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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.

> The solution to the competitive problem of US capital markets lies, on the one hand, in reducing the burden of litigation. (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. (U.S. Chamber Institute of Legal Reform (2005))

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[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.

I. Introduction

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 U.S. 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 average.[3] This surge in litigation motivated the passage of the Private Securities Litigation Reform Act (PSLRA) in 1995 and inspired the 2017 approval by the U.S. House of Representatives of the Lawsuit Abuse Reduction Act (LARA).[4] This article examines the effect of SCA litigation on the delisting decisions of U.S. 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 U.S. stock market.

A firm will consider delisting when the costs of being public exceed the benefits (Djama, Martinez, and Serve (2014)).[5] 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

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

[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. 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)).

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

[5]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 (Ritter (1987), Pagano, Panetta, and Zingales (1998)). 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)).

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.[6] In addition, 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 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 4-digit 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, MTB 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.[7] 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.[8] Indeed, we

[6]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 1 year of an SCA lawsuit, potentially reflecting the impact of direct litigation costs.

[7]The 9 states in the Ninth Circuit are Alaska, Washington, Oregon, Idaho, Montana, California, Nevada, Arizona, and Hawaii.

[8]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

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[9] 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% 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.[10]

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 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., Staudt, Epstein, and Wiedenbeck (2006), Fedderke and Ventoruzzo (2016)). As such, liberal

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.

[9]The 3 states in the Second Circuit are Connecticut, New York, and Vermont.

[10]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)).

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., Sunstein, Schkade, and Ellman (2004), Fedderke and Ventoruzzo (2016), and Huang et al. (2019)). This identification strategy allows us to take advantage of cross-sectional and time-series variations 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 article 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.[11] Spiess and Tkac (1997) and Johnson, Nelson, and Pritchard (2000) 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 U.S. cross-listed foreign firms' stock price reactions following the U.S. 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 article 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), and Houston et al. (2019)). We advance this literature by shedding light on a negative effect of shareholder litigation on firms' incentives to remain public.

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

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 (Pagano et al. (1998), Kim and Weisbach (2008)). Several studies focus on the costs and benefits of complying with U.S. stock market regulations, such as the 2002 Sarbanes–Oxley Act (e.g., Leuz, Triantis, and Wang (2008), Doidge, Karolyi, and Stulz (2010)) and the 1933–1934 Securities Acts (e.g., Stigler (1964), Jarrell (1981)).

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 investor's protections.

In contrast, our article uses the variation in legal burdens to examine delisting decisions from the perspective of the firm. Our empirical designs aim to establish the causal 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 article 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.

II. 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), utility 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.[12] 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 involve class actions related to securities that are not nationally traded.[13] Panel A of Table 1 reports the yearly distribution of SCA lawsuits and the rates of litigation in the sample.

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 of Table 1, 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 3 years to settle.

Panel B of Table 1 reports the distribution of SCA litigation across 1-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 reports 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

[12]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.

[13]In particular, Johnson (2012) documents that, following the congressional restrictions embodied in SLUSA (1998) and CAFA (2005), SCAs in state courts involve: i) 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; ii) class actions related to securities that are not nationally traded; iii) class actions with a relatively small size of plaintiff class; and iv) class actions that solely feature claims under the 1933 Securities Act.

TABLE 1
Distribution of SCA Lawsuits

Panel A of Table 1 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 1-digit SIC sectors. Panel C reports the composition of different SCA types.

Panel A. SCA Lawsuits by Year

	All Firms	SCA		Dismissed SCA		Settled SCA		SCA
		No.	%	No.	%	No.	%	Dis/Set
Year	1	2	3	4	5	6	7	8
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

Sector	Total Firms	SCAs	SCA Rate %
	1	2	3
Agriculture, forestry, and fishing	267	6	2.25
Construction	1,107	33	2.98
Manufacturing	36,866	1,359	3.69
Mining	3,976	126	3.17
Retail trade	5,727	201	3.51
Services	14,191	700	4.93
Transportation and communications	4,376	200	4.57
Wholesale trade	2,922	82	2.81
Total	**69,432**	**2,707**	**3.90**

Panel C. Types of SCA Suits

SCA Type	#	%
	1	2
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**

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: i) voluntary delist (codes 570 or 573), ii) delist due to mergers (codes 200 to 399), and iii) 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 (Krishnan, Masulis, Thomas, and Thompson (2012), Doidge et al. (2017)). Therefore, to avoid this potential mechanical relation, we exclude all delists due to mergers from our analysis.[14] 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 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.

In columns 4–7 of Table 2, 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 Section V that our results are separately robust for voluntary and forced delists.

Panel B of Table 2 reports the distribution of delisting across 1-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 MTB ratio of

[14]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).

TABLE 2

Distribution of Delistings

Panel A of Table 2 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 1-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

		Delistings		Delist – Voluntary		Delist – Forced	
Year	All Firms	No.	%	No.	%	No.	%
	1	2	3	4	5	6	7
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

Sector	All Firms	Delistings	Delisting Rate%
	1	2	3
Agriculture, forestry, and 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 and communications	4,376	174	3.98
Wholesale trade	2,922	136	4.65
Total	**69,432**	**2,395**	**3.45**

2.17. These figures are broadly consistent with Crane and Koch (2018), who report an average leverage ratio of 22% and an average MTB ratio of 1.67.

III. 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 (DELIST), a dummy variable that equals 1 if the firm delists in a given year, and 0 otherwise. The main explanatory variable is (SCA), a dummy variable that equals 1 if the firm experiences an SCA lawsuit, and 0 otherwise. We hypothesize that firms are more likely to delist after

TABLE 3

Summary Statistics

Table 3 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.

	No. of Obs.	Mean	Std. Dev.	Min	Median	Max
	1	2	3	4	5	6
Firm and State-Level Characteristics						
MTB	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

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 (Neyman and Scott (1948), Lancaster (2000)).

The most rigorous specification includes industry-year fixed effects. The industries are defined by a granular 4-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), and 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 (Marosi and Massoud (2007), Leuz et al. (2008), Pour and Lasfer (2013), and Doidge et al. (2017)). We use FIRM_SIZE (the natural logarithm of a firm's total assets) and MTB 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 (2012)). 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), Mehran and Peristiani (2011), and Doidge et al. (2017)).

We use LEVERAGE (total debt divided by total assets) and CASH_FLOW_VOLATILITY (5-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.

In columns 1 and 2 of Table 4, we use a dummy variable (SCA), which equals 1 if the firm experiences an SCA lawsuit in a given year, and 0 otherwise. Across both columns, the coefficients on (SCA) are positive and statistically significant ($p < 0.01$), 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 of Table 4, the dependent variable is #SCA, which is the number of SCA lawsuits that a firm experiences in a given year. Columns 3 and 4 use the full sample, while columns 5 and 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.[15]

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 0, we compute the degree of selection on unobservables relative to observables as δ, which equals $\frac{\beta_{\text{FULL}}}{\beta_{\text{RESTRICT}} - \beta_{\text{FULL}}} \times \frac{R_{\text{FULL}} - R_{\text{RESTRICT}}}{R_{\text{MAX}} - R_{\text{FULL}}}$, where

[15]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 $\mathbb{1}$(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.

TABLE 4

Effect of SCA Lawsuits on Firms' Delisting Rate

Table 4 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 1 if the firm delists from a stock exchange in a given year, and 0 otherwise. In columns 1 and 2, 𝟙(SCA) is a dummy variable that equals 1 if the firm experiences an SCA lawsuit in a given year, and 0 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 and 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 0. δ equals to $\frac{\beta_{FULL}}{\beta_{RESTRICT}-\beta_{FULL}} \times \frac{R_{FULL}-R_{RESTRICT}}{R_{MAX}-R_{FULL}}$, 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 [β^*, β_{FULL}], where the bias-adjusted treatment effect is $\beta^* = \beta_{FULL} - (\beta_{RESTRICT} - \beta_{FULL}) \times \frac{R_{MAX}-R_{FULL}}{R_{FULL}-R_{RESTRICT}}$. Standard errors clustered at the firm level are reported in square brackets. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, 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]
MTB	−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	
No. of obs.	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

$\beta_{RESTRICT}$ 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 of Table 4, for example, the restricted model includes (SCA) as the only explanatory variable, whereas the full model includes (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 0. 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 0 to 1. Following Oster (2019), the beta range is $[\beta^*, \beta_{\text{FULL}}]$, where the bias-adjusted treatment effect is $\beta^* = \beta_{\text{FULL}} - (\beta_{\text{RESTRICT}} - \beta_{\text{FULL}}) \times \frac{R_{\text{MAX}} - R_{\text{FULL}}}{R_{\text{FULL}} - R_{\text{RESTRICT}}}$. If the bounds do not include 0, then the estimates are robust. As seen in Table 4, all the betas are positive and their bounds do not include 0, suggesting that our results are robust.

Our Supplementary Material 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.

IV. 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 Dec. 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.[16]

[16]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

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.[17]

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 3 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.[18] Using the matched sample, we estimate the following difference-in-differences model:

$$(1)\quad y_{it} = \alpha + \beta \mathbb{1}(\text{9TH\_CIRCUIT})_i \times \mathbb{1}(>1999)_t + \eta \mathbb{1}(>1999)_t + \delta_{jt} + \theta_c + \lambda X_{it} + \varepsilon_{it},$$

the dependent variable y_{it} is a dummy variable that equals 1 if firm i delists in year t, and 0 otherwise. $\mathbb{1}(\text{9TH\_CIRCUIT})_i$ is a dummy variable that equals 1 for treated firms headquartered in the Ninth Circuit states, and 0 for matched control firms headquartered in the Second Circuit states; and $\mathbb{1}(>1999)_t$ is a dummy variable that equals 1 when the fiscal year is after 1999, and 0 otherwise.

Circuit fixed effects, θ_c, are included to control for time-invariant circuit characteristics. Note that the standalone term of $\mathbb{1}(\text{9TH\_CIRCUIT})_i$ 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

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.

[17]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.

[18]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.

around the year 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 reports 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.

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(9TH_CIRCUIT) on the delisting rate, and include the

TABLE 5

Validity Tests on the Ninth Circuit Ruling

Panel A of Table 5 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 matched control firms respectively. 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 1 for the Ninth Circuit states, and 0 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 and 2 use a sample of public firms, whereas columns 3 and 4 use a sample of OTC firms. The dependent variables are 𝟙(SCA), a dummy variable that equals 1 if a firm experiences a SCA lawsuit in a given year, and 0 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 square brackets. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

Panel A. Univariate Comparisons of Pre-Ruling Characteristics

	Mean		
	Ninth Circuit Firms	Matched Control Firms	*p*-Value of Difference
	1	2	3
𝟙(DELIST)	0.072	0.067	0.648
MTB	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 [3.149]	0.648 [3.145]
log(STATE_GDP)		2.354 [6.830]
STATE_GDP_GROWTH		−0.389 [0.964]
log(NUM_PUBLIC_FIRMS)		0.062 [0.738]
No. of obs.	102	102
Pseudo R^2	0.0011	0.0147

(continued on next page)

TABLE 5 (continued)
Validity Tests on the Ninth Circuit Ruling

Panel C. Difference-in-Differences – Probability of Litigation

	Main Sample (Public Firms)		OTC Firms	
Dependent Variables	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]
MTB	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
No. of obs.	5,373	5,373	1,768	1,768
R^2	0.299	0.309	0.407	0.338

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 and 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 and 4 of Panel C of Table 5, 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: i) they have lower public visibility, thereby avoiding being targeted by opportunistic lawyers (Johnson et al. (2000), (2001)); and ii) 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

TABLE 6

The Effect of the Ninth Circuit Ruling on Corporate Delisting Propensity

The dependent variable in Table 6 is 𝟙(DELIST), a dummy variable that equals 1 if the firm delists from a stock exchange in a given year, and 0 otherwise. 𝟙(9TH CIRCUIT) is a dummy variable that equals 1 for firms located in the Ninth Circuit states, and 0 otherwise. 𝟙(>1999) is a dummy variable that equals 1 for the years after 1999, and 0 otherwise. Lagged control variables are defined in the Appendix. Standard errors clustered at the headquarters state level are reported in square brackets. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

	Dependent Variable: 𝟙(DELIST)		
	1	2	3
𝟙(9TH_CIRCUIT) × 𝟙(>1999)	−0.020**	−0.042***	−0.061***
	[0.007]	[0.012]	[0.012]
𝟙(>1999)	0.003	0.050***	
	[0.006]	[0.010]	
MTB	−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
No. of obs.	5,448	5,448	5,448
R^2	0.060	0.064	0.354

from Compustat-Capital IQ. The regression specifications are similar to those in columns 1 and 2.[19] As shown in columns 3 and 4, although the coefficients on $\mathbb{1}(9\text{TH\_CIRCUIT}) \times \mathbb{1}(>1999)$ 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 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.

[19]There are two exceptions. First, we replace MTB 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.

TABLE 7

Robustness on the Effect of the Ninth Circuit Ruling on Delisting

Table 7 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 1 if the firm delists from a stock exchange in a given year, and 0 otherwise. 𝟙(9TH_CIRCUIT) is a dummy variable that equals 1 for firms located in the Ninth Circuit states, and 0 otherwise. 𝟙(>1999) is a dummy variable that equals 1 for the years after 1999, and 0 otherwise. Lagged control variables are defined in the Appendix. Standard errors clustered at the headquarters state level are reported in square brackets. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, 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) × 𝟙(>1999)	−0.061** [0.024]	−0.086*** [0.024]	−0.100*** [0.030]	−0.949*** [0.106]	−0.050
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	–
No. of obs.	4,955	3,755	3,496	5,448	–
R^2	0.363	0.422	0.433	–	–
Pseudo R^2	–	–	–	0.574	–

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.

Across all columns in Table 6, the interaction coefficients $\mathbb{1}(9\text{TH\_CIRCUIT}) \times \mathbb{1}(>1999)$ are negative and statistically significant ($p < 0.01$). 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.[20]

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[21] (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 instead of OLS and find that our results remain robust. The marginal

[20]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 (>1999) with (>1994), which equals 1 when the fiscal year is after 1994, and 0 otherwise. We find that the interaction coefficient (9TH_CIRCUIT) × (>1994) is statistically insignificant, suggesting that our main results are unlikely to be driven by a broader time trend.

[21]Technology firms are defined as firms whose 3-digit SIC code are 357, 837, or 367.

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)),[22] 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 3-factor model as the benchmark return model. The event date is the stock's delisting date. The Fama–French 3-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.

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.

Panel B of Table 8 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 $\mathbb{1}(9\text{TH\_CIRCUIT}) \times \mathbb{1}(>1999)$ are negative and significantly different from 0 in all regression specifications in Panel B of Table 8. 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.

[22]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.

TABLE 8

Delisting Returns After the Ninth Circuit Ruling

Panel A of Table 8 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 reports cross-sectional regression results using the [−7,0] CAR as the dependent variable. 𝟙(9TH_CIRCUIT) is a dummy variable that equals 1 for firms located in the Ninth Circuit states, and 0 otherwise. 𝟙(>1999) is a dummy variable that equals 1 for the years after 1999, and 0 otherwise. Lagged control variables are defined in the Appendix. Standard errors clustered at the headquarters state level are reported in square brackets. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

Panel A. Ninth Circuit Before and After 1999

	Cumulative Abnormal Returns		
	Before 1999	After 1999	*p*-Value 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) × 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]	–
MTB	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
No. of obs.	550	550
R^2	0.029	0.677

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), and 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

TABLE 9

Evidence from the 2001 Nevada Ruling

Table 9 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 1 if a firm is incorporated in Nevada, and 0 otherwise. 𝟙(>2001) is a dummy variable that equals 1 for the years after 2001, and 0 otherwise. The dependent variable is 𝟙(DELIST), a dummy variable that equals 1 if the firm delists from a stock exchange in a given year, and 0 otherwise. Lagged control variables are defined in the Appendix. Standard errors clustered at the incorporation state level are reported in square brackets. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

	Dependent Variable: 𝟙(DELIST)	
	1	2
𝟙(NEVADA) × 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
No. of obs.	1,184	1,183
R^2	0.709	0.856

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 3 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.

Table 9 reports 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.[23] For example, a fervently contested provision

[23] 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.

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."[24] 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.[25]

Prior studies widely adopt the political affiliation of the appointing president as a proxy for judicial partisan preferences (Gerber and Park (1997), Flemming, Holian, and Mezey (1998)). 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 appointed by Republican presidents (e.g., Cross and Tiller (1998), Sunstein et al. (2004)).[26] 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

[24]See 15 US Code §78u–4(b)(2).

[25]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.

[26]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.

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 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 U.S. judicial system, is preeminent, monitoring and review by the Supreme Court of SCA lawsuits are extremely rare, or close to non-existent (Pritchard (2011)).[27] 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: i) 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 ii) by calculating the probability that a three-judge panel in a firm's circuit court will comprise at least two Democratic appointees (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

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

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 $[C(p, 2) \times C(y - p, 1)]/C(y, 3)$

[27] 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)).

TABLE 10

Federal Judge Ideology

Table 10 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 1 if a firm delists from a stock exchange in the year, and 0 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 square brackets. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, 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]	
MTB	−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	
No. of obs.	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	

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.

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.[28] 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.

V. 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 (2023)). 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.

Panel A of Table 11 reports 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

[28]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.

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 of Table 11, 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

TABLE 11

Voluntary Versus Forced Delisting

Panel A of Table 11 decomposes SCA lawsuits into those that are settled and those that are dismissed. The dependent variable is 𝟙(DELIST), a dummy variable that equals 1 if the firm delists from a stock exchange in the year, and 0 otherwise. 𝟙(DISMISSED_SCA) is a dummy variable that equals 1 if the firm's SCA lawsuits originating in a year are dismissed, and 0 otherwise. 𝟙(SETTLED_SCA) is a dummy variable that equals 1 if the firm's SCA lawsuits originating in a year are settled, and 0 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 1 for forced delists, 2 for voluntary delists, and 0 for active firms (the base group). 𝟙(SCA) is a dummy variable that equals 1 if the firm experiences an SCA lawsuit in a given year, and 0 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 square brackets. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, 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*** [0.001]	0.004*** [0.001]
𝟙(SCA)						0.044*** [0.007]
MTB	−0.005*** [0.001]	−0.005*** [0.001]	−0.007*** [0.001]	−0.007*** [0.001]	−0.005*** [0.001]	−0.005*** [0.001]
FIRM_SIZE	−0.007*** [0.001]	−0.007*** [0.001]	−0.008*** [0.001]	−0.008*** [0.001]	−0.005*** [0.001]	−0.006*** [0.001]
LEVERAGE	0.101*** [0.007]	0.101*** [0.007]	0.107*** [0.007]	0.107*** [0.007]	0.087*** [0.005]	0.087*** [0.005]
RETURN_ON_ASSETS	−0.104*** [0.007]	−0.104*** [0.007]	−0.109*** [0.008]	−0.108*** [0.008]	−0.090*** [0.006]	−0.090*** [0.006]
CASH_FLOW_VOLATILITY	0.108*** [0.020]	0.108*** [0.020]	0.106*** [0.020]	0.107*** [0.020]	0.081*** [0.015]	0.080*** [0.015]
ANALYST_FOLLOWINGS	−0.011*** [0.002]	−0.010*** [0.002]	−0.009*** [0.002]	−0.009*** [0.002]	−0.010*** [0.001]	−0.010*** [0.001]
log(STATE_GDP)	0.002* [0.001]	0.002* [0.001]	0.002* [0.001]	0.002* [0.001]	0.002* [0.001]	0.002* [0.001]
STATE_GDP_GROWTH	0.037 [0.055]	0.037 [0.055]	0.024 [0.060]	0.026 [0.060]	0.021 [0.043]	0.019 [0.043]
Industry-year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
No. of obs.	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

(continued on next page)

TABLE 11 (continued)
Voluntary Versus Forced Delisting

Panel B. Voluntary Versus Forced Delists

	Dependent variable: 𝟙(DELIST)			
	Coefficient	Marginal	Coefficient	Marginal
	Multinomial Logit Coefficient	Marginal Effects	Multinomial Logit Coefficient	Marginal Effects
	1	2	3	4
Base model – Active firms				
Forced delists				
𝟙(SCA)	1.727*** [0.093]	0.049		
#SCA			1.241*** [0.072]	0.035
MTB	−0.272*** [0.019]	−0.008	−0.270*** [0.019]	−0.008
FIRM_SIZE	−0.265*** [0.022]	−0.008	−0.265*** [0.022]	−0.008
LEVERAGE	2.271*** [0.097]	0.065	2.261*** [0.097]	0.065
RETURN_ON_ASSETS	−1.388*** [0.095]	−0.040	−1.386*** [0.095]	−0.040
CASH_FLOW_VOLATILITY	1.262*** [0.264]	0.037	1.287*** [0.263]	0.037
ANALYST_FOLLOWINGS	−0.437*** [0.037]	−0.012	−0.425*** [0.037]	−0.012
log(STATE_GDP)	−0.054** [0.025]	−0.002	−0.050** [0.025]	−0.001
STATE_GDP_GROWTH	7.001*** [0.769]	0.201	7.110*** [0.767]	0.205
Voluntary delists				
𝟙(SCA)	2.052*** [0.301]	0.004		
#SCA			1.361*** [0.160]	0.003
MTB	−0.344*** [0.098]	−0.001	−0.342*** [0.098]	−0.001
FIRM_SIZE	−0.333*** [0.073]	−0.001	−0.328*** [0.074]	−0.001
LEVERAGE	1.217*** [0.380]	0.002	1.199*** [0.381]	0.002
RETURN_ON_ASSETS	−1.334*** [0.374]	−0.003	−1.350*** [0.373]	−0.003
CASH_FLOW_VOLATILITY	−1.871* [1.066]	−0.004	−1.833* [1.060]	−0.004
ANALYST_FOLLOWINGS	−0.769*** [0.146]	−0.002	−0.749*** [0.146]	−0.002
log(STATE_GDP)	0.173* [0.089]	0.000	0.179** [0.089]	0.000
STATE_GDP_GROWTH	−1.118 [2.689]	−0.004	−0.962 [2.672]	−0.003
No. of obs.	69,432		69,432	
Log pseudolikelihood	−9,212		−9,231	

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 1 for forced delists, 2 for voluntary delists, and 0 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.

VI. Conclusion

This article 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 causal 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.

Appendix. Variable Descriptions

Litigation Variables

$\mathbb{1}$(SCA): Equals 1 if a firm experiences a shareholder class action lawsuit in year *t*, and 0 otherwise. Source: ISS-SCAS database.

#SCA: The number of shareholder class action lawsuits that a firm experiences in year *t*. Source: ISS-SCAS database.

𝟙(DISMISSED_SCA): Equals 1 if a firm's shareholder class action lawsuit originating in year *t* are dismissed, and 0 otherwise. Source: ISS-SCAS database.

𝟙(SETTLED_SCA): Equals 1 if a firm's shareholder class action lawsuit originating in year *t* are settled, and 0 otherwise. Source: ISS-SCAS database.

#DISMISSED_SCA: The number of shareholder class action lawsuits originating in year *t* that are dismissed. Source: ISS-SCAS database.

#SETTLED_SCA: The number of shareholder class action lawsuits originating in year *t* that are settled. Source: 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. Source: ISS-SCAS database.

𝟙(DELIST): Equals 1 if a firm delists from the stock exchange in year *t*, and 0 otherwise. Source: CRSP.

𝟙(DELIST_FORCED): Equals 1 if a firm's CRSP delist code is 400 or above, but not code 570 or 573, and 0 otherwise. Source: CRSP.

𝟙(DELIST_VOLUNTARY): Equals 1 if a firm's CRSP delist code is 570 or 573, and 0 otherwise. Source: CRSP.

Legal Changes

𝟙(9TH_CIRCUIT): Equals 1 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). Source: SEC filings and Compustat.

𝟙(NEVADA): Equals 1 if a firm is incorporated in Nevada, and 0 otherwise. Source: SEC filings and Compustat.

𝟙(>1999): Equals 1 for the years after 1999, and 0 otherwise.

𝟙(>2001): Equals 1 for the years after 2001, and 0 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 firm's headquarters. Source: Federal Judicial Center's website.

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. Source: Federal Judicial Center's website.

Firm Controls

MTB: Market value of equity divided by book value of equity. Source: CRSP/Compustat Merged.

FIRM_SIZE: Natural logarithm of total assets (in thousands of dollars, adjusted to 2010 values). Source: CRSP/Compustat Merged.

LEVERAGE: Total debt divided by total assets. Source: CRSP/Compustat Merged.

RETURN_ON_ASSETS: Earnings before interest and taxes (EBIT) over total assets. Source: CRSP/Compustat Merged.

CASH_FLOW_VOLATILITY: The standard deviation of operating income before depreciation divided by total assets over the previous 5 years. Source: CRSP/Compustat Merged.

ANALYST_FOLLOWINGS: Natural logarithm of the number of stock analysts following the firm. Source: IBES.

SALES_GROWTH: The annual change of total sales. Source: Capital IQ.

INSTITUTIONAL_HOLDINGS: The fraction of shares owned by institutional investors. Source: 13F filings.

State-Level Variables

log(STATE_GDP): Natural logarithm of the state GDP in a given year. Source: U.S. Census Bureau.

STATE_GDP_GROWTH: The annual change of the state GDP. Source: U.S. Census Bureau.

log(NUM_PUBLIC_FIRMS): Natural logarithm of the number of public firms in a given state-year. Source: CRSP.

DELIST_RATE: The average delist rate in a given state-year. Source: CRSP.

$\mathbb{1}$(9TH_CIRCUIT_STATES): A dummy variable that equals 1 if a state belongs to the Ninth Circuit Court of Appeals.

Supplementary Material

To view supplementary material for this article, please visit http://doi.org/10.1017/S0022109023000571.

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