a meta-analysis, finding that the political party affiliation of judges in the Circuit Courts of Appeals explains around 24% of circuit court rulings.

Motivated by this line of literature, we use measures of the dominance of Democratic-appointed judges at the circuit court level as an exogenous shock to ex ante litigation risk. Because judge composition stems from the structure of the legal environment, it is less endogenously correlated with other factors that influence corporate policy and performance. As such, it can attenuate the confounding effect between litigation risk and delisting choice, serving as an exogenous shock to ex ante litigation risk. Huang et al. (2019) report that an increase in the liberal ideology of judges from the first to the third quartile results in a 33.5% relative increase in

[27] Cross and Tiller (1998) document that a panel consisting of a majority of Republican appointed judges have a tendency to render a conservative decision (e.g., reverse the agency in favor of a conservative challenger such as nongovernmental public interest organization challenging the agency position.). In contrast, a panel with a majority of Democrats tend to render a liberal decision (e.g., reverse the agency in favor of a liberal challenger such as an industry group challenging a federal regulation.). Sunstein et al. (2004) report that panels with all-Republican are more likely to reject campaign finance regulations, while panels with all-Democratic panels are more likely to uphold affirmative action programs that aim to support underrepresented parts of society.

the ex ante probability of being litigated. Fedderke and Ventoruzzo (2016), investigating the enforcement of securities laws, show that liberal justices are more inclined to favor investors, whereas conservative justices are more inclined to side with big business and support "free and less regulated" markets. Therefore, liberal judges pose a higher litigation risk to firms than do conservative judges.

Following prior literature, we measure judges' political orientation at the circuit court level. Even though the Supreme Court, the highest court in the US judicial system, is preeminent, monitoring and review by the Supreme Court of SCA lawsuits are extremely rare, or close to non-existent (Pritchard (2011)).[28] In addition, judges in a circuit court can review and overrule a district court judge's decision. Therefore, circuit courts are the courts of last resort for most, if not all, SCA lawsuits. Hence, the ideology of a circuit court has the greatest influence on expected lawsuit outcomes (Bowie and Songer (2009), Choi, Gulati, and Posner (2012)). Prior work shows that in civil liberties and economics cases, the rulings of district court judges reflect the ideological preferences of the circuit court's judges (Randazzo (2008), Choi et al. (2012)).

Each case in a circuit court is assigned to a panel consisting of three judges randomly selected from the circuit. The panel decides the case based on the majority opinion. Following prior studies (e.g., Cross and Tiller (1998), Sunstein et al. (2004)), we measure the ideology of the circuit's judges based on the prevalence of appointees of Democratic presidents. We estimate this in two ways: (1) by computing the percentage of judges that were appointed by Democratic presidents in a firm's circuit court (i.e., the circuit court with jurisdiction over the state where the firm's headquarters is located; LIBERAL_JUDGES); and (2) by calculating the probability that a three-judge panel in a firm's circuit court will comprise at least two Democratic appointees

[28] Unlike circuit court appeals, the Supreme Court is not obliged to hear any individual appeal. Parties may file a "writ of certiorari" to the court, asking for an appeal, but this is rarely granted. Less than 1% of appeals to the Supreme Court are actually granted (Bowie and Songer (2009)).

(LIBERAL_PANEL). To identify the appointing president of individual circuit court judges, we obtain judges' biographical data from the Federal Judicial Center's website. The probability of a three-judge panel having at least two Democratic appointees is:

$$\text{LIBERAL\_PANEL} = [C(p, 3) + C(p, 2) \times C(y - p, 1)] / C(y, 3), \quad (2)$$

where $C(n, r)$ denotes a binomial coefficient indicating the number of possible ways to choose a subset of r objects from a larger set of n distinct objects; p is the number of Democratic appointees in the circuit; and y is the total number of judges in the circuit. Both p and y are counted at the end of each month. The first term $C(p, 3)/C(y, 3)$ calculates the probability that the three-judge panel is comprised of all Democratic appointees, and the second term $[C(p, 2) \times C(y - p, 1)]/C(y, 3)$ estimates the probability that the panel is comprised of two Democratic appointees and one Republican appointee. A higher value for LIBERAL_PANEL indicates that the circuit is more likely to be dominated by liberal judges.

We compute the variable ΔLIBERAL_JUDGES as the change from the previous year in the percentage of federal judges who were appointed by a Democratic president to the circuit court in which the firm's headquarters is located. The variable ΔLIBERAL_PANEL is the change from the previous year in the probability that judges appointed by Democratic presidents dominate a panel of three judges randomly selected from the circuit. In other words, we examine the change, not the base level, in the federal judges' ideologies at a firm level as a proxy for the firm's ex ante litigation risk. The results are presented in Table 10. All regressions include control variables similar to those in Table 4. We use three estimation models: OLS, Cox, and probit.

Insert Table 10 Here

Across all three regression models in Table 10, the coefficients on ΔLIBERAL_JUDGES and ΔLIBERAL_PANEL are positive and statistically significant, consistent with our expectations.[29] Because liberal judges are expected to pose a higher litigation risk to firms, the dominance of liberal judges at the circuit court level is positively associated with a higher likelihood of delisting. Overall, the results using judge ideology shocks reinforce the positive causal impact of shareholder litigation risk on firms' delisting propensity.

IV. Direct versus Indirect Costs of Litigation

Having established that a higher litigation risk increases firms' propensity to delist, we next explore why this is the case. There are at least two reasons. First, when there is a lawsuit, the direct costs are significant enough such that firms view the risk of incurring similar costs in the future as too great to remain listed. In the sample, the average settlement amount (which excludes some other direct costs, such as legal and consulting fees) is 0.51% of an average firm's total assets. Given that the average ROA of firms in the sample is 3.6%, this cost is economically substantial.

Second, SCA litigation also imposes substantial indirect costs on the firm, such as distracting managers from focusing on long-term goals that maximize shareholder value. These costs could also induce firms to delist. Because it is difficult to directly observe direct and indirect costs of litigation, we assess their impact by focusing on the merits of the litigation.

Specifically, in Panel A of Table 11, we decompose SCA lawsuits into those that are settled and those that are dismissed. A dismissed lawsuit is one in which the judge grants a motion of dismissal or when the plaintiff decides to drop the case voluntarily. We interpret a case that is dismissed as being frivolous, while one that is settled as being legitimate (Kempf and Spalt

[29] The number of observations in Table 10 is less than that in Table 4 because of missing judge biographical data from the Federal Judicial Center's website.

(2022)). As indicated in Table 1, a large proportion of SCA lawsuits (48.8%) are dismissed. Concerns about the widespread propagation of frivolous cases motivated the passage of the PSLRA in 1995 and subsequently triggered the approval by the House of Representatives of the LARA in 2017. Meritless cases not only drain corporate resources but also waste managers' time and effort in long-lasting legal disputes.

We expect firms that receive a settled lawsuit to incur both direct and indirect litigation costs, whereas those that receive a dismissed lawsuit will mostly incur indirect costs. If the indirect costs arising from frivolous litigation influence firms' delisting decision, we should observe a statistically significant effect on delisting even for dismissed SCA lawsuits.

Insert Table 11 Here

Panel A of Table 11 displays the results. Columns (1) and (2) examine the impact of dismissed SCAs on firms' propensity to delist, while Columns (3) and (4) focus on settled SCAs. We report the results using both the SCA dummy variables as well as the number of SCAs. As shown in Columns (1) and (2), the coefficients on the dismissed SCA measures are statistically significant, and the coefficient estimate in Column (1) indicates that a dismissed litigation event is associated with a 3.9% increase in the probability of delisting. This suggests that frivolous litigation imposes non-neglectable indirect costs on firms which, in turn, influences their delisting decision. A settled SCA, on the other hand, is associated with a statistically significant 7.5% increase in the probability of delisting (Column (3)).

Next, we consider the effect of the settlement amount on firms' delisting decision. The variable log(SETTLEMENT AMOUNT) is the natural logarithm of the total cash amount made available to investors for recovery. Hence, it captures the direct costs of a lawsuit. In Column (5), we replace 1(*SCA*) with log(SETTLEMENT AMOUNT), and in Column (6) we include both 1

(*SCA*) and log(SETTLEMENT AMOUNT) in the same regression. We find that the coefficients on log(SETTLEMENT AMOUNT) are positive and significant in both columns, suggesting that the direct costs of litigation indeed increase firms' propensity to delist. More importantly, in Column (6), the coefficient on $1(SCA)$ remains positive and significant even after we control for the settlement amount. This demonstrates that the direct costs of a settlement do not subsume the effect of a litigation event on a firm's delisting decision and, again, points to the potential indirect costs of SCA litigation.

In Panel B of Table 11, we decompose the delist cases into voluntary and forced delists. We follow Doidge et al. (2017) and use a multinomial logit model in which we regress the category variable of delisting types, which equals one for forced delists, two for voluntary delists, and zero for active firms (the base group). Each delisting choice is treated as an independent outcome in the multinomial logit setting. As shown in Panel B, the coefficients on all SCA measures are statistically significant for both forced and voluntary delists. The results on voluntary delisting mitigate the concern that the main finding is driven by firms being forced to delist due to the financial distress caused by the legal settlement. If this were the case, litigation events would not affect voluntary delists. This is not the case in the data.

V. Conclusion

This paper empirically examines whether and to what extent the costs associated with shareholder litigation incentivize firms to delist from public markets. We find that firms become more likely to delist following an SCA lawsuit and this effect is both statistically significant and economically meaningful. Our empirical design establishes the casual relationship between shareholder litigation and delisting using various identification strategies, including the change in

pleading standards for firms located in the Ninth Circuit states, the legislative change that significantly reduces the legal liabilities of corporate directors and officers for firms incorporated in Nevada, as well as the exogenous assignment of litigation threats from the random appointments of federal judges. In all the analyses, we consistently find that changes in litigation threats affects the propensity of delisting.

The effect remains robust when we only consider firms that voluntarily delist and even when SCA cases are dismissed or have negligible settlement amount. These results offer evidence of the impact of indirect costs from legal exposure; that is, even without direct financial loss the occurrence of low-quality lawsuits is sufficiently burdensome to disincentivize firms from listing in public stock markets. Such a strategy is successful; by not publicly listing, firms can enjoy a lower litigation rate.

Overall, this study highlights that frivolous shareholder litigation hurts the competitiveness of U.S. equity markets. Striking the right policy balance between the governance benefits of litigation and the costs of excessive litigation on firms' performance is desirable; indeed, such moderation seems vital to preserving the continued effectiveness and vigor of the U.S. stock market.

References

Asker, J., Farre-Mensa, J., and Ljungqvist, A. (2011). Comparing the Investment Behavior of Public and Private Firms. *NBER Working Papers*, 17394.

Barzuza, M. (2012). Market segmentation: The rise of Nevada as a liability-free jurisdiction. *Virginia Law Review*, *98:* 935–1000.

Barzuza, M., and Smith, D. C. (2014). What happens in Nevada? Self-selecting into lax law. *The Review of Financial Studies*, *27*(12): 3593–3627.

Bolton, P., and Von Thadden, E. (1998). Blocks, Liquidity, and Corporate Control. *Journal of Finance*, 53(1): 1–25.

Boudette, N.E., and Phillips, M. (2018)). Elon Musk Says Tesla May Go Private, and Its Stock Soars," *The New York Times*, August 7, 2018

Bowie, J., and Songer, D. (2009). Assessing the Applicability of Strategic Theory to Explain Decision Making on the Courts of Appeals. *Political Research Quarterly*, 62(2): 393–407.

Campbell, T. (1979). Optimal Investment Financing Decisions and the Value of Confidentiality. *Journal of Financial and Quantitative Analysis*, 14(5): 913–924.

Cartwright, S., and Cooper, C. (1990). The Impact of Mergers and Acquisitions on People at Work: Existing Research and Issues. *British Journal of Management*, 1(2): 65–76.

Cazier, R., Christensen, T., Merkley, K. J., and Treu. J. (2016). Litigation risk and non-GAAP reporting. *Working Paper.*

Cheng, B., Srinivasan, S., and Yu, G. (2014). Securities Litigation Risk for Foreign Companies Listed in the U.S. *Working Paper*.

Choi, S., Gulati, M. and Posner, E. (2012). What Do Federal District Judges Want? An Analysis of Publications, Citations, and Reversals. *Journal of Law, Economics, and Organization*, 28(3): 518–549.

Cox, D., Thomas, S., and Bai, L. (2009). Do Differences in Pleading Standards Cause Forum Shopping in Securities Class Actions: Doctrinal and Empirical Analyses. *Wisconsin Law Review*, 2009(2): 421–453.

Crane, A., and Koch, A. (2018). Shareholder Litigation and Ownership Structure: Evidence from a Natural Experiment. *Management Science*, 64(1): 5–23.

Cross, F. (2003). Decision Making in the U.S. Courts of Appeals. *California Law Review*, 91(6): 1457–1515.

Cross, F., and Tiller, E. (1998). Judicial Partisanship and Obedience to Legal Doctrine: Whistleblowing on the Federal Courts of Appeals. *Yale Law Journal*, 107(7): 2155–2176.

Djama, C., Martinez, I., and Serve, S. (2014). What do we Know about Delistings? A Survey of the Literature. *Working Paper*.

Doidge, C., Karolyi, A. and Stulz, R. (2010). Why Do Foreign Firms Leave U.S. Equity Markets? *Journal of Finance*, 65(4): 1507–1553.

Doidge, C., Karolyi, A., and Stulz, R. (2017). The U.S. Listing Gap. *Journal of Financial Economics*, 123(3): 464–487.

Donelson, D. C., and Yust, C. G. (2014). Litigation Risk and Agency Costs: Evidence from Nevada Corporate Law. *The Journal of Law and Economics*, *57*(3): 747–780.

Easley, D., Hvidkjaer, S., and O'Hara, M. (2002). Is Information Risk a Determinant of Asset Returns? *Journal of Finance*, 57(5): 2185–2221.

Engel, E., Hayes, R., and Wang, X. (2007). The Sarbanes–Oxley Act and Firms' Going-Private Decisions. *Journal of Accounting and Economics*, 44(1-2): 116–145.

Fama, E., and French, K. (2004). New Lists: Fundamentals and Survival Rates. *Journal of Financial Economics*, 73(2): 229–269.

Fedderke, J., and Ventoruzzo, M. (2016). Do Conservative Justices Favor Wall Street? Ideology and the Supreme Court's Securities Regulation Decisions. *Florida Law Review*, 67(3): 1211–1280.

Fernandes, N., Lel, U., and Miller D.P. (2010) Escape from New York: The market impact of loosening disclosure requirements. *Journal of Financial Economics,* 95(2): 129–147

Flemming, G., Holian, D. and Mezey, S. (1998). An Integrated Model of Privacy Decision Making in State Supreme Courts. *American Politics Quarterly*, 26(1): 35–58

Gagnon, L., Karolyi, A. (2018). An Unexpected Test of the Bonding Hypothesis. *Review of Corporate Finance Studies*, 7(1): 101–156.

Gande, A., and Lewis, C. (2009). Shareholder-Initiated Class Action Lawsuits: Shareholder Wealth Effects and Industry Spillovers. *Journal of Financial and Quantitative Analysis*, 44(4): 823–850.

Gande, A. and Miller, P. (2012). Why Do U.S. Securities Laws Matter to Non-U.S. Firms? Evidence from Private Class-Action Lawsuits. *Working Paper*.

Gao, H., Harford, J., and Li, K. (2013). Determinants of corporate cash policy: Insights from private firms. *Journal of Financial Economics*, 109(3): 623–639.

Gerber, S. D., and Park, K. (1997). The Quixotic Search for Consensus on the U.S. Supreme Court: A Cross-judicial Empirical Analysis of the Rehnquist Court Justices. *American Political Science Review*, 390–408.

Grundfest, J., and Pritchard, C. (2002). Statutes with Multiple Personality Disorders: The Value of Ambiguity in Statutory Design and Interpretation. *Stanford Law Review*, 54: 627–736.

Hail, L., and Leuz, C. (2006). International Differences in Cost of Capital: Do Legal Institutions and Securities Regulation Matter? *Journal of Accounting Research*, 44(3): 485–531.

Healy, P., and Palepu, K. (2001). Information Asymmetry, Corporate Disclosure, and the Capital Markets: A Review of the Empirical Disclosure Literature. *Journal of Accounting and Economics*, 31(1-3): 405–440.

Houston, J. Lin, C., Liu, S., and Wei L. (2019). Litigation Risk and Voluntary Disclosure: Evidence from Legal Changes. *The Accounting Review*, 94(5): 247–272.

Huang, A., Hui, K. and Li, R. (2019). Federal Judge Ideology: A New Measure of Ex Ante Litigation Risk. *Journal of Accounting Research*, 57(2): 431–489.

Jarrell, G. A. (1981). The economic effects of federal regulation of the market for new security issues. *Journal of Law and Economics*, 24(3): 613–675.

Johnson, M.F., Neslon, K., and Pritchard, C. (2000). In re Silicon Graphics Inc.: Shareholder Wealth Effects Resulting from the Interpretation of the Private Securities Litigation Reform Act's Pleading Standard. *Southern California Law Review*, 73(4): 773–810.

Johnson, J. (2012). Securities Class Actions in State Court. *University of Cincinnati Law Review*, 80(2): 349–388.

Johnson, M.F., Kasznik, R., and Nelson, K. (2000). Shareholder Wealth Effects of the Private Securities Litigation Reform Act of 1995. *Review of Accounting Studies*, 5(3): 217–233.

Johnson, M.F., Kasznik, R, and Nelson, K. (2001). The Impact of Securities Litigation Reform on the Disclosure of Forward-Looking Information by High Technology Firms. *Journal of Accounting Research*, 9: 297–327.

Kahle, K., and Stulz, R. (2017). Is the U.S. Public Corporation in Trouble? *Journal of Economic Perspectives*, 31(3): 67–88.

Kempf, E., and Spalt, O. (2022). Attracting the Sharks: Corporate Innovation and Securities Class Action Lawsuits. *Management Science,* forthcoming

Kim, I., and Skinner, D. (2012). Measuring Securities Litigation Risk. *Journal of Accounting and Economics*, 53(1-2): 290–310.

Kim, W., and Weisbach, M. (2008). Motivations for Public Equity Offers: An International Perspective. *Journal of Financial Economics*, 87(2): 281–307.

Krishnan, C. N. V., Masulis, R. W., Thomas, R. S., and Thompson, R. B. (2012). Shareholder litigation in mergers and acquisitions. *Journal of Corporate Finance*, *18*(5): 1248–1268.

La Porta, R., Lopez-de-Silanes, F., Shleifer, A., and Vishny, W. (1998). Law and Finance. *Journal of Political Economy*, 106(6): 1113–1155.

Lancaster, T. (2000). The Incidental Parameter Problem since 1948. *Journal of Econometrics*, 95(2): 391–413.

Leuz, C., Triantis, A., and Wang, T. (2008). Why do Firms Go Dark? Causes and Economic Consequences of Voluntary SEC Deregistrations. *Journal of Accounting and Economics*, 45(2–3): 181–208.

Lin, C., Liu, S., and Manso, G. (2020). Shareholder Litigation and Corporate Innovation. *Management Science*, 67(6): 3321–3984.

Lin, C., Officer, M., Schmid, T., and Zou, H. (2019). Is skin in the game a game changer? Evidence from mandatory changes of D&O insurance policies. *Journal of Accounting and Economics*, 68(1): 101225.

Licht, A., Poliquin, C., Siegel, J., and Xi, L. (2018). What Makes the Bonding Stick? A Natural Experiment Testing the Legal Bonding Hypothesis. *Journal of Financial Economics*, 129(2): 329–356.

Ljungvist, A., Persson, L., and Tag, J. (2018). The Incredible Shrinking Stock Market: On the Political Economy Consequences of Excessive Delistings. *Working Paper.*

Marosi, A., and Massoud, N. (2007). Why Do Firms Go Dark? *Journal of Financial and Quantitative Analysis*, 42(2): 421–442.

Mehran, H., and Peristiani, S. (2011). Financial Visibility and the Decision to Go Private. *Review of Financial Studies,* 23(2): 519–547.

Merton, R. (1987). A Simple Model of Capital Market Equilibrium with Incomplete Information. *Journal of Finance*, 42(3): 483–510.

Neyman, J., and Scott, E. (1948). Consistent Estimates Based on Partially Consistent Observations. *Econometrica*, 16(1): 1–32.

Oster, E. (2019). Unobservable selection and coefficient stability: Theory and evidence. *Journal of Business and Economic Statistics,* 37: 187–204.

Pagano, M., Panetta, F., and Zingales, L. (1998). Why do Companies Go Public? An Empirical Analysis. *Journal of Finance*, 53(1): 27–64.

Pinello, D. (1999). Linking Party to Judicial Ideology in American Courts: A Meta-Analysis. *The Justice System Journal*, 20(3): 219–54.

Pincus. A.J. (2018). A Rising Threat – The New Class Action Racket that Harms Investors and the Economy. *The US Chamber of Commerce, Institute for Legal Reform.*

Pour, E., and Lasfer, M. (2013). Why do Companies Delist Voluntarily from the Stock Market? *Journal of Banking and Finance*, 37(12): 4850–4860.

Pritchard, A. (2011). Securities Law in the Roberts Court: Agenda or Indifference. *Journal of Corporate Law*, 37(2): 105–45.

Randazzo, K. (2008). Strategic Anticipation and the Hierarchy of Justice in U.S. District Courts. *American Politics Research*, 36(5): 669–93.

Ritter, J. (1987). The Costs of Going Public. *Journal of Financial Economics*, 19(2): 269–281.

Rogers, J., and Buskirk, A. (2009). Shareholder litigation and changes in disclosure behavior. *Journal of Accounting and Economics*, 47(1): 136–56

Romano, R. (1991). The Shareholder Suit: Litigation without Foundation? *Journal of Law, Economics, and Organization*, 7(1): 55–87.

Saunders, A. and Steffen, S. (2011). The Costs of Being Private: Evidence from the Loan Market. *Review of Financial Studies*, 24(12): 4091–4122.

Spiess, K., and Paula, T. (1997). The Private Securities Litigation Reform Act of 1995: The Stock Market Casts its Vote. *Managerial and Decision Economics*, 18(7-8): 545–561.

Staudt, N.; Epstein, L. and Wiedenbeck, P. (2006). The Ideological Component of Judging in the Taxation Context. *Washington University Law Review*, 84: 1797–821.

Stigler, G. J. (1964). Public regulation of the securities markets. *Journal of Business*, 37(2): 117–142.

Sunstein, C., Schkade, D. and Ellman, L. (2004). Ideological Voting on Federal Courts of Appeals: A Preliminary Investigation. *Virginia Law Review*, 90(1): 301–354.

Zingales, L. (2006). Chapter 1: Competitiveness, *Interim Report of the Committee on Capital Markets Regulation*. https://www.law.du.edu/images/uploads/corporate-governance/empirical-committee-capital-markets-regulation.pdf

Appendix: Variable description

Variable	Definition	Source
Litigation variables		
𝟙(SCA)	Equals one if a firm experiences a shareholder class action lawsuit in year *t*, and zero otherwise.	ISS-SCAS database
#SCA	The number of shareholder class action lawsuits that a firm experiences in year *t.*	ISS-SCAS database
𝟙(DISMISSED_SCA)	Equals one if a firm's shareholder class action lawsuit originating in year *t* are dismissed, and zero otherwise.	ISS-SCAS database
𝟙(SETTLED_SCA)	Equals one if a firm's shareholder class action lawsuit originating in year *t* are settled, and zero otherwise.	ISS-SCAS database
#DISMISSED_SCA	The number of shareholder class action lawsuits originating in year *t* that are dismissed.	ISS-SCAS database
#SETTLED_SCA	The number of shareholder class action lawsuits originating in year *t* that are settled.	ISS-SCAS database
log(SETTLEMENT_AMOUNT)	Natural logarithm of the settlement amount. Settlement amount is the total cash amount made available to investors for recovery.	ISS-SCAS database
𝟙(DELIST)	Equals one if a firm delists from the stock exchange in year *t*, and zero otherwise.	CRSP
𝟙(DELIST_FORCED)	Equals one if a firm's CRSP delist code is 400 or above, but not code 570 or 573, and zero otherwise.	CRSP
𝟙(DELIST_VOLUNTARY)	Equals one if a firm's CRSP delist code is 570 or 573, and zero otherwise.	CRSP
Legal changes		
𝟙(9TH CIRCUIT)	Equals one if a firm is headquartered in a state of the Ninth Circuit Court of Appeals (Alaska, Arizona, California, Hawaii, Idaho, Montana, Nevada, Oregon, or Washington).	SEC filings and Compustat
𝟙(NEVADA)	Equals one if a firm is incorporated in Nevada, and zero otherwise.	SEC filings and Compustat
𝟙(>1999)	Equals one for the years after 1999, and zero otherwise.	-
𝟙(>2001)	Equals one for the years after 2001, and zero otherwise.	-
ΔLIBERAL_JUDGES	Change from the previous year in the percentage of federal judges who were appointed by a Democratic president in the circuit court of the	Federal Judicial Center's Website

	firm's headquarters.	
ΔLIBERAL_PANEL	Change from the previous year in the probability that judges appointed by a Democratic president dominate a panel of three judges randomly selected from the circuit.	Federal Judicial Center's Website
Firm controls		
MARKET_TO_BOOK	Market value of equity divided by book value of equity.	CRSP/Compustat Merged
FIRM_SIZE	Natural logarithm of total assets (in thousands of dollars, adjusted to 2010 values).	CRSP/Compustat Merged
LEVERAGE	Total debt divided by total assets.	CRSP/Compustat Merged
RETURN_ON_ASSETS	Earnings before interest and taxes (EBIT) over total assets.	CRSP/Compustat Merged
CASH_FLOW_VOLATILITY	The standard deviation of operating income before depreciation divided by total assets over the previous five years.	CRSP/Compustat Merged
ANALYST_FOLLOWINGS	Natural logarithm of the number of stock analysts following the firm	IBES
SALES_GROWTH	The annual change of total sales	Capital IQ
INSTITUTIONAL_HOLDINGS	The fraction of shares owned by institutional investors	13F filings
State-level variables		
log(STATE_GDP)	Natural logarithm of the state GDP in a given year	U.S. Census Bureau
STATE_GDP_GROWTH	The annual change of the state GDP	U.S. Census Bureau
log(NUM_PUBLIC_FIRMS)	Natural logarithm of the number of public firms in a given state-year	CRSP
DELIST_RATE	The average delist rate in a given state-year.	CRSP
𝟙(9TH CIRCUIT STATES)	A dummy variable that equals one if a state belongs to the Ninth Circuit Court of Appeals	-

Table 1: Distribution of SCA lawsuits

Panel A reports the annual frequency of SCA lawsuits and the total number of public firms for the period from 1996 to 2019. Data on SCA lawsuits are obtained from the ISS-SCAS database. In Panel A, the litigation rate in Column (3) equals the number of lawsuits divided by the total number of firms. The litigation rates in Columns (5) and (7) equal the numbers of dismissed and settled lawsuits, respectively, over the total number of SCA cases. The total number of dismissed and settled lawsuits (Columns (4) and (6)) does not add up to the number of SCAs (Column (2)) because pending cases are not included in either category. The litigation rate in column (8) is the ratio of dismissed SCAs to settled SCAs. Panel B presents the distribution of SCA lawsuits across one-digit SIC sectors. Panel C displays the composition of different SCA types.

Panel A: SCA lawsuits by year

Year	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
								SCA
	All firms	SCA		Dismissed SCA		Settled SCA		
		#	%	#	% SCA	#	% SCA	Dis/Set
1996	3,905	76	1.95%	22	28.95%	54	71.05%	40.74%
1997	3,940	83	2.11%	30	36.14%	53	63.86%	56.60%
1998	3,994	96	2.40%	40	41.67%	55	57.29%	72.73%
1999	3,813	126	3.30%	53	42.06%	72	57.14%	73.61%
2000	3,626	116	3.20%	45	38.79%	70	60.34%	64.29%
2001	3,547	174	4.91%	36	20.69%	138	79.31%	26.09%
2002	3,519	146	4.15%	38	26.03%	108	73.97%	35.19%
2003	3,263	106	3.25%	52	49.06%	53	50.00%	98.11%
2004	3,111	128	4.11%	49	38.28%	79	61.72%	62.03%
2005	2,924	102	3.49%	37	36.27%	65	63.73%	56.92%
2006	2,820	76	2.70%	27	35.53%	49	64.47%	55.10%
2007	2,743	83	3.03%	39	46.99%	43	51.81%	90.70%
2008	2,697	101	3.74%	58	57.43%	43	42.57%	134.88%
2009	2,603	75	2.88%	40	53.33%	35	46.67%	114.29%
2010	2,449	89	3.63%	60	67.42%	29	32.58%	206.90%
2011	2,381	85	3.57%	47	55.29%	37	43.53%	127.03%
2012	2,325	106	4.56%	63	59.43%	42	39.62%	150.00%
2013	2,282	112	4.91%	63	56.25%	49	43.75%	128.57%
2014	2,230	115	5.16%	60	52.17%	54	46.96%	111.11%
2015	2,201	114	5.18%	72	63.16%	41	35.96%	175.61%
2016	2,273	127	5.59%	80	62.99%	42	33.07%	190.48%
2017	2,272	139	6.12%	94	67.63%	39	28.06%	241.03%
2018	2,254	163	7.23%	109	66.87%	41	25.15%	265.85%
2019	2,260	169	7.48%	107	63.31%	40	23.67%	267.50%
Total	**69,432**	**2,707**	**3.90%**	**1,321**	**48.80%**	**1,331**	**49.17%**	**99.25%**

Panel B: SCA lawsuits by industry

	(1)	(2)	(3)
Sector	Total firms	SCAs	SCA rate
Agriculture, Forestry, & Fishing	267	6	2.25%
Construction	1,107	33	2.98%
Manufacturing	36,866	1359	3.69%
Mining	3,976	126	3.17%
Retail Trade	5,727	201	3.51%
Services	14,191	700	4.93%
Transportation & Communications	4,376	200	4.57%
Wholesale Trade	2,922	82	2.81%
Total	**69,432**	**2,707**	**3.90%**

Table 1 Continued

Panel C: Types of SCA suits

	(1)	(2)
SCA type	#	%
Transactional	314	11.60%
GAAP	360	13.30%
Section 10(b)	763	28.19%
Section 11	32	1.18%
IPO	127	4.69%
SPO	67	2.48%
Insider trading	162	5.98%
Restated earning	395	14.59%
Others	487	17.99%
Total	**2,707**	**100%**

Table 2: Distribution of delistings

Panel A reports the annual frequency of delisting firms and the total number of public firms. Data for delistings for the period from 1996 to 2019 are taken from CRSP. The delisting rate (%) equals the number of delistings divided by the total number of firms. Panel B reports the distribution of delistings across one-digit SIC sectors. The delisting rate equals the number of delistings in an industry divided by the total number of firms in that industry.

Panel A: Number of delistings by year

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Year	All firms	Delistings		Delist – Voluntary		Delist – Forced	
		#	%	#	%	#	%
1996	3,905	141	3.61%	5	0.13%	136	3.48%
1997	3,940	206	5.23%	4	0.10%	202	5.13%
1998	3,994	242	6.06%	2	0.05%	240	6.01%
1999	3,813	194	5.09%	4	0.10%	190	4.98%
2000	3,626	268	7.39%	9	0.25%	259	7.14%
2001	3,547	203	5.72%	19	0.54%	184	5.19%
2002	3,519	197	5.60%	12	0.34%	185	5.26%
2003	3,263	88	2.70%	6	0.18%	82	2.51%
2004	3,111	87	2.80%	14	0.45%	73	2.35%
2005	2,924	67	2.29%	4	0.14%	63	2.15%
2006	2,820	68	2.41%	8	0.28%	60	2.13%
2007	2,743	104	3.79%	13	0.47%	91	3.32%
2008	2,697	109	4.04%	19	0.70%	90	3.34%
2009	2,603	71	2.73%	13	0.50%	58	2.23%
2010	2,449	42	1.71%	2	0.08%	40	1.63%
2011	2,381	35	1.47%	4	0.17%	31	1.30%
2012	2,325	25	1.08%	2	0.09%	23	0.99%
2013	2,282	34	1.49%	3	0.13%	31	1.36%
2014	2,230	32	1.43%	0	0.00%	32	1.43%
2015	2,201	39	1.77%	0	0.00%	39	1.77%
2016	2,273	28	1.23%	1	0.04%	27	1.19%
2017	2,272	40	1.76%	1	0.04%	39	1.72%
2018	2,254	32	1.42%	3	0.13%	29	1.29%
2019	2,260	43	1.90%	3	0.13%	40	1.77%
Total	**69,432**	**2,395**	**3.45%**	**151**	**0.22%**	**2,244**	**3.23%**

Panel B: Industry distribution

	(1)	(2)	(3)
Sector	All firms	Delistings	Delisting rate
Agriculture, Forestry & Fishing	267	11	4.12%
Construction	1,107	35	3.16%
Manufacturing	36,866	1,092	2.96%
Mining	3,976	164	4.12%
Retail Trade	5,727	207	3.61%
Services	14,191	576	4.06%
Transportation & Communications	4,376	174	3.98%
Wholesale Trade	2,922	136	4.65%
Total	**69,432**	**2,395**	**3.45%**

Table 3: Summary statistics

The table presents summary statistics for the main variables used in the study. The sample period is from 1996 to 2019. Definitions of all variables are included in the Appendix. Continuous variables are winsorized at the 1% level. Non-ratio variables are reported in CPI-adjusted 2010 dollars.

	(1) Obs.	(2) Mean	(3) S.D.	(4) Min	(5) Median	(6) Max
Firm and state-level characteristics						
MARKET_TO_BOOK	69,432	2.165	1.861	0.530	1.540	12.600
FIRM_SIZE	69,432	1.131	2.078	-3.581	1.046	6.373
LEVERAGE	69,432	0.218	0.218	0.000	0.174	0.997
RETURN_ON_ASSETS	69,432	0.036	0.262	-1.306	0.104	0.400
CASH_FLOW_VOLATILITY	69,432	0.077	0.094	0.003	0.042	0.519
ANALYST_FOLLOWINGS	69,432	1.562	1.080	0.000	1.609	3.611
log(STATE_GDP)	69,432	13.070	0.952	9.539	13.050	14.880
STATE_GDP_GROWTH	69,432	0.050	0.030	-0.153	0.051	0.246
SCA lawsuits						
𝟙(SCA)	69,432	0.035	0.183	0.000	0.000	1.000
𝟙(DISMISSED_SCA)	50,234	0.024	0.153	0.000	0.000	1.000
𝟙(SETTLED_SCA)	48,756	0.025	0.157	0.000	0.000	1.000
#SCA	69,432	0.039	0.220	0.000	0.000	8.000
#DISMISSED_SCA	50,234	0.026	0.175	0.000	0.000	3.000
#SETTLED_SCA	48,756	0.027	0.180	0.000	0.000	8.000
Delisting						
𝟙(DELIST)	69,432	0.035	0.182	0.000	0.000	1.000
𝟙(DELIST_VOLUNTARY)	67,188	0.002	0.047	0.000	0.000	1.000
𝟙(DELIST_FORCED)	69,281	0.032	0.177	0.000	0.000	1.000

Table 4: Effect of SCA lawsuits on firms' delisting rate

This table reports OLS results estimating the effect of SCA lawsuits on a firm's delisting likelihood for the period from 1996 to 2019. The dependent variable is *𝟙(DELIST),* a dummy variable that equals one if the firm delists from a stock exchange in a given year, and zero otherwise. In Columns (1)-(2), *𝟙(SCA)* is a dummy variable that equals one if the firm experiences an SCA lawsuit in a given year, and zero otherwise. In Columns (3)-(6), *#SCA* is the number of SCA lawsuits that the firm experiences in a given year. Columns (1)-(4) use the full sample, whereas Columns (5)-(6) include only firms that receive at least one SCA over the sample period. Lagged control variables are defined in the Appendix. Each column also reports the statistics from Oster's (2019) test for the amount of variation in unobservables relative to observables needed to bring the estimated effect on SCA litigation to zero. δ equals to $\frac{\beta_{Full}}{\beta_{Restrict}-\beta_{Full}} x \frac{R_{Full}-R_{Restrict}}{R_{Max}-R_{Full}}$, where $\beta_{Restrict}$ is the coefficient on SCA litigation from the model using a restricted set of controls, β_{Full} is the coefficient on SCA litigation from the model using a full set of controls and fixed effects. R_{max} equals to $\min\{1.3R_{full}, 1\}$, where R_{max} is the R^2 from a hypothetical regression that includes both observed and unobserved controls and R_{full} is the R^2 from a regression that includes a full set of controls. Beta range is $[\beta^*, \beta_{Full}]$, where the bias-adjusted treatment effect is $\beta^* = \beta_{Full} - (\beta_{Restrict} - \beta_{Full}) \; x \frac{R_{Max}-R_{Full}}{R_{Full}-R_{Restrict}}$. Standard errors clustered at the firm-level are reported in parentheses. Statistical significance at the 1%, 5%, and 10% levels are indicated by ***, **, and *, respectively.

	Dependent variable: 𝟙(DELIST)					
	(1)	(2)	(3)	(4)	(5)	(6)
𝟙(SCA)	0.064***	0.060***				
	[0.006]	[0.006]				
#SCA			0.053***	0.051***	0.061***	0.055***
			[0.005]	[0.005]	[0.005]	[0.005]
MARKET_TO_BOOK	-0.006***	-0.005***	-0.006***	-0.005***	-0.003***	-0.002***
	[0.000]	[0.001]	[0.000]	[0.001]	[0.000]	[0.001]
FIRM_SIZE	-0.006***	-0.006***	-0.006***	-0.006***	-0.002***	-0.001
	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]
LEVERAGE	0.085***	0.087***	0.085***	0.086***	0.041***	0.041***
	[0.005]	[0.005]	[0.005]	[0.005]	[0.005]	[0.006]
RETURN_ON_ASSETS	-0.073***	-0.090***	-0.073***	-0.090***	-0.038***	-0.047***
	[0.005]	[0.006]	[0.005]	[0.006]	[0.005]	[0.006]
CASH_FLOW_VOLATILITY	0.078***	0.080***	0.078***	0.080***	0.021*	0.021
	[0.013]	[0.015]	[0.013]	[0.015]	[0.012]	[0.014]
ANALYST_FOLLOWINGS	-0.010***	-0.010***	-0.009***	-0.010***	-0.005***	-0.007***
	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]	[0.002]
log(STATE_GDP)	0.002**	0.002*	0.002**	0.002*	0.001	0.000
	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]
STATE_GDP_GROWTH	0.022	0.020	0.024	0.022	-0.003	0.006
	[0.037]	[0.043]	[0.037]	[0.043]	[0.040]	[0.049]
Year fixed effects	Yes	No	Yes	No	Yes	No
Industry-year fixed effects	No	Yes	No	Yes	No	Yes
Sample	All firms				Firms with minimum one SCA	
Observations	69,432	69,432	69,432	69,432	30,214	30,214
δ	19.238	13.485	27.847	19.529	1.607	7.361
Beta range	[0.061, 0.064]	[0.056, 0.060]	[0.051, 0.053]	[0.048, 0.051]	[0.023, 0.061]	[0.047, 0.055]
R^2	0.059	0.172	0.059	0.172	0.046	0.267

Table 5: Validity tests on the Ninth Circuit ruling

Panel A compares the characteristics of treated firms and matched control firms before the Ninth Circuit ruling. Columns (1) and (2) present the mean characteristics of firms in the Ninth Circuit and mached control firms respective. Column (3) presents the p-value of the difference between the two samples. Panel B reports state-level logit regressions to test whether corporate delisting behavior could predict the occurrence of the Ninth Circuit ruling. The dependent variable is *𝟙(9TH CIRCUIT STATES),* a dummy variable equals one for the Ninth Circuit states and zero otherwise. The main explanatory variable is *DELIST_RATE,* the average delist rate in a given state-year. Panel C reports the effect of the Ninth Circuit ruling on the probability of firms experiencing SCA litigation. Columns (1)-(2) use a sample of public firms, whereas Columns (3)-(4) use a sample of OTC firms. The dependent variables are *𝟙(SCA),* a dummy variable that equals one if a firm experiences a SCA lawsuit in a given year, and zero otherwise (Column (1)) and *#SCA* is the number of SCA lawsuits that the firm experiences in a given year (Column (2)). Standard errors clustered at the headquarters state-level are reported in parentheses. Statistical significance at the 1%, 5%, and 10% levels are indicated by ***, **, and *, respectively.

Panel A – Univariate comparisons of pre-ruling characteristics

	Mean		p-value
	Ninth Circuit firms	Matched control firms	of difference
	(1)	(2)	(3)
𝟙(DELIST)	0.072	0.067	0.648
MARKET_TO_BOOK	2.178	2.138	0.661
FIRM_SIZE	0.276	0.356	0.410
LEVERAGE	0.223	0.225	0.879
RETURN_ON_ASSETS	0.065	0.050	0.178
CASH_FLOW_VOLATILITY	0.072	0.078	0.166
ANALYST_FOLLOWINGS	0.919	0.944	0.607

Panel B – Pre-existing delisting rate and Ninth Circuit ruling

	Dependent variable: 𝟙(9TH CIRCUIT STATES)	
	(1)	(2)
DELIST_RATE	1.264	0.648
	[3.149]	[3.145]
log(STATE_GDP)		2.354
		[6.830]
STATE_GDP_GROWTH		-0.389
		[0.964]
log(NUM_PUBLIC_FIRMS)		0.062
		[0.738]
Observations	102	102
Pseudo R-squared	0.0011	0.0147

Table 5 Continued

Panel C – Difference-in-differences - Probability of litigation

Dependent variables:	Main sample (Public firms)		OTC firms	
	𝟙(SCA)	#SCA	𝟙(SCA)	#SCA
	(1)	(2)	(3)	(4)
𝟙(9TH CIRCUIT)	-0.032**	-0.022**	-0.009	-0.012
	[0.013]	[0.010]	[0.035]	[0.024]
MARKET_TO_BOOK	0.002	0.001	-	-
	[0.002]	[0.001]	-	-
SALES_GROWTH	-	-	0.000	-0.001
	-	-	[0.002]	[0.002]
FIRM_SIZE	0.002	0.002	0.007	0.006
	[0.003]	[0.003]	[0.007]	[0.006]
LEVERAGE	0.017	0.012	0.001	0.000
	[0.017]	[0.013]	[0.003]	[0.002]
RETURN_ON_ASSETS	0.008	0.002	-0.013	-0.01
	[0.008]	[0.005]	[0.012]	[0.009]
CASH_FLOW_VOLATILITY	0.012	0.004	-0.005	-0.003
	[0.069]	[0.046]	[0.003]	[0.002]
ANALYST_FOLLOWINGS	0.018**	0.013*	-	-
	[0.008]	[0.006]	-	-
log(STATE_GDP)	0.001	0.002	0.258	0.188
	[0.010]	[0.007]	[0.145]	[0.114]
STATE_GDP_GROWTH	0.096	0.073	-0.155	-0.100
	[0.130]	[0.089]	[0.119]	[0.090]
Circuit fixed effects	Yes	Yes	Yes	Yes
State linear trends	Yes	Yes	Yes	Yes
Industry-year fixed effects	Yes	Yes	Yes	Yes
Observations	5,373	5,373	1,768	1,768
R^2	0.299	0.309	0.407	0.338

Table 6: The effect of the Ninth Circuit ruling on corporate delisting propensity

The dependent variable is 𝟙*(DELIST*), a dummy variable that equals one if the firm delists from a stock exchange in a given year, and zero otherwise. *𝟙(9TH CIRCUIT)* is a dummy variable that equals one for firms located in the Ninth Circuit states, and zero otherwise. *𝟙(>1999)* is a dummy variable that equals one for the years after 1999, and zero otherwise. Lagged control variables are defined in the Appendix. Standard errors clustered at the headquarters state-level are reported in parentheses. Statistical significance at the 1%, 5%, and 10% levels are indicated by ***, **, and *, respectively.

	Dependent variable: 𝟙(DELIST)		
	(1)	(2)	(3)
𝟙(9TH CIRCUIT) x 𝟙(>1999)	-0.020**	-0.042***	-0.061***
	[0.007]	[0.012]	[0.012]
𝟙(>1999)	0.003	0.050***	
	[0.006]	[0.010]	
MARKET_TO_BOOK	-0.009***	-0.010***	-0.009***
	[0.001]	[0.001]	[0.002]
FIRM_SIZE	-0.011***	-0.011***	-0.011***
	[0.002]	[0.002]	[0.003]
LEVERAGE	0.093***	0.091***	0.083***
	[0.011]	[0.011]	[0.010]
RETURN_ON_ASSETS	-0.156***	-0.159***	-0.149***
	[0.015]	[0.014]	[0.014]
CASH_FLOW_VOLATILITY	0.061	0.057	0.079
	[0.048]	[0.049]	[0.055]
ANALYST_FOLLOWINGS	-0.003	-0.003	-0.005
	[0.003]	[0.003]	[0.007]
log(STATE_GDP)	0.001	-0.008	0.000
	[0.002]	[0.013]	[0.021]
STATE_GDP_GROWTH	0.208***	0.074	-0.287
	[0.035]	[0.044]	[0.185]
Circuit fixed effects	Yes	Yes	Yes
State linear trends	No	Yes	Yes
Industry-year fixed effects	No	No	Yes
Observations	5,448	5,448	5,448
R^2	0.060	0.064	0.354

Table 7: Robustness on the effect of the Ninth Circuit ruling on delisting

This table reports various robustness tests on the effect of the Ninth Circuit ruling on firms' propensity to delist. Column (1) excludes firms in high-tech industries, defined as firms whose 3-digit SIC are 357, 837 and 367. Column (2) excludes firms headquartered in California. Column (3) excludes both firms in high-tech industries and firms headquartered in California. Column (4) employs a probit model and Column (5) reports the marginal effects of the probit regressions. The dependent variable is *𝟙(DELIST*), a dummy variable that equals one if the firm delists from a stock exchange in a given year, and zero otherwise. *𝟙(9TH CIRCUIT)* is a dummy variable that equals one for firms located in the Ninth Circuit states, and zero otherwise. *𝟙(>1999)* is a dummy variable that equals one for the years after 1999, and zero otherwise. Lagged control variables are defined in the Appendix. Standard errors clustered at the headquarters state-level are reported in parentheses. Statistical significance at the 1%, 5%, and 10% levels are indicated by ***, **, and *, respectively.

	Dependent variable: 𝟙(DELIST)				
	Exclude high-tech firms	Exclude California firms	Exclude high-tech and California firms	Probit Coefficient	Probit marginal effects
	(1)	(2)	(3)	(4)	(5)
𝟙(9TH CIRCUIT) x 𝟙(>1999)	-0.061**	-0.086***	-0.100***	-0.949***	-0.050
	[0.024]	[0.024]	[0.030]	[0.106]	
Control variables	Yes	Yes	Yes	Yes	-
Circuit fixed effects	Yes	Yes	Yes	Yes	-
State linear trends	Yes	Yes	Yes	Yes	-
Industry-year fixed effects	Yes	Yes	Yes	Yes	-
Observations	4,955	3,755	3,496	5,448	-
R^2	0.363	0.422	0.433	-	-
Pseudo R-squared	-	-	-	0.574	-

Table 8: Delisting returns after the Ninth Circuit ruling

Panel A reports cumulative abnormal returns for stocks in the Ninth Circuit states before and after 1999. For each event window, the p-value of the difference between the two periods is calculated. Panel B shows cross-sectional regression results using the [–7,0] CAR as the dependent variable. *𝟙(9TH CIRCUIT)* is a dummy variable that equals one for firms located in the Ninth Circuit states, and zero otherwise. *𝟙(>1999)* is a dummy variable that equals one for the years after 1999, and zero otherwise. Lagged control variables are defined in the Appendix. Standard errors clustered at the headquarters state-level are reported in parentheses. Statistical significance at the 1%, 5%, and 10% levels are indicated by ***, **, and *, respectively.

Panel A – Ninth Circuit before and after 1999

	Cumulative abnormal returns		p-value
	Before 1999	After 1999	of difference
Event window	(1)	(2)	(3)
[–5,0]	-2.459%	-7.855%	0.022**
[–7,0]	-1.990%	-9.756%	0.003***
[–9,0]	-4.476%	-12.212%	0.008***
[–13,0]	-5.900%	-15.251%	0.003***
[–17,0]	-8.313%	-15.548%	0.044**
[–21,0]	-9.184%	-18.310%	0.023**

Panel B – Cross-sectional regression

	Dependent variable: [-7, 0] CAR	
	(1)	(2)
𝟙(9TH CIRCUIT) x 𝟙(>1999)	-0.060**	-0.087**
	[0.024]	[0.032]
𝟙(9TH CIRCUIT)	-0.003	0.042
	[0.031]	[0.029]
𝟙(>1999)	-0.025	-
	[0.023]	-
MARKET_TO_BOOK	0.001	0.021***
	[0.001]	[0.003]
FIRM_SIZE	-0.009	-0.013
	[0.007]	[0.053]
LEVERAGE	-0.054	-0.092
	[0.034]	[0.087]
RETURN_ON_ASSETS	0.028	0.105
	[0.028]	[0.074]
CASH_FLOW_VOLATILITY	0.100	0.005
	[0.067]	[0.173]
ANALYST_FOLLOWINGS	0.005	-0.016
	[0.029]	[0.063]
log(STATE_GDP)	-0.138	-0.446
	[0.163]	[1.593]
STATE_GDP_GROWTH	0.000	-0.005
	[0.009]	[0.037]
Industry-year fixed effects	No	Yes
Observations	550	550
R^2	0.029	0.677

Table 9: Evidence from the 2001 Nevada ruling

This table presents the effect of the Nevada corporate law amendment in 2001, which decreases litigation risk for firms incorporated in Nevada. *𝟙(NEVADA)* is a dummy variable that equals one if a firm is incorporated in Nevada, and zero otherwise. *𝟙(>2001)* is a dummy variable that equals one for the years after 2001, and zero otherwise. The dependent variable is *𝟙(DELIST)*, a dummy variable that equals one if the firm delists from a stock exchange in a given year, and zero otherwise. Lagged control variables are defined in the Appendix. Standard errors clustered at the incorporation state-level are reported in parentheses. Statistical significance at the 1%, 5%, and 10% levels are indicated by ***, **, and *, respectively.

	Dependent variable: 𝟙(DELIST)	
	(1)	(2)
𝟙(NEVADA) x 𝟙(>2001)	-0.094**	-0.158***
	[0.042]	[0.052]
Control variables	Yes	Yes
HQ state-year fixed effects	No	Yes
Incorporation state linear trends	Yes	Yes
Industry-year fixed effects	Yes	Yes
Observations	1,184	1,183
R^2	0.709	0.856

Table 10: Federal judge ideology

This table reports the estimation results on the effect of liberal judges on firms' propensity to delist. The dependent variable is *𝟙(DELIST)*, a dummy variable that equals one if a firm delists from a stock exchange in the year, and zero otherwise. In Columns (1) and (2), we use an OLS specification. In Columns (3)-(8), we employ Cox and probit models. *ΔLIBERAL_JUDGES* is the change in percentage of federal judges appointed by a Democratic president in the Circuit court of the firm's headquarters. *ΔLIBERAL_PANEL* is the change in probability that judges appointed by Democratic presidents dominate a panel of three judges randomly selected from the Circuit. Lagged control variables are defined in the Appendix. Standard errors clustered at the firm-level are reported in parentheses. Statistical significance at the 1%, 5%, and 10% levels are indicated by ***, **, and *, respectively.

	Dependent variable: 𝟙(DELIST)							
	OLS		Cox		Probit			
					Coefficient	Marginal	Coefficient	Marginal
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
ΔLIBERAL_JUDGES	0.097***		2.184***		1.186***	0.077		
	[0.012]		[0.336]		[0.144]			
ΔLIBERAL_PANEL		0.061***		1.265***			0.730***	0.047
		[0.009]		[0.233]			[0.100]	
MARKET_TO_BOOK	-0.005***	-0.005***	-0.251***	-0.252***	-0.124***	-0.008	-0.124***	-0.008
	[0.001]	[0.001]	[0.017]	[0.017]	[0.008]		[0.008]	
FIRM_SIZE	-0.005***	-0.005***	-0.238***	-0.238***	-0.114***	-0.007	-0.114***	-0.007
	[0.001]	[0.001]	[0.020]	[0.020]	[0.010]		[0.010]	
LEVERAGE	0.088***	0.088***	1.888***	1.893***	1.098***	0.071	1.100***	0.071
	[0.005]	[0.005]	[0.084]	[0.084]	[0.046]		[0.046]	
RETURN_ON_ASSETS	-0.091***	-0.091***	-1.294***	-1.291***	-0.757***	-0.049	-0.755***	-0.049
	[0.006]	[0.006]	[0.082]	[0.082]	[0.047]		[0.047]	
CASH_FLOW_VOLATILITY	0.081***	0.081***	0.975***	0.975***	0.637***	0.041	0.637***	0.041
	[0.015]	[0.015]	[0.240]	[0.239]	[0.125]		[0.125]	
ANALYST_FOLLOWINGS	-0.009***	-0.009***	-0.318***	-0.321***	-0.170***	-0.011	-0.171***	-0.011
	[0.001]	[0.001]	[0.034]	[0.034]	[0.016]		[0.016]	
log(STATE_GDP)	0.001	0.001	0.022	0.024	-0.024**	-0.002	-0.023**	-0.001
	[0.001]	[0.001]	[0.023]	[0.023]	[0.011]		[0.011]	
STATE_GDP_GROWTH	0.038	0.038	0.375	0.365	3.012***	0.196	3.017***	0.196
	[0.043]	[0.043]	[1.022]	[1.025]	[0.347]		[0.346]	
Industry-year fixed effects	Yes	Yes	No	No	No		No	
Observations	69,202	69,202	71,852	71,852	69,202		69,202	
R^2	0.170	0.170						
Log pseudolikelihood			-18,044	-18,051	-8,695		-8,703	

Table 11 : Voluntary versus forced delisting

Panel A decomposes SCA lawsuits into those that are settled and those that are dismissed. The dependent variable is 𝟙(*DELIST*), a dummy variable that equals one if the firm delists from a stock exchange in the year, and zero otherwise. 𝟙(*DISMISSED_SCA*) is a dummy variable that equals one if the firm's SCA lawsuits originating in a year are dismissed, and zero otherwise. 𝟙(*SETTLED_SCA*) is a dummy variable that equals one if the firm's SCA lawsuits originating in a year are settled, and zero otherwise. #*DISMISSED_SCA* is the number of SCA lawsuits originating in a year that are dismissed. #*SETTLED_SCA* is the number of SCA lawsuits originating in a year that are settled. *log(SETTLEMENT_AMOUNT)* is the natural logarithm of the settlement amount. Panel B reports multinomial logit results estimating the effect of SCA lawsuits on firms' delist types. The dependent variable is *DELIST_TYPES*, which equals one for forced delists, two for voluntary delists, and zero for active firms (the base group). *𝟙(SCA)* is a dummy variable that equals one if the firm experiences an SCA lawsuit in a given year, and zero otherwise. *#SCA* is the number of SCA lawsuits that the firm experiences in a given year. Lagged control variables are defined in the Appendix. Standard errors clustered at the firm-level are reported in parentheses. Statistical significance at the 1%, 5%, and 10% levels are indicated by ***, **, and *, respectively.

Panel A – Dismissed versus settled

	Dependent variable: 𝟙(DELIST)					
	(1)	(2)	(3)	(4)	(5)	(6)
𝟙(DISMISSED_SCA)	0.039***					
	[0.007]					
#DISMISSED_SCA		0.031***				
		[0.006]				
𝟙(SETTLED_SCA)			0.075***			
			[0.009]			
#SETTLED_SCA				0.073***		
				[0.009]		
ln(SETTLEMENT_AMOUNT)					0.008***	0.004***
					[0.001]	[0.001]
𝟙(SCA)						0.044***
						[0.007]
MARKET_TO_BOOK	-0.005***	-0.005***	-0.007***	-0.007***	-0.005***	-0.005***
	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]
FIRM_SIZE	-0.007***	-0.007***	-0.008***	-0.008***	-0.005***	-0.006***
	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]
LEVERAGE	0.101***	0.101***	0.107***	0.107***	0.087***	0.087***
	[0.007]	[0.007]	[0.007]	[0.007]	[0.005]	[0.005]
RETURN_ON_ASSETS	-0.104***	-0.104***	-0.109***	-0.108***	-0.090***	-0.090***
	[0.007]	[0.007]	[0.008]	[0.008]	[0.006]	[0.006]
CASH_FLOW_VOLATILITY	0.108***	0.108***	0.106***	0.107***	0.081***	0.080***
	[0.020]	[0.020]	[0.020]	[0.020]	[0.015]	[0.015]
ANALYST_FOLLOWINGS	-0.011***	-0.010***	-0.009***	-0.009***	-0.010***	-0.010***
	[0.002]	[0.002]	[0.002]	[0.002]	[0.001]	[0.001]
log(STATE_GDP)	0.002*	0.002*	0.002*	0.002*	0.002*	0.002*
	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]
STATE_GDP_GROWTH	0.037	0.037	0.024	0.026	0.021	0.019
	[0.055]	[0.055]	[0.060]	[0.060]	[0.043]	[0.043]
Industry-year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	50,234	50,234	48,756	48,756	69,432	69,432
R^2	0.210	0.210	0.210	0.211	0.171	0.172

Table 11 Continued

Panel B – Voluntary versus forced delists

	Dependent variable: 𝟙(DELIST)			
	Multinomial logit coefficient (1)	Marginal effects (2)	Multinomial logit coefficient (3)	Marginal effects (4)
	Coefficient	Marginal	Coefficient	Marginal
Base model – Active firms				
Forced delists				
𝟙(SCA)	1.727***	0.049		
	[0.093]			
#SCA			1.241***	0.035
			[0.072]	
MARKET_TO_BOOK	-0.272***	-0.008	-0.270***	-0.008
	[0.019]		[0.019]	
FIRM_SIZE	-0.265***	-0.008	-0.265***	-0.008
	[0.022]		[0.022]	
LEVERAGE	2.271***	0.065	2.261***	0.065
	[0.097]		[0.097]	
RETURN_ON_ASSETS	-1.388***	-0.040	-1.386***	-0.040
	[0.095]		[0.095]	
CASH_FLOW_VOLATILITY	1.262***	0.037	1.287***	0.037
	[0.264]		[0.263]	
ANALYST_FOLLOWINGS	-0.437***	-0.012	-0.425***	-0.012
	[0.037]		[0.037]	
log(STATE_GDP)	-0.054**	-0.002	-0.050**	-0.001
	[0.025]		[0.025]	
STATE_GDP_GROWTH	7.001***	0.201	7.110***	0.205
	[0.769]		[0.767]	
Voluntary delists				
𝟙(SCA)	2.052***	0.004		
	[0.301]			
#SCA			1.361***	0.003
			[0.160]	
MARKET_TO_BOOK	-0.344***	-0.001	-0.342***	-0.001
	[0.098]		[0.098]	
FIRM_SIZE	-0.333***	-0.001	-0.328***	-0.001
	[0.073]		[0.074]	
LEVERAGE	1.217***	0.002	1.199***	0.002
	[0.380]		[0.381]	
RETURN_ON_ASSETS	-1.334***	-0.003	-1.350***	-0.003
	[0.374]		[0.373]	
CASH_FLOW_VOLATILITY	-1.871*	-0.004	-1.833*	-0.004
	[1.066]		[1.060]	
ANALYST_FOLLOWINGS	-0.769***	-0.002	-0.749***	-0.002
	[0.146]		[0.146]	
log(STATE_GDP)	0.173*	0.000	0.179**	0.000
	[0.089]		[0.089]	
STATE_GDP_GROWTH	-1.118	-0.004	-0.962	-0.003
	[2.689]		[2.672]	
Observations	69,432		69,432	
Log pseudolikelihood	-9,212		-9,231	

Internet Appendix

Does Shareholder Litigation Risk Cause Public Firms to Delist? Evidence from Securities Class Action Lawsuits

Internet Appendix IA1 presents robustness tests for the findings in Table 4 on the relationship between SCA lawsuits and delisting propensity.

In Panel A, instead of using OLS, we estimate duration and probit models, respectively. In Columns (1) and (2), the dependent variable is the hazard ratio for the Cox regression, which is the probability that a firm will delist in the next unit of time. The advantage of using survival models is that they can account for both the event occurrence and the time to the event (Fama and French, 2004). Furthermore, a survival approach is useful to examine censored data and time-series data with different time horizons (Shumway, 2001). In Column (2), we include variables that capture the industry sales growth rate and real GDP growth rate to control for industry conditions and economy-wide effects. Consistent with the OLS estimate, the hazard ratio is positively and statistically significantly related to the delisting propensity. Thus, the probability of delisting increases following SCA lawsuits. In Columns (3)-(6), we employ a probit model instead of the Cox model. The coefficients on $\mathbb{1}(SCA)$ remain positive and statistically and economically significant in this alternative model specification.

Panel B addresses the potential confounding effects of the 2008 global financial crisis and the bursting of the dotcom bubble. During these crisis periods, the likelihood of litigation and of delisting increases. While the baseline model addresses this by incorporating industry-year fixed effects, Panel B further examines whether the results are robust to the exclusion of these periods. In Column (1), we remove observations for the years 2001 and 2002, representing the dotcom bubble. In Column (2), we remove observations for the global financial crisis period of 2007–2008. In Column (3), we remove observations for both the periods of the dotcom bubble and the financial crisis. We find consistently positive and statistically significant coefficients on $\mathbb{1}(SCA)$, indicating a positive relationship between SCA litigation and firms' delisting propensity.

In the third robustness analysis, we consider the effect of corporate governance on firms' delisting decisions. Firms may be incentivized to delist, for example via a leveraged buy-out, not to lower frivolous litigation risk but to strengthen managerial oversight with a more concentrated ownership structure (Muscarella and Vetsuypens, 1990). To address this alternative rationale for delisting, we augment the baseline specification with additional controls for governance variables, including governance (G_INDEX) and entrenchment (E_INDEX) indices, and the percentage of institutional ownership to reflect the firm's ownership structure (*INSTITUTIONAL_HOLDINGS)*. The results in Panel C indicate that the coefficients on 𝟙(*SCA*) remain positive and statistically significant across the three models controlling for the governance variables.

In conclusion, regardless of the econometric design we use to estimate litigation risk, of the exclusion of crisis periods, or of explicitly controlling for governance effects, the results show a statistically significant and positive relation between the occurrence of SCA litigation and firms' delisting propensity.

References

Bebchuk, L., Cohen, A., and Ferrell, A. (2009). What matters in corporate governance?. *Review of Financial Studies*, *22*(2): 783-827.

Fama, E., and French, K. (2004). New Lists: Fundamentals and Survival Rates. *Journal of Financial Economics*, 73(2): 229-269.

Gompers, P., Ishii, J., and Metrick, A. (2003). Corporate governance and equity prices. Q*uarterly Journal of Economics*, *118*(1): 107-156.

Muscarella, C., and Vetsuypens, M. (1990). Efficiency and Organizational Structure: A Study of Reverse LBOs. *Journal of Finance,* 45(5), 1389-1413.

Shumway, T. (2001). Forecasting Bankruptcy More Accurately: A Simple Hazard Model. *Journal of Business*, 74(1): 101-124.

Internet Appendix IA1: Robustness tests on the relation between SCA litigation and firms' delisting propensity

This table reports robustness tests on the relation between SCA litigation and firms' delisting propensity.The dependent variable is *𝟙(DELIST),* a dummy variable that equals one if the firm delists from a stock exchange in a given year, and zero otherwise. In Panel A, we employ Cox and probit models. In Panel B, we run the regressions on various subsample periods. Column (1) removes the dotcom bubble years of 2001 and 2002. Column (2) removes the global financial crisis years of 2007 and 2008. Column (3) removes both the dotcom bubble (2001 and 2002) and the global financial crisis (2007 and 2008). In Panel C, we additionally control for the potential effect of firms' corporate governance quality on delisting. *G_INDEX* is the index of governance provisions developed by Gompers, Ishii, and Metrick (2003). *E_INDEX* is the managerial entrenchment index developed by Bebchuk, Cohen, and Ferrell (2009). Data on *G_INDEX* and *E_INDEX* are obtained from the Institutional Shareholder Services database. *INSTITUTIONAL_HOLDINGS* is the fraction of stocks owned by institutional investors. Data on institutional holding are obtained from the 13F filings. 𝟙(SCA) is a dummy variable that equals one if a firm experiences an SCA lawsuit in a year, and zero otherwise. Lagged control variables are defined in the Appendix. Standard errors clustered at the firm-level are reported in parentheses. Statistical significance at the 1%, 5%, and 10% levels are indicated by ***, **, and *, respectively.

Panel A: Cox and probit models

Dependent variable: 𝟙(DELIST)			
	Cox	Probit	
		Coefficient	Marginal
	(1)	(2)	(3)
𝟙(SCA)	1.292***	0.825***	0.053
	[0.076]	[0.044]	
MARKET_TO_BOOK	-0.254***	-0.130***	-0.008
	[0.014]	[0.008]	
FIRM_SIZE	-0.253***	-0.124***	-0.008
	[0.020]	[0.010]	
LEVERAGE	1.911***	1.117***	0.072
	[0.077]	[0.046]	
RETURN_ON_ASSETS	-1.258***	-0.738***	-0.047
	[0.081]	[0.047]	
CASH_FLOW_VOLATILITY	0.954***	0.621***	0.040
	[0.229]	[0.125]	
ANALYST_FOLLOWINGS	-0.360***	-0.198***	-0.013
	[0.034]	[0.016]	
log(STATE_GDP)	0.034	-0.019*	-0.001
	[0.023]	[0.011]	
STATE_GDP_GROWTH	0.189	3.082***	0.198
	[1.051]	[0.349]	
Observations	72,092	69,432	
Log pseudolikelihood	-18,048	-8,611	

Panel B: Subsample testing

Dependent variable: 𝟙(*Delist*)	Exclude dotcom bubble	Exclude financial crisis	Exclude both
	(1)	(2)	(3)
𝟙(SCA)	0.059***	0.063***	0.062***
	[0.006]	[0.006]	[0.006]
Control variables	Yes	Yes	Yes
Industry-year fixed effects	Yes	Yes	Yes
Observations	62,366	63,992	56,926
R^2	0.174	0.171	0.173

Panel C: Controlling for governance

Dependent variable: 𝟙(*Delist*)			
	(1)	(2)	(3)
𝟙(SCA)	0.061***	0.022***	0.015**
	[0.006]	[0.007]	[0.007]
INSTITUTIONAL_HOLDINGS	0.012***		
	[0.003]		
G_INDEX		0.0003	
		[0.000]	
E_INDEX			0.00003
			[0.001]
Control variables	Yes	Yes	Yes
Industry-year fixed effects	Yes	Yes	Yes
Observations	69,432	19,923	18,479
R^2	0.172	0.389	0.438