Are Star Lawyers Also Better Lawyers?

Allen Ferrell, Alberto Manconi, Ekaterina Neretina,

William Powley, and Luc Renneboog*

This draft: November 2019

Please do not cite or circulate without permission

Abstract

We study the performance of dominant plaintiff law firms ("stars") in litigation brought against publicly traded corporations. We use insurance coverage as a benchmark for expected settlement amounts, to separate to what extent (a) stars reach more favorable settlements on any lawsuit (a performance or treatment effect) or (b) stars are retained in lawsuits where a favorable settlement is ex ante more likely (a selection effect). Our findings indicate the latter, and that star firms have an economically small impact on settlement amounts. This result is not explained by measurement error or over-/under-insurance. The extent to which stars are associated with improvements in corporate governance also appears limited. The stars' large market share and the high fees they earn may be justified by their ability to reduce uncertainty about the lawsuit outcome or by frictions, such as aggressive marketing and limited client sophistication and bargaining power, which limits the stars' clients' ability to turn to other law firms.

JEL codes: K41, G34, L43

Keywords: Corporate litigation, 10b-5, securities litigation, legal profession, corporate governance, corporate litigation insurance

* Allen Ferrell is at Harvard Law School, ECGI and NBER (email: fferrell@law.harvard.edu); Alberto Manconi is at Bocconi University (email: alberto.manconi@unibocconi.it); Ekaterina Neretina is at USC Marshall School of Business (email: neretina@marshall.usc.edu); Will Powley is at MIT Sloan School of Management (email: wpowley@mit.edu); Luc Renneboog is at Tilburg University and ECGI (email: luc.renneboog@uvt.nl). We thank seminar participants at Tilburg University, Université Paris Dauphine, Free University of Bolzano, USC Marshall, BI Oslo, and the Bristol-Manchester Corporate Finance Conference. Ekaterina Neretina gratefully acknowledges financial support from the NWO "Research Talent" grant #406-15-242.

The legal profession is in many ways a hierarchal profession. Over the past four decades the ten largest plaintiff law firms have accounted for nearly half of aggregate corporate litigation settlements (Figure 1). Those settlements can be staggering: examples include $7.24 billion for the Enron securities litigation, $6.19 billion for the WorldCom securities litigation, and more recently $3 billion in the Petrobras securities litigation case. Plaintiff law firms receive a percentage of the settlement amount as their compensation, suggesting that the dominant ones, or "stars", earn significant profits in these cases.

But do star plaintiff law firms add value to the corporate lawsuits they litigate, in the sense of obtaining a more favorable settlement than a less prominent law firm could achieve? Stars are larger, have more resources and experience, and presumably better lawyers. But "stardom" could also result from actions that need not add value to the lawsuit, such as the star's ability to be retained in the most promising cases, or to manage the lead plaintiff appointment judicial process (Coffee (2010)). At the same time, non-stars may be more motivated and more focused. Whether star law firms add value, and by how much, is therefore an empirical question – one which we attempt to answer in this paper. This question speaks to the broader issues of the effectiveness of litigation as a tool to discipline corporate behavior and the functioning of the market for corporate legal services.

Answering our research question confronts us with two challenges. First, a star plaintiff law firm may be able to generate a more favorable settlement on any given lawsuit ("treatment" effect), or it may just tend to be retained in lawsuits where any law firm could reach a favorable settlement ("selection" effect). The difference is material, as the client should be willing to pay for treatment, but not for selection. Second, a star law firm can impact the likelihood of reaching a settlement ("risk" effect) and/or the expected settlement amount ("return" effect). That means the client may be willing to accept a smaller improvement in dollar settlement from a star law firm, if it is accompanied by lower uncertainty about her lawsuit's outcome.

To address these challenges, we structure our analysis in three parts. First, we focus on the return effect, i.e. the stars' impact on the expected settlement amount. That is the first-order issue, if the merit of a lawsuit is unrelated to the plaintiff law firm litigating it (as should be, at least in principle), or if the law firm's clients are not very risk-averse. We find that stars appear to add little to the expected settlement amount. Second, we ask if instead it is the risk effect that drives stardom, i.e. if stars increase their clients' confidence of reaching a settlement to a degree that explains their market dominance. Our results indicate that is unlikely the case. Combined, these findings suggest that the stars' market shares are large relative to a benchmark where they are entirely driven by law firm ability, or treatment effect. Third, we ask what, if not the treatment effect, drives the stars' dominance; our results point to aggressive marketing and lack of client sophistication and bargaining power.

The first part of our analysis focuses on the impact of star plaintiff law firms on the expected settlement. To isolate the treatment effect, one would need an independent assessment of the expected settlement, regardless of the law firm on the lawsuit. That is precisely the intuition behind our empirical approach. We rely on the fact that defendant corporations routinely purchase insurance against such litigation. Such insurance contracts are competitively priced and based on detailed disclosure of information to the insurance buyer. These features indicate that the level of insurance coverage chosen by the defendant corporation represents a natural benchmark for the settlement expenses that it expects to face conditional on a settlement. In other words, insurance coverage on average gauges the selection effect. The distance between the actual settlement and the amount covered by insurance, on the other hand, estimates the treatment effect.

Since many of our tests rely on the premise that insurance coverage can proxy for the expected settlement amount conditional on litigation, we perform extensive checks on whether this is in fact accurate and, in addition, perform a number of additional tests that relax this premise.

To take these ideas to the data, we assemble a dataset of lawsuits against U.S. publicly traded corporations since 1970, combining a number of existing databases as well as additional hand-collected information. Our data cover shareholder lawsuits, employee lawsuits, lawsuits related to products, services and operations, intellectual property, trade practices, environment, and antitrust. For each lawsuit in our sample, we obtain information on the defendant corporation, the plaintiff and defendant law firm(s), settlement amount, and insurance coverage. This is, to our knowledge, the most comprehensive dataset of litigation filed against publicly traded corporations in existence.

Consistent with the notion that stars tend to perform better on average, we find a strong positive association between dollar settlement amounts and an indicator for the top-10 plaintiff law firms: on average, star law firms are associated with settlements that are 40-55% larger than for non-stars. However, when we separate "selection" and "treatment" by looking at the amount covered by corporate insurance and the residual settlement amount, we find that selection explains most of the outperformance of star law firms. Based on our estimates the star law firms have a "treatment" impact of only about 10% on settlement values. Because plaintiff law firm fees are determined as a percentage of the settlement amount, a back-of-the-envelope calculation suggests that on average star law firms are paid $280,000-$500,000 above their marginal product on the median settled lawsuit.

The baseline finding of a small impact of star law firms on settlements relative to the insurance coverage benchmark is robust. It holds under alternative proxies for law firm status, alternative treatments of the standard errors, including a broad set of controls and fixed effects, controlling for the status of the defense law firms, restricting the attention to shareholder lawsuits (securities class actions and derivative actions), as well as over different time periods.

It is also immune to three alternative explanations: measurement error, over-/under-insurance by defendants, and plaintiffs seeking non-monetary lawsuit outcomes. Measurement error arises from the fact that when a lawsuit is dismissed the insurance coverage is not disclosed but rather set to zero in existing databases. That attributes a more favorable outcome to the plaintiff law firm, because it implies that it performs in line with the benchmark (insurance coverage = settlement amount) when in fact it underperforms, as the unobserved insurance coverage is likely positive. Tests based on list-wise deletion, which restricts the sample to settled cases, as well as three data imputation methods, which estimate the censored insurance coverage, suggest that the impact of measurement error on our findings is at best modest.

Defendant over-/under-insurance refers to the possibility that defendants facing stars tend to over-insure or defendants facing non-stars tend to under-insure, biasing us towards finding a smaller star law firm treatment effect. Three pieces of evidence suggest this alternative does not explain our findings. First, we combine information from a unique database containing a sample of the portfolio of Directors and Officers (D&O) insurance contracts (covering derivative and securities litigation) of a major primary insurer and machine learning techniques to flag defendant companies in our data as over- or under-insured relative to three benchmarks. Excluding from the sample over-insured defendants facing stars and/or under-insured defendants facing non-stars does not result in larger treatment effect estimates. Second, we rely on a matching approach, stratifying the sample such that each lawsuit with a star plaintiff law firm is matched to a non-star lawsuit having similar-sized settlement. A similar (ex post) settlement suggests similar (ex ante) incentives to over- or under-insure, thus attenuating the potential bias. We find again small treatment effect estimates. Third, we partition the sample based on the defendant firm's cash holdings, on the grounds that companies flush with cash (financially constrained) may under-insure (over-insure). We find nearly identical estimates among high- and low-cash defendants. Combined, these results suggest that over-/under-insurance unlikely captures our findings, and imply that star plaintiff law firms have a "treatment" impact that raises expected settlement value by 25% at best, and 0% at worst.

The third alternative explanation is that plaintiff utility is not just a function of the dollar settlement, but also of changes to the governance and policies of the defendant firm. To check for this possibility, we consider a range of governance indexes, covering corporate governance dimensions such as managerial compensation, entrenchment, and board structure. We find that the *average* lawsuit is associated with governance changes such as CEO and board turnover and changes in CEO compensation. Such changes, however, do not appear especially concentrated among lawsuits with star plaintiff law firms, where we find at best weak evidence of any governance improvement beyond the average lawsuit. Thus, non-monetary lawsuit outcomes are unlikely to explain our findings.

In the second part of our analysis, we assess the possibility that our findings are explained by the risk effect, i.e. that star plaintiff law firms reduce the uncertainty regarding the lawsuit's outcome, justifying their large market share even though they do not materially improve the settlement value. We find that star plaintiff law firms are associated with a 10% higher probability of reaching a settlement. Combining that value with the most generous treatment effect estimate from the first part of our analysis (about 25%) indicates that star plaintiff law firms raise the expected settlement by at best 37.5% (= (1 + 10%) × (1 + 25%) – 1). At the same time, they receive fees that are over 70% higher than for non-stars. Taken together, these findings suggest that the large market shares and high fees enjoyed by star law firms are large relative to an ideal benchmark in which they should be entirely driven by the stars' ability to create value for their clients, i.e. by treatment effects.

In the third part of our analysis, we attempt to explain why. We conjecture that frictions related to the industrial organization of the legal profession protect the dominant position of the stars. In that vein, we show that the treatment effect estimates are larger for lawsuits that are likely initiated by activist shareholders, who are more sophisticated and more likely to "shop around" for the best-performing law firm, thus exposing the stars to more meaningful competition.

Our paper makes two main contributions to the literature. First, it contributes to the corporate governance literature on corporate litigation. The ability of shareholders (and more generally corporate stakeholders) to sue managers and corporations serves as an ex ante disciplining mechanism against moral hazard and provides ex post compensation in case managers misbehave (Jensen and Meckling (1976), La Porta, Lopez-de-Silanes, Shleifer, and Vishny (1997, 1998)). Along with studies documenting the beneficial effects of corporate litigation (Ferris et al. (2007), Chung and Wynn (2008), Appel (2016)), this literature points to two inter-related problems. The first one is that exposure to potentially frivolous lawsuits can result in excessive managerial conservatism (Kinney (1994), Lin, Liu, and Manso (2017)). The second problem is that institutional features of the legal profession can induce lawyers to focus on profits rather than the merit of a lawsuit (Brickman (1989), Horowitz (1995), Krishnan and Kritzer (1999)). Indeed, among legal scholars a common concern is that a significant fraction of corporate lawsuits is frivolous and that attorneys, rather than shareholders, are the main beneficiaries in shareholder litigation (Romano (1991), Rhode (2004)). These two problems suggest that the governance role of litigation may be undermined in practice, and that law firms make gains to the detriment of the plaintiffs they represent. Our findings bring new elements to this debate, showing that dominant law firms may not materially improve their clients' expected monetary benefit from litigation, nor do they appear to have an impact on governance at the defendant firm.

Second, and more broadly, our paper adds to our understanding of the economics of the legal profession. Despite the central role they play in the modern legal system, there is surprisingly little research on the performance of law firms and the value they create for their clients. One strand of literature has focused on rationalizing the existence of "large" dominant law firms, arguing that it can be driven by economies of scale from social connections and partner reputation (Burk and McGowan (2011)) as well as by lower transaction costs and higher returns to specialization (Garicano and Hubbard (2008); Chatain (2010)). We contribute to this literature by asking whether and to what extent the performance of law firms, defined by the size of the settlement they can achieve, is the related to their market share. Our findings indicate that that relationship is tenuous, and suggest the existence of frictions that facilitate the dominance of star law firms even though their performance advantage may be modest. Our contribution is also methodological. To our knowledge, this is the first study to cast the problem of measuring law firm performance in terms of its selection and treatment components, whereas practitioner rankings tend to rely on crude measures such as total revenues.

The remainder of our paper is organized as follows. Section II describes our data and variables. Section III provides the institutional background and discusses our empirical strategy. Section IV presents the main results. Section V discusses potential explanations for the star law firms' dominant market position. A brief conclusion follows.

II. Data and main variables of interest

A. Sample composition

To maximize coverage and the representativeness of our sample, we merge information from the major providers of data on corporate lawsuits in the U.S., incorporating manual screens and hand-collected additional information. Our main sources are Audit Analytics Litigation (AA), ISS Securities Class Action Services (ISS), the Federal Court Cases Integrated Data Base (FCC), the Master Significant Cases & Actions Database (MSCAd), and the Stanford Securities Class Action Clearinghouse (SCAC). Our dataset combines these sources, to assemble what is, to the best of our knowledge, the most comprehensive collection of corporate lawsuits against U.S. publicly listed firms settled over the period 1970-2016.

There is some overlap among these databases, so we merge lawsuits in the different databases by defendant company, court, docket number, filing date, and settlement date. Defendant company names and docket numbers are sometimes reported using different spelling or numbering conventions, and we screen them to remove duplicates. The resulting dataset contains 27,362 individual lawsuits. Out of them, 79% are brought before federal courts, 20% before state courts, and the remaining 1% comprise a small number of lawsuits brought before foreign courts, regulators, or alternative dispute resolutions. Figure 2.A describes the number of corporate lawsuits over time; the data coverage is sparse until 1991, but after that date we observe an increase in litigations, reaching a peak in the 2006-10 period with nearly 9,000 lawsuits against U.S. public companies.

In comparison to the previous literature, the set of lawsuits we analyze is broader. The majority of studies using individual lawsuit data restrict the focus to shareholder lawsuits (e.g. Appel (2016), DuCharme, Malatesta, and Sefcik (2004), Fahlenbrach, Low, and Stulz (2010), Lin, Liu, and Manso (2017)). Notable lawsuits in our data are about intellectual property, such as Apple

Inc.'s 2011 lawsuit against Samsung Electronics Co., Ltd. Regarding smartphone and tablet design, or employee lawsuits, such as one brought by African-American employees against the Coca-Cola Company on the grounds of racial discrimination. Because we want to assess the performance of law firms in general, we aim to obtain the largest possible coverage; however, as we show in robustness checks, our main results hold when we restrict the sample to the largest lawsuit category, i.e. shareholder lawsuits.

The shareholder lawsuit category comprises both securities class actions and derivative actions.[1] Their number has also been increasing over time, and since the mid-1990s their average settlement amounts exceed that of the average corporate lawsuit (Figure 2.B). Although shareholder lawsuits are the most frequent category (Figure 3.C), shareholder lawsuits exhibit only the fourth largest average settlements, after lawsuits associated with environment risk, products, and trade practices (Figure 3.D). We define lawsuit categories in greater detail in Appendix A, Table A.2.

When we break down our sample by industry, we find that out of the 12 Fama-French industries, lawsuits are most frequent among "Business equipment" and "Finance". The largest average settlement amounts are found among "Finance", "Telecommunications", and "Oil, gas, and coal" (Figures 3.A and 3.B).

Multiple plaintiff and defendant law firms can be involved in a given lawsuit. In corporate litigation, nearly all law firms tend to specialize as either plaintiff or defendant (primarily to avoid

[1] In a shareholder class action, a specific group or "class" of shareholders who have shared a common damage (for example, shareholders who have bought the stocks of the company during a given time period) pursues claims for that damage. A class action requires that the number of parties (plaintiffs, defendants, or both) is so numerous that it would be impractical for each plaintiff to pursue an individual claim; a common question of law must exist, which makes it more efficient to hear all claims at once, and all cases must have a common issue. In a derivative lawsuit, the interests of all shareholders are encompassed. Before they can bring a derivative lawsuit, shareholders must petition the corporation's management to rectify the behavior that prompts the lawsuit. Around 80% of the shareholder lawsuits in our data are shareholder class actions.

conflicts of interest); we focus on plaintiff law firms. Law firms are partnerships, and they are typically named after their most senior partners. Their names may change over time, reflecting e.g. a promotion to "name partner" or the departure of one or more name partners from the firm. We standardize firm names to account for alternative spellings, abbreviations, and typos, and to track firms across the different sources and over time. The lawsuits in our dataset involve 9,960 individual plaintiff law firms; the average lawsuit is associated with two law firms, and the average law firm participates in four lawsuits.

Throughout the analysis, we require that the outcome of a given lawsuit is known, i.e. that the lawsuit has been either settled or dismissed by the end of our sample period. To that end we take 2016 as the latest filing year in our sample; only a small fraction of cases are still pending or have unknown outcome by then. The vast majority of corporate lawsuits do not actually go to trial, but are either settled or dismissed prior to that. Settlement occurs in about half of all lawsuits. For the cases of which we observe the settlement amount, we collect in the case description the amount of the settlement covered by insurance. Insurance coverage is however not universally disclosed; in our data, out of 15,595 settled lawsuits, 1,344 reveal it. Thus, the sample on which we run most of our tests includes a total of 13,111 lawsuits, of which 1,344 are settled lawsuits with available insurance data and 11,767 are dismissed cases.

For settled cases in the overall sample, settlements are on average around $37 million (Table 1); however, they become larger in the more recent years, peaking at about $50 million in the period 2001-2005 (Figure 2). These figures are consistent with earlier studies focusing on narrower datasets (e.g. Baker and Griffith (2007), and references therein). Typically the lawsuits with insurance disclosure involve larger settlements; for those lawsuits, the average settlement amount is around $46 million (average over the entire sample period). For our purposes, that means: (i) our baseline tests focus on the portion of the data that is economically more relevant, and (ii) those tests are based on a set of lawsuits where plaintiff law firms seemingly generate larger amounts of money for their clients. On average, insurance coverage is around $32 million, or 71% of the settlement; but there is important variation in this variable: in 46% of lawsuits with available information, the insurance coverage the entire settlement amount, whereas in 7% of cases the coverage is zero (we discuss the relationship between insurance coverage and settlement amounts in greater detail in Section IV.A).

B. Star law firms

To identify star law firms, we rank plaintiff law firms based on the settlement amounts that they have generated over time. Cumulative settlement amounts are a natural measure of law firm status, as they are observed by their clients and determine the firms' revenues. In turn, revenues drive many popular law firm rankings, such as the Am Law 100 and Am Law 200 mentioned in the introduction, which are widely available to industry practitioners and prospective clients. Fees are more closely related to law firm revenues, but they are also more sparsely populated in our data sources; and as we confirm in robustness checks, the information contained in the settlement is largely equivalent.

Figure 1, already referred in the introduction, plots the distribution of settlement amounts over four periods: pre-2000, 2001-05, 2006-10, and 2011-16.[2] Two patterns emerge. First, the shape of the distribution is quite stable over time. Second, whereas a large number of firms has small market shares, a core of firms captures the lion-share of settlements.

[2] Whenever $N > 1$ plaintiff firms are involved in one lawsuit, we assign to each law firm a fraction of the settlement proportional to the size of the settlements of all lawsuits that the firm was involved in over the previous five years.

These stylized facts motivate our choice of variables proxying for law firm status. Our main proxy is the $Star$ indicator, equal to 1 for the top 10 law firms in a given year based on cumulative settlement amounts. This variable is constructed as follows. For a given law firm i in year t, we compute the cumulative settlement amount S_{it} generated by the firm over the 5 years up to and including year t. We then rank law firms in year $t+1$ sorting them by S_{it}, such that the firm with the largest cumulative settlement has the top rank. The one-year lag between cumulative settlement amounts and law firm ranks ensures that the information about past performance (settlement) is available to prospective clients in year $t+1$, and that there is no overlap between the dependent variables in most of our tests (related to settlements in individual lawsuits) and the law firm's rank.[3]

For robustness, we also consider three alternative measures of law firm status. The first, $Star\ (fees)$, is a top-10 firm indicator based on cumulative past fees rather than settlements. Cumulative fees are computed analogously to S_{it}; where fees are not disclosed in the case descriptions, we impute the value of 1/3 of the settlement, which is close to the median fraction of the settlement amount destined to fees and considered an industry standard (Baker and Griffith (2007, 2011)). The two remaining proxies are continuous measures. The first one, called $Rank$, is defined as:

$$Rank_{it+1} = \frac{S_{it} - \min_j\{S_{jt}\}}{\max_j\{S_{jt}\} - \min_j\{S_{jt}\}} \tag{1}$$

where $\min_j\{S_{jt}\}$ and $\max_j\{S_{jt}\}$ are the minimum and maximum cumulative settlement across all law firms j other than firm. This measure reflects the concentration of the distribution of market

[3] In a number of cases, several firms act as plaintiff law firms on a given lawsuit. In our tests, we consider a given lawsuit as having a star plaintiff law firm if the team of plaintiff law firms contains at least one star. Similar results obtain if we use instead the fraction of stars among multiple plaintiff law firms on a given lawsuit.

shares among law firms, assigning a higher value to firms with larger cumulative settlements. The last proxy, $Rank$ $(fees)$, is analogous to $Rank$ but built based on fees rather than settlement amounts.

C. Other variables of interest

In most of our tests we use control variables derived from the CRSP/Compustat Merged database. We match CRSP/Compustat to defendant corporations in our lawsuit data, by manually screening company names; both the AA and SCAC databases contain tickers, and the AA database also contains the SEC's Central Index Key (CIK), so we use this linking information where available.

The main set of control variables used throughout the paper are derived from Kim and Skinner (2012), and include: Size (natural logarithm of the defendant corporation's total assets), yearly sales growth rate, stock return (monthly average over a one-year period), stock return skewness, stock return volatility, and stock turnover (ratio of the number of shares traded to the number of shares outstanding). These variables are defined on a yearly frequency, and expressed in their values as of the end of the year prior to a given lawsuit's filing date.

In robustness checks, we supplement these variables with additional controls retrieved from CRSP/Compustat, the IBES analyst forecast database, BoardEx, and the Thomson Reuters 13F Institutional Holdings database. We list the additional controls in section III.C, and describe them in detail in Table A.1 of the Appendix.

Finally, in the tests on changes to corporate governance described in section III.D, we consider several measures related to governance quality. The first is the Bebchuk, Cohen, and Ferrell (2009) E-Index. We also analyze CEO changes and CEO compensation package data from the Compustat ExecuComp database, and board composition measures from BoardEx. The variables and their sources are described in detail in Appendix A.

III. Institutional background and testable hypotheses

A. The market for corporate litigation insurance

Corporate litigation insurance is a central risk management tool. The features of the corporate insurance market, which we discuss below, indicate that (i) companies often seek coverage for the full extent of their expected liability, and (ii) insurers provide such coverage at a competitive premium. These elements suggest that litigation insurance coverage reflects an unbiased estimate of the expected settlement amount.

Appendix Table A.5 shows that over 50% of the insurance observations in our data are related to Directors' & Officers' insurance policies, which are purchased by nearly all U.S. public corporations (Baker and Griffith (2007)). D&O policies insure against securities litigation (primarily Rule 10b-5 and Section 11 litigation) and state corporate derivative actions. The typical D&O insurance package protects individual managers from litigation (so-called "Side A"), reimburses the corporation for indemnification of officers and directors ("Side B"), and protects the corporation itself from the risk of litigation to which it may be a party ("Side C").[4] Side A coverage is triggered when liability is for settlement of derivative litigation (a fairly unimportant source of liability) because under Delaware corporate law the firm cannot indemnify officers and

[4] Side A coverage has no deductible, whereas side B and C can have deductibles. A higher deductible can reduce the insurance premium; but such savings are considered small, and involve the risk of the company bearing higher costs in the event of litigation. In addition, the insurer may require (1) to be kept informed throughout the litigation, and (2) that the insured comply with the insurer's rules, such as whom they may retain as counsel, when the insured may settle a claim, and general litigation strategy (Guggenheim and Henderson (2008)). A Tower Perrins (2008) survey reports that 66% of surveyed firms purchase D&O insurance with no deductibles at all. Also in that survey, among the corporations with total assets between $2-$5 Bn as in our sample, the average deductible is about $860,000; based on the average insurance coverage of $33 million in our data, deductibles are on average 2.6% of insurance coverage.

directors in derivative actions. The principal exclusions from D&O coverage are fraud, "insured v. insured" cases (aimed at avoiding collusive litigation), and prior claims. The prior claims exclusion removes from the coverage any claims noticed or pending prior to the commencement of the current policy, which ordinarily would be covered under a prior policy, creating an incentive for the insured to notify the insurer of any potential claims at the earliest possible date, because those claims could be excluded under any subsequent policies.[5]

The exposure of any individual insurer to a given company's litigation risk is limited, as most policies have limits of $10 million or less (Baker and Griffith (2007)). Companies therefore purchase a "tower" of D&O policies in order to reach a desired amount of insurance, with the assistance of specialized D&O insurance brokers. The bottom layer of the tower, or "primary policy" responds first to a covered loss; the layers further up in the tower are purchased from so-called excess insurers.

Prior to underwriting D&O insurance coverage, the insurers obtain information about litigation risk from prospective insured corporations, collected through the application process and via independent research. Prospective insureds have an incentive to transparency in their application, because an applicant furnishing untrue information creates the basis for a subsequent rescission action; in other words, the insurer may refuse to cover a future lawsuit settlement. The insurer's research is based on public data, as well as on private information obtained from meetings with the applicant's senior management, typically covered by nondisclosure agreements. The information collected through these channels has broad scope, and ranges from the prospective insured's financials and corporate strategy, to incentives and governance, to the background and personality of the managers (Baker and Griffith (2007)). Indeed, Core (2000) finds evidence that

[5] In particular, the prior claims exclusion rules out the possibility that insurance coverage may be ex-post increased over the course of a given lawsuit.

D&O premiums reflect the quality of the insured company's governance. Moreover, policies are renewed on a frequent basis (in many cases yearly), so that the data on which they are based is timely. In sum, the insurers collect information that enables them to form an unbiased assessment of the litigation risk of the prospective insured.

That assessment is reflected in the D&O insurance premium and coverage. Although insurers have a degree of discretion in insurance pricing, it is constrained by competition and transparency. In the market for primary insurance a few insurers such as ACE, AIG, and Chubb historically have had large market shares; but the excess insurance market is competitive and has low barriers to entry, and features of insurance contracts such as the prior claims exclusion, or the fact that the primary insurer's quote is disclosed to all prospective excess insurers, ensure that information is widely available and timely. In addition, "shopping" for less expensive coverage is common (Baker and Griffith (2007)). These features suggest that D&O insurance premiums generally reflect a competitive market, so that companies likely do not under-insure their litigation risk due to non-competitive market conditions.[6]

The combination of (i) competitive markets for insurances with risk assessment of expected litigation and (ii) the fact that companies likely do not under-insure due to non-competitive market conditions suggests that the corporate litigation insurance coverage provides an unbiased estimate of the litigation settlement amounts a given company expects to face conditional on litigation. That is consistent with a literature documenting the information content of D&O insurance (Boyer and Stern (2014), Chalmers, Dann, and Harford (2002), Core (2000)). As we discuss below, this observation plays an important role in our empirical strategy.

[6] On the other hand, companies may over-insure. We discuss this possibility below, and find that it is unlikely to account for our findings.

B. Identification challenge and empirical strategy

In this section, we clarify our empirical approach for the first part of the analysis. We focus on distinguishing between selection and treatment effects when we analyze the star law firm's impact on the expected settlement value. To illustrate that challenge, we model the selection effect as the probability that a law firm is retained on a lawsuit that can be settled at all. Lawsuits that can be settled are associated with a "baseline" settlement amount. The treatment effect, on the other hand, refers to the law firm's ability to generate a larger (more favorable) settlement. This framework focuses on the first-order issue of the law firm's impact on expected settlement. In the second part of the analysis, we relax these assumptions, and allow for the possibility that the law firm's "treatment" involves the ability to raise the likelihood of reaching a settlement.

Consider a stylized setting with the following players: a corporation, which may receive a lawsuit; insurance companies, which provide insurance against that lawsuit; and law firms, which may represent the plaintiffs on the lawsuit. There are two potential plaintiff law firms, a star (S) and a non-star (NS), which may in principle differ in their likelihood to be retained in a lawsuit that can be settled at all (corresponding to the selection effect) and their ability to generate a larger settlement value (corresponding to the treatment effect). There are three dates 0, 1, and 2; zero discount rates and universal risk-neutrality are assumed.

At time 0, the corporation purchases insurance against lawsuits on a competitive insurance market. It seeks insurance due to institutional reasons, reflecting the fact that nearly all public U.S. firms have one; but it is otherwise risk-neutral.[7] Also at this date, the corporation determines how much insurance coverage to purchase. At time 1, each law firm is retained as plaintiff on a lawsuit.

[7] For instance, it may be difficult to hire managers without providing them with Directors & Officers' (D&O) insurance (e.g. Larcker and Tayan (2011, p. 87)).

At time 2, the lawsuit is settled or dismissed, and all payoffs are realized. The model's solution yields expressions for the equilibrium settlement amounts and insurance coverage, which we will relate to our empirical strategy.

The solution proceeds by backwards induction: First, we determine the law firms' choice at time 1; next, we use it as an input for the corporation's and insurance companies' choices at time 0.

Let δ denote the probability that a given lawsuit reaches a settlement at all. That probability may be different for star (δ_S) and non-star law firms (δ_{NS}). A "baseline" settlement value $R > 0$ is common knowledge to all players. The actual settlement value, however, may be larger than R: conditional on reaching a settlement, the law firm scales up the expected settlement amount relative to the "baseline" R by a factor $k > 1$, interpreted as the treatment ability of the law firm, so that the final settlement amount is kR. Stars and non-stars have treatment abilities denoted by k_S and k_{NS}, also in principle different from each other. The expected settlement given δ and the firm's treatment ability k is thus given by:

$$E(Settlement|k, \delta) = \delta k R. \tag{2}$$

The law firm's payoff is equal to a fraction of the settlement, and thus it equals 0 if a settlement is not reached (that is consistent with the "no win, no pay" law firm compensation contract that is predominant in corporate litigation (Brickman (1989), Horowitz (1995), Krishnan and Kritzer (1999)).[8] Similarly, the law firm's payoff is 0 if it does not pursue the lawsuit. Under these assumptions, both law firms always want to pursue their lawsuits.

At time 0, the corporation and the insurance companies know R. Neither, on the other hand, knows what plaintiff law firm the corporation will face in a potential lawsuit at time 1.

[8] For simplicity, we abstract from any fixed costs that the plaintiff law firm may face.

Corporations therefore demand an amount of insurance coverage equal to the expected settlement amount conditional on the lawsuit reaching a settlement, i.e. $\bar{k}R$ where $\bar{k} \equiv \frac{1}{2}(k_S + k_{NS})$ denotes the average law firm's treatment ability. Insurance companies are competitive, so they set an insurance premium equal to the present value of the expected settlement they may have to pay, i.e. $\bar{\delta}\bar{k}R$, where $\bar{\delta} \equiv \frac{1}{2}(\delta_S + \delta_{NS})$. That is a fair price from the point of view of the risk-neutral corporation, so that no players have an incentive to deviate and the model's solution is complete.

In the data, we observe the average settlement amount associated with a given law firm from equation (1). Introducing indexes for law firm f and lawsuit i and a multiplicative error term $e^{\varepsilon_{if}}$ and taking logs yields:

$$\ln\left(Settlement_{if}\right) = \ln\left(\delta_f\right) + \ln\left(k_f\right) + \ln(R_i) + \varepsilon_{if}. \tag{3}$$

Thus, if we compare the average settlements between star and non-star law firms we have in expectation:

$$\underbrace{\ln(\delta_S) - \ln(\delta_{NS})}_{\text{Selection effect}} + \underbrace{\ln(k_S) - \ln(k_{NS})}_{\text{Treatment effect}} \tag{4}$$

In other words: If the star plaintiff law firm is associated with larger settlements on average, that could be because it is more often retained in lawsuits that settle ($\delta_S > \delta_{NS}$), because it is better able to reach a favorable settlement ($k_S > k_{NS}$), or both. That clarifies the empirical challenge of separating the treatment and selection effects in the data.

Looking at insurance coverage can help address that challenge. Recall that the corporation seeks a coverage equal to $\bar{k}R$. Ex post, the probability that a settlement is paid out for a lawsuit litigated by plaintiff law firm f is δ_f.Thus, the average insurance coverage for lawsuits litigated by law firm f is $\bar{k}R\delta_f$. Proceeding in a similar way as for the settlement amount, introducing indexes and a multiplicative error term $e^{\eta_{if}}$ and taking logs yields:

$$\ln(Coverage_{if}) = \ln(\delta_f) + \ln(\bar{k}) + \ln(R_i) + \varepsilon_{if}. \tag{5}$$

and in expectation, the difference in coverage between star and non-star law firms is:

$$\ln(\delta_S) - \ln(\delta_{NS}). \tag{6}$$

That corresponds to the selection effect. It follows that comparing $\ln(Settlement_{if}) - \ln(Coverage_{if})$ between star and non-star law firms yields in expectation:

$$\ln(k_S) - \ln(k_{NS}), \tag{7}$$

thus isolating the treatment effect. The above expression clarifies our baseline approach of comparing the difference between log-settlement and log-insurance coverage between star and non-star law firms, to assess the treatment effect of the stars.

IV. The performance of star plaintiff law firms

A. Does insurance coverage predict the settlement amount?

A key assumption behind our identification approach is that the insurance coverage purchased by the defendant company reflects the settlement amount it expects to pay conditional on litigation. In addition to the institutional reasons discussed in Section III.A, we now present two pieces of empirical evidence supporting that assumption.

First, we quantify how much of the variation in settlement amounts is explained by insurance coverage. In Appendix Table A.6, we regress the log-settlement amount on a number of explanatory variables. In column (1), the set of explanatory variables includes those used by Kim and Skinner (2012); those variables appear to explain 4% of the observed variation in log-settlement amounts. When we include the log-insurance coverage among the control variables in column (2), the R-squared rises to 67%. In fact, even as the only regressor log-insurance coverage generates an R-squared of 65% (column (3)), and the inclusion of filing year and defendant corporation fixed effects raises the R-squared only modestly, to 87% (column (4)). In sum, insurance coverage predicts settlement amounts, over and above standard explanatory variables as well as fixed effects.

Second, we ask to what extent insurance companies have access to information specific to the corporations they insure. One possibility is that insurers apply standardized, one-size-fits-all prices to all their clients; as a result, some insurance policies might be mispriced and prospective defendant companies might choose to over- or under-insure. Our data indicate that this is unlikely, and in fact insurance companies have access to corporation-specific information that they use in their pricing decisions. In this test, we exploit detailed information on insurance pricing provided to us by a leading primary D&O insurer, who shared with us a sample of defendant clients from its portfolio over the period 2005-2016. Out of those defendants, 211 are associated with lawsuits in our dataset, with \$10.6m average primary insurance coverage limit and 0.021 price per unit of coverage limit (defined as the insurance premium divided by the insurance coverage). Using those data, we study the behavior of per-unit insurance prices around the filing of a lawsuit against the insured corporation. Figure A.1 summarizes the results. We find that per-unit insurance prices increase in the two years prior to the lawsuit filing, with a statistically significant increase exactly prior to the filing. That is consistent with the notion that the insurance provider has access to information suggesting that the likelihood of a lawsuit has increased.

B. Baseline Results

This section reports our baseline finding: relative to the benchmark of insurance coverage, the performance of star law firms is modest. Our baseline regression is:

$$y_{if} = \alpha + \beta Star_f + \gamma' x_{if} + \varepsilon_{if} \tag{9}$$

where $Star$ denotes the "star" indicator, equal to 1 if plaintiff law firm f is a top-10 law firm, and x is a vector of control variables used by Kim and Skinner (2012), including filing year and defendant company fixed effects. The dependent variable y_{if} is $Settlement_{if}$, the natural logarithm of the amount of the settlement (expressed in millions of 2010 dollars) on lawsuit i with plaintiff law firm f; $Coverage_{if}$, the log-insurance coverage amount; or the difference $Settlement_{if} - Coverage_{if}$.

The estimates are reported in Table 2. They show that star law firms are associated with much larger settlements: When the $Star$ indicator equals 1, the settlement amount is 40% (column (4)) to 54% (column (1)) larger. The question is how much of that is attributable to treatment – star law firms being able to reach a larger settlement on any given case – and how much to selection – star law firms being skilled at being retained on those lawsuits where any law firm would be able to reach a large settlement. To answer that question, in columns (3) and (5) we replace the dependent variable by $Settlement - Coverage$, the difference between log-settlement and log-insurance coverage which, as we argued, removes the selection effect. Our results suggest a much smaller treatment effect of star law firms: the coefficient estimates imply a 9% (column (5)) to 12% (column (3)) larger settlement.

A back-of-the-envelope calculation based on columns (4) and (5) reveals the economic magnitude of the implied potential performance misattribution. The estimates of column (4) imply that star law firms are associated with about 40% larger settlements, i.e. an extra \$1.50 million for the median settlement of \$3.692 million. At the median fee of 25% of the settlement amount (= \$0.908m / \$3.692m from Table 1), that means that a plaintiff law firm enjoying star status earns about \$370,000 more per lawsuit than a regular one. The estimates of column (5), however, imply that it should only earn about 1/4 of that, or about \$90,000; i.e. plaintiffs pay stars in excess of the treatment effect about \$280,000 million on the median settled lawsuit.

This calculation is based on median fees and hence a conservative estimate; but we can expect that star law firms will charge higher fees. In a separate set of tests, reported in Table 3, we estimate a regression analogous to equation (9), replacing the dependent variable by log-fees or log-fees plus expense reimbursements. The estimates indicate that indeed star law firms charge 72% higher fees relative to the average law firm (column (1)), implying an extra payment to stars of \$650,000, and a pay in excess of the treatment effect of over \$500,000 on the median settled lawsuit.

C. Robustness

We now present a number of robustness checks on the baseline test discussed in the previous section; the results of these tests are summarized in Table 4. First, we consider alternative proxies for law firm status. We look at $Star\ (fees)$, an alternative top-10 firm indicator based on fees rather than settlement amounts, and at two continuous measures of rank, $Rank$ and $Rank\ (fees)$, all defined above. We re-estimate the baseline regression (9), replacing $Star$ by those alternative proxies. The results are reported in panel A, columns (1)-(3). Under all alternative proxies, the results are similar to our baseline, in terms of statistical significance and economic magnitude. In all cases, star law firms ($Star\ (fees)$ indicator equal to 1, or a higher value of the $Rank$ and $Rank\ (fees)$ variables) are associated with higher settlement amounts, but smaller settlements net of insurance coverage. Our baseline results, therefore, do not depend on the specific proxy for law firm status used in the previous section.

The second set of robustness checks revolves around the treatment of the standard errors. First, we focus on the potential serial correlation in settlement amounts generated by a given law firm. To address a potential correlation between $Settlement$ (and $Settlement - Coverage$) on the left-hand side of equation (9) and $Star$ on the right-hand side, which is based on past settlements, we run regressions in the spirit of Fama and MacBeth (1973), drawing inference from the average coefficients from year-by-year cross-sectional regressions corresponding to equation (9). As each cross-sectional regression is estimated on one year of data only, serial correlation in settlement amounts is not a concern.[9] The results are reported in panel A (column (4)): the average coefficient estimates are close to our baseline, suggesting that the results of Table 2 are not affected by serial correlation. As an additional test, we re-estimate our baseline equation (9) with two- and three-way clustered standard errors (columns (5)-(6)), clustering by defendant firm and filing year, and by defendant firm, law firm, and filing year. The statistical significance of the resulting estimates is comparable to the baseline regressions of Table 2.

The third set of checks is about potential omitted variables. First, we include a large number of additional control variables in the baseline regression; second, we include additional fixed effects. In panel B, columns (1) includes additional controls for a number of defendant corporation characteristics (book-to-market, dividend payout ratio, ROA, debt-to-total assets ratio, interest coverage ratio, R&D-to-sales ratio, advertising-to-sales ratio, staff-to-sales ratio, and discretionary accruals ratio), and column (2) includes controls associated with transparency, liquidity, the quality of corporate governance, and ownership structure (analyst forecast dispersion, forecast errors, and coverage, bid-ask spread, Amihud (2002) illiquidity ratio, and idiosyncratic volatility, Bebchuk, Cohen, and Ferrell's (2009) E-index, board size, log-CEO salary, bonus, and equity pay,

---

[9] Due to the relatively small number of observations per settlement year prior to 1992, we constrain the sample to the settlement years from 1992 onwards in this test. Although serial cross-correlation between settlement amounts and the $Star$ indicator is not a problem with the Fama-MacBeth approach, serial correlation in the $Star$ indicator itself and the other right-hand side variables can still be an issue. To adjust for that, the standard errors apply the Newey-West correction, based on a 5-year lag window.

institutional ownership level, equity stake controlled by the top 10 largest institutional shareholders, ownership of institutional block-holders, number of institutional investors, number of institutional block-holders, and institutional ownership HHI). All additional control variables are defined in detail in Appendix Table A.1. The introduction of additional control variables does not affect the baseline finding of a small treatment effect for star law firms, relative to the benchmark of insurance coverage. In columns (3)-(6), we repeat the baseline regression including court fixed effects, lawsuit type fixed effects, plaintiff law firm fixed effects, as well as all three additional fixed effects. The coefficient estimate on the $Star$ indicator becomes smaller in these cases, ranging between nearly 0 (columns (5)-(6)) and 0.092 (column (3)). In sum, this set of checks confirms that the treatment effect of star law firms appears small.

Four final checks are reported in panel C. First, we collapse lawsuits that have the same court, docket number (unique identification code of a court case), and filing date but different settlement dates (column (1)), i.e. related lawsuits affecting different defendants (e.g. the company and its directors); the results are, statistically and economically, very close to the baseline of Table 2. Second, we split the sample based on the status of the defendant law firm facing the plaintiff law firm, gauging the status based on a five-year rank count of the number of lawsuits associated with a given defendant law firm, similar to what we do with the plaintiff law firms. When the defendant law firm is lower-ranked, we find slightly larger estimates of the coefficient on the star plaintiff law firm indicator, but still economically small at 0.14-0.15; when the defendant law firm is higher-ranked, we find estimates near 0. Thus, even when not facing a higher-ranked defense law firm, the effect of star plaintiff law firms appears modest. Third, we ask if shareholder lawsuits, which represent a large component of the lawsuits in our sample, differ from other lawsuits in a meaningful way. We distinguish between shareholder class actions (which arise under federal law) and derivative actions (which arise under state corporate law), and introduce interaction terms between $Star$ and indicators for either kind of lawsuit. The estimates indicate an effect of star law firms in class actions somewhat larger than the baseline, but still economically small. The effect for derivative actions is statistically indistinguishable from zero, but similar to the baseline effect reported in Table 2 (column (5)). Fourth, we trace the effect of star plaintiff law firms over different time periods: pre-2000, 2001-2005, 2006-2010, and 2011-2016. The estimates indicate a small and insignificant impact of star law firms on settlement amounts (net of the insurance benchmark or otherwise) in the years prior to 2000. The $Settlement - Coverage$ effects become larger thereafter, but are still small relative to the larger settlements associated with star law firms.

Taken together, the checks discussed in this section support our baseline results. They suggest that the finding of a small impact of star law firms is robust to alternative proxies for law firm status, treatment of the standard errors, potential omitted variables, different types of lawsuits, aggregation of related lawsuits, and over time. This is consistent with the view that star law firms have a relatively small treatment effect on settlement amounts.

D. Alternative explanations

We discuss three potential alternative explanations for our findings. The first one is measurement error, due to the fact that when lawsuits are dismissed the insurance coverage cannot be observed, and it is set to zero like the settlement amount. The second one is over- or under-insurance: our finding of a small star law firm treatment effect could be explained if defendants facing stars tend to over-insure and/or defendants facing non-stars tend to under-insure. The third one is that plaintiffs do no seek redress in the form of a dollar settlement, but rather in terms of changes to the defendant firm's governance; by focusing on settlement amounts, therefore, we may underestimate the actual impact of star law firms.[10]

The censoring of insurance coverage in dismissed lawsuits implies a potential measurement error bias, because most likely in those cases the actual insurance purchased by the defendant company is not zero but, rather, a positive amount. That results in a more favorable estimate of the treatment effect, because we attribute a performance ($Settlement - Coverage$) equal to zero, whereas the actual performance should be negative, as a zero settlement is associated with a (most likely) non-zero insurance coverage.

To assess the impact on our estimates, we perform four checks. The first one is list-wise deletion: we estimate the baseline regression of equation (9) restricting the sample to the set of lawsuits with a positive settlement amount. The estimates are reported in Panel A of Table 5, column (1), and show a coefficient estimate on $Star$ of 0.252, larger than the baseline estimate of Table 2. In Panel B of Table 5, column (1) shows that, for those lawsuits, star plaintiff law firms are associated with a 42% larger insurance coverage, so that the implied treatment effect is 38% (= 0.252 / (0.252 + 0.419)) of the overall larger settlement associated with star law firms.

The other three checks rely on data augmentation and imputation methods to form an estimate of the actual insurance coverage in dismissed lawsuits. First, we use mean imputation. We regress the non-missing log-insurance coverage on indicators for lawsuit category, defendant firm Fama-French industry, and lawsuit settlement year, and use the coefficient estimates to obtain imputed values for firms in a given lawsuit category, industry, and year. We then obtain an updated

[10] Another potential driver of our results is the possibility that when a defendant corporation faces multiple lawsuits at the same time, they reduce the overall available insurance coverage so that the plaintiff law firms' performance is artificially inflated. Unlike the other alternative explanations discussed in this section, this mechanism could induce a bias in favor of star law firms (to the extent that they tend to face defendant corporations with multiple lawsuits). Several tests, reported in Appendix Table A.7, indicate however that this mechanism does not appear to have a significant impact on our findings.

$Settlement - Coverage$ variable, which replaces the imputed insurance coverage values where the lawsuits were dismissed, and re-estimate equation (9). The estimates are reported in Panel A of Table 5, column (2). The coefficient on $Star$ is positive, and the magnitude (0.103) is close to the baseline estimate from Table 2; combined with the insurance coverage estimates from Panel B of Table 5, this implies a treatment effect of about 10% of the overall settlement effect.

Second, we use Markov Chain-Monte Carlo (MCMC) data augmentation combined with multiple imputation (Rubin (1987)). MCMC data augmentation obtains a distribution of possible values of $Coverage$, from which imputed values are drawn. Those values are then plugged into the variable $Settlement - Coverage$, and the baseline test in equation (9) is estimated. To account for the uncertainty in the imputed values, the MCMC process is repeated over 500 rounds; the resulting estimates are averaged to obtain one estimate for the coefficient on $Star$, and the associated standard errors are obtained through the Rubin (1996) formulas.[11] The estimates are reported in Panel A of Table 5, column (3). The estimated coefficient on $Star$ is larger than the baseline estimate of Table 2 at 0.25, which combined with the estimates of Panel B of Table 5 implies a treatment effect of about 18% (= 0.251 / (0.251 + 1.159)) of the overall settlement.

Third, we use the Random Forest algorithm (Brieman (2001), Mullainathan and Spiess (2017)), a machine-learning tool that based on a large number of random decision trees generates a prediction of the censored values of insurance coverage for dismissed lawsuits using the available data used as a "training set".[12] We impute the Random Forest prediction for those censored values, re-run equation (9), and report the estimates in Table 5, PanelA, column (4). In this case, the estimated coefficient on $Star$ equals 0.094, close to the baseline estimate of Table 2 and implying a treatment effect of 15% (= 0.094 / (0.094 + 0.548)) of the overall settlement.

---

[11] We provide details on this approach in Appendix B.

[12] We provide details on this approach in Appendix C.

Summing up, the four approaches we discussed provide a range of values for the coefficient on $Star$ between 0.094 and 0.251. Under the most favorable estimate, the "treatment effect" from the $Settlement - Coverage$ regression accounts for 38% of the overall performance of star law firms; under the least favorable one, about 10%. Combined, this evidence suggests that our baseline result of a small treatment effect associated with star plaintiff law firms is not explained by the unobserved insurance coverage data for dismissed lawsuits.

A second potential explanation for our baseline finding is over- and/or under-insurance. It is possible that (a) defendant corporations that tend to face star plaintiff law firms purchase insurance in excess of the expected settlement amount (i.e. they over-insure), or (b) defendant corporations that tend to face non-star plaintiff law firms purchase insurance short of the expected settlement amount (i.e. they under-insure). Either possibility would introduce a bias against star law firms in our test, underestimating their treatment effect.

Before discussing our checks against this alternative explanation, we point out that some of the features of the corporate litigation insurance market discussed in Section III.A suggest that systematic over- or under-insurance is unlikely. Inefficient insurance pricing (cheap or expensive insurance) is not expected because the insurance market is competitive, as there are low entry barriers for insurers, and transparent, as prospective insured are expected to share both public and private information with their insurers. Furthermore, the quote of the primary insurer is made available to the excess insurers. Consequently, insurance prices tend to reflect the litigation risk of the prospective insured in an accurate manner, leaving few if any "arbitrage opportunities" for the insureds. Moreover, although there is evidence suggesting that managers act more conservatively when faced with litigation risk, they appear to do so mainly through other leverages than insurance coverage, such as their innovation policy (e.g. Lin, Liu, and Manso (2017)). If anything, practitioners tend to debate the possibility that the insureds increase deductibles, reducing the effective coverage to lower the overall insurance cost; but even that appears to be associated with modest gains at best (Guggenheim and Henderson (2008)).

These arguments notwithstanding, we run three checks against this over-/under-insurance. In the first one, we flag as over-insured those corporations that pay a low price for insurance (suggesting low risk) and have a high coverage (suggesting too much insurance), relative to a benchmark. Similarly, we flag as under-insured corporations that pay a high price and have low coverage.

One challenge is that insurance prices and overall coverage are not publicly disclosed. We address this difficulty combining a unique dataset with machine-learning techniques to produce price per dollar of coverage and coverage estimates for the defendant companies in our main data. We build this part of our analysis on the D&O insurance quotes for 221 defendant companies provided to us by the leading D&O insurance provider introduced in section IV.A. We use this database as a "training set" for the Random Forest algorithm, described above and in greater detail in Appendix C, to obtain an estimate of the primary D&O insurance price for defendant companies, based on characteristics observable up to the end of the year prior to the lawsuit settlement or dismissal.

Based on the above discussion, we flag over-insured companies as follows. We regress insurance price per dollar of coverage and insurance coverage on indicators for size (total assets) quintile, settlement year indicators, and interaction terms, and obtain residuals. We consider a corporation over-insured if its price residual is negative and its coverage residual positive. In additional checks, we repeat this procedure augmenting the price and coverage regressions to include industry indicators or industry and previous litigation intensity indicators, and their interactions with settlement year indicators. We define under-insured corporations similarly, flagging them if the price residual is positive and the coverage residual negative. We then estimate the baseline regression of equation (9) excluding from the sample over-insured corporations that face star plaintiff law firms, under-insured corporations that face non-stars, or both.

The results are reported in Table 6. In these tests, the sample is restricted to lawsuits covered by D&O insurance, as we determine over-/under-insurance based on D&O insurance data in the first place. Across all the specifications, the estimates of the treatment effect associated with star plaintiff law firms are smaller than the baseline estimate of Table 2, and in one case statistically indistinguishable from 0. This evidence is consistent with the notion that over- or under-insurance does not explain our baseline findings.

The second check is based on a matching approach. To illustrate this check, suppose the treatment effect of star law firms is in fact substantial, and that when the defendant company expects a large lawsuit, it also expects to face a star plaintiff law firm. As a result, confronted with a prospective large settlement, the defendant purchases a large insurance coverage. To fix ideas, let e^A be the true star law firm treatment effect, and e^B the extra coverage that corporations purchase when they expect large lawsuits. Let also w_{LS} denote the proportion of observations in equation (9) associated with large settlements and star law firms, w_{SS} the proportion of small settlements with star law firms, and w_{LNS} and w_{SNS} the corresponding proportions with non-star law firms. A regression of $\ln(Settlement) - \ln(Coverage)$ on the $Star$ indicator then estimates:

$$w_{LS} \times (A - B) - w_{LNS} \times (-B) + w_{SS} \times A - w_{SNS} \times 0. \qquad (10)$$

If defendants that expect large lawsuits and star law firms tend to over-insure, we expect $w_{LS} > w_{LNS}$, leading to underestimating the "true" treatment effect A, as equation (10) clarifies. This problem can be solved by stratifying the sample such that $w_{LS} \approx w_{LNS}$ and $w_{SS} \approx w_{SNS}$. To that end, we employ a matching approach. For each lawsuit with a star plaintiff law firm, we include in the regression sample n lawsuits with non-stars, with $n = 10$, 5, 3, or 1. The results (here based on all lawsuits, not just those covered by D&O insurance) are reported in Table 7. In three out of four specifications, the estimates of the coefficient on the $Star$ indicator are close to the baseline estimate of Table 2 and insignificantly different from zero; in column (4), the coefficient estimate is actually negative.

In the third check, we split the sample based on the defendant corporation's cash holdings (above/below the median). The idea is that corporations that are flush with cash may be more willing to purchase relatively less insurance, whereas corporations that have lower cash holdings may be more conservative and have a greater propensity to over-insure.[13] The results are reported in Table 7 (columns (5)-(6)), and are nearly identical for high- and low-cash defendant corporations. Together, these three checks indicate that the results of Table 2 are not an artifact of insurance coverage absorbing part of the treatment effect of star law firms.

The third potential alternative explanation is that the payoff plaintiffs seek is not exclusively monetary, but rather they derive a benefit from material changes in management and/or governance practices. As a result, the defendant company might be able to avoid having to pay a large settlement on condition of implementing changes to its governance structure; and conceivably this might be a more favorable outcome for the plaintiff, as it brings about gains over the longer term. As argued by Romano (1991), this would be a salutary Coasian outcome, where the defendant company, rather than the court, is able to redress the problems that give rise to the lawsuit in the first place. According to this line of reasoning, an alternative explanation for our

[13] We thank Kevin Murphy for suggesting this possibility to us.

findings is that the beneficial impact of star law firms manifests itself, rather than in higher settlement amounts, in changes in governance at the defendant company.

Indeed, changes along several corporate governance dimensions do take place around the average lawsuit in our data. We consider changes in board composition, CEO identity, CEO compensation, and in the Bebchuk, Cohen, and Ferrell (2009) E-index. As reported in Table 8, panel A, over the course of the average lawsuit we observe the departure (addition) of 1.2 (1.6) board members, and a net reduction in board size of 0.4 members. Similar changes are found when we restrict the sample to shareholder lawsuits. Relative to the average pre-lawsuit board size of about 7 members, these changes appear economically meaningful, and potentially value-improving based on Yermack's (1996) evidence that smaller boards are associated with higher stock market valuation. In a similar spirit, we also observe a CEO change in 16% of lawsuits (overall as well as shareholder lawsuits). CEO bonuses and equity compensation (restricted stocks plus stock options) are also reduced by about 20%, but the CEO's salary increases by 24% (similar effects obtain when restricting the sample to shareholder lawsuits). Finally, we observe an increase in the E-index, signaling greater managerial entrenchment; but the effect is not statistically significant at conventional levels. In sum, we observe potentially meaningful changes in governance, some of which at least may be value-improving.

The question is if any governance improvements (or even just changes) are *more* likely when the plaintiff law firm is a star. We run a set of tests for this possibility, looking at corporate governance changes following the lawsuit. We estimate:

$$\Delta G_{if} = \alpha + \beta Star_f + \gamma' x_{if} + \varepsilon_{if} \tag{10}$$

The dependent variable ΔG denotes the annualized percentage change in a given corporate governance quality proxy over the period from the end of the year before lawsuit i is filed to the end of the year when it is settled (or dismissed), and x includes the Kim and Skinner (2012) controls, as well as defendant company and filing year fixed effects.

The results are reported in Table 8, panels B (all lawsuits) and C (shareholder lawsuits). Overall, we find little evidence that star plaintiff law firms are associated with governance improvements. Across the different specifications, the coefficient on $Star$ is small and mostly statistically indistinguishable from zero. The only significant effects we detect are a positive association between $Star$ and the likelihood of a CEO change, which is 4 percentage points higher in shareholder lawsuits, and between $Star$ and departures from the board of directors, which are 14% lower (Panel B). There is no evidence of a significant relation between star plaintiff law firms and the components of CEO compensation. Similar results obtain when restricting the attention to shareholder lawsuits.

Overall, the evidence reported in this section provides little support for the view that the small treatment effect of star plaintiff law firms on settlement amounts can be compensated by changes in classic corporate governance measures. In further tests, omitted for brevity, we consider a range of indexes of corporate social responsibility from the MSCI-KLD database, related to employee relations, diversity, community, human rights, and environmental performance. We find no evidence of any association between those indexes and $Star$, suggesting that even broadening the scope of governance changes is unlikely to reveal a material treatment effect of stars.

VI. Discussion

The results of Table 2 show that a large component of the settlements generated by star law firms is explained by selection. That suggests that stars are not especially better than the average law firm at reaching a favorable settlement for their clients. Combined with the finding that they tend to charge higher fees (Table 3), this evidence indicates that plaintiffs are paying their star lawyers well in excess of the treatment effect. That raises the question: What are star law firms' clients paying for? There are two possible answers to that question, one more benign, one less so, which we discuss below.

A. The value of the "risk" effect

The more benign possibility is that the star law firms do not create value just by raising the settlement value ("return" effect). In fact, the "risk" effect can be valuable in its own right, and the stars may create value for their client by reducing uncertainty about the outcome of the lawsuit. The estimates of Table 9, columns (1)-(2), indicate that stars have an 8-10% higher probability of reaching a settlement. This effect, just like the "return" effect discussed in the previous section, may be due to a combination of treatment and selection. Treatment implies that star law firms can reduce uncertainty regarding the outcome of the lawsuit in a meaningful way, and plaintiffs that are averse to such uncertainty or simply prefer a reliable outcome of the lawsuit to a drawn-out legal battle attach a high value to that, justifying the higher fees charged by stars. A possible selection mechanism, on the other hand, is that plaintiffs turn to star law firms for "tougher" lawsuits that have little chance of reaching a settlement in the first place; under this view, the treatment effect of star law firms on lawsuit uncertainty may be even larger than 10%.

To address this possibility, we relate the star law firm indicator to the price of insurance. Intuitively, the estimates of Table 9 columns (1)-(2) look at the settlement probability conditional on a star plaintiff law firm; the price of insurance, instead, is a function of the ex ante settlement probability, i.e. regardless of the plaintiff law firm.[14] Under the selection hypothesis, we should expect star plaintiff law firms to be associated with a high insurance price, i.e. with a low ex ante

[14] Due to the prior claims exclusion, insurance coverage cannot be ex-post increased over the course of a given lawsuit. Thus, the insurance premium associated with the coverage for a given lawsuit is indeed an ex ante measure of risk.

settlement probability. We find, however, a weak *negative* association (Table 9, column (3)), implying that the selection effect, if at all present, is very modest.

That suggests that the "risk" effect of star law firms raises the probability of a settlement by at most 10%. Combining that value with the estimates from the previous section provides an upper bound for the star law firm's effect on expected settlement value at about 37.5% = (1 + 10%) × (1 + 25%) – 1 (where 25% is the most favorable estimate of the increase in settlement amount from the previous section). The estimates of Table 3 indicate that they earn fees that are on average about 72% higher than non-stars, suggesting an abnormal payoff of at least 34.5% (= 72% – 37.5%) for the stars. Great caution should be exercised before drawing general welfare implications; for instance, plaintiff risk-aversion may justify the larger fees earned by the stars.

B. Frictions

A less benign answer to the question "what do star law firm clients pay for?" is that plaintiffs could indeed improve their welfare by turning to non-stars, but are unable to do so due to frictions related to the industrial organization of the legal services industry. One such friction relates to the marketing strategies followed by law firms. To the extent that the lawsuit results from a law firm aggressively approaching a prospective plaintiff, the latter's ability and willingness to "shop" for alternative, less expensive legal counsel might be limited, thus sustaining the dominant position of stars. That suggests that the small treatment effects that we document ought to be driven by such "law firm-initiated" lawsuits; conversely, we should observe larger treatment effects on lawsuits where the initiative rests more firmly with the plaintiffs themselves.

To address this possibility, we attempt to identify a set of lawsuits that are less likely "law firm-initiated," by looking at likely cases of lawsuits driven by activist shareholders. Intuitively, activist shareholders have the sophistication and information to shop for alternative legal counsel if a given law firm underperforms. As a result, a (star) law firm has a stronger incentive to deliver a better performance when retained by an activist shareholder.

To identify lawsuits that are likely related to cases of shareholder activism, we focus on all defendant corporations in our data for which a Schedule 13D form was filed with the SEC in the two-year period prior to the lawsuit filing year. We flag these lawsuits as activist-driven, and estimate regression (10) separately for those lawsuits and the rest. The results are reported in Table 9, columns (3) and (4). They show significant estimated treatment effects for the activist-driven lawsuits, nearly 3 times larger than for other lawsuits, consistent with the notion that aggressive marketing can at least in part explain the small effects observed in the overall sample.

Conclusion

We study the performance of dominant law firms ("stars") in corporate litigation, on a large sample of corporate lawsuits in the U.S. over the period 1970-2016. We exploit insurance coverage as a benchmark for expected settlement amounts conditional on being sued, to separate to what extent (a) stars reach more favorable settlements on any lawsuit ("treatment effect") or (b) stars tend to be retained on lawsuits where a favorable settlement is ex ante more likely ("selection effect"). Our findings indicate that selection explains much of observed settlement amounts, and that star law firms have an economically small treatment effect. This result is not explained by measurement error or over-/under-insurance, and stars do not appear to be associated with significant improvements in governance at the defendant companies. The stars' large market share and the high fees they earn may be justified by their ability to reduce uncertainty about the lawsuit outcome or by frictions, such as aggressive marketing and limited client sophistication and bargaining power, which limits the stars' clients' ability to turn to other law firms.

References

Amihud, Y. 2002. Illiquidity and stock returns: Cross-section and time-series effects. *Journal of Financial Markets* 5, 31-56.

Appel. I. 2016. Governance by litigation. Working paper, Boston College.

Baker, T., and S. J. Griffith. 2007. Predicting corporate governance risk: Evidence from the Directors' & Officers' liability insurance market. *University of Chicago Law Review* 74, 487-544.

Baker, T. and S.J. Griffith. 2010. *Ensuring Corporate Misconduct*, University of Chicago Press, Chicago.

Barton, B. H. 2001. Why do we regulate lawyers? An economic analysis of the justifications for entry and conduct regulation. *Arizona State Law Journal* 33, 429-485.

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

Boyer, M. M., and L. H. Stern. 2014. D&O insurance and IPO performance: What can we learn from insurers? *Journal of Financial Intermediation* 23, 504-540.

Brieman, L. 2001. Random forests. Working paper, University of California at Berkeley.

Brickman, L. 1989. Contingent fees without contingencies: Hamlet without the prince of Denmark? *UCLA Law Review* 37, 29-137.

Burk, B. A., and D. McGowan. 2011. Big but brittle: Economic perspectives on the future of the law firm in the new economy. *Columbia Business Law Review* 1, 76-87.

Cameron, A. C., and P. K. Trivedi. 2005. *Microeconometrics: Methods and Applications*. Cambridge University Press, New York.

Chalmers, J. M. R., L. Y. Dann, and J. Harford. 2002. Managerial opportunism? Evidence from Directors' and Officers' insurance purchases. *Journal of Finance* 57, 609-636.

Chatain, O. 2010.Value creation, competition, and performance in buyer-supplier relationships. *Strategic Management Journal* 32, 76-102.

Chung, H. H., and J. P. Wynn. 2008. Managerial legal liability coverage and earnings conservatism. *Journal of Accounting and Economics* 46, 135-153.

Coffee, J, 2010. Litigation Governance. *Columbia Law Review* 110, 288-351.

Core, J. E. 2000. The directors' and officers' insurance premium: An outside assessment of the quality of corporate governance. *Journal of Law, Economics, and Organization* 16, 449-477.

DuCharme, L. L., P. H. Malatesta, and S. E. Sefcik. 2004. Earnings Management, stock issues, and shareholder lawsuits. *Journal of Financial Economics* 71, 27-49.

Fahlenbrach, R., A. Low, and R. M. Stulz. 2010. The dark side of outside directors: Do they quit when they are most needed? ECGI Working paper 281/2010 and NBER Working paper 15917.

Fama, E. F., and J. D. MacBeth. 1973. Risk, return and equilibrium: Empirical test. *Journal of Political Economy* 81, 607-636.

Fama, E. F., and K. R. French. 2001. Disappearing dividends: Changing firm characteristics or lower propensity to pay? *Journal of Financial Economics* 60, 3-43.

Ferris, S. P., T. Jandik, R. M. Lawless, and A. Makhija. 2007. Derivative lawsuits as a corporate governance mechanism: Empirical evidence on baord changes surrounding filings. *Journal of Financial and Quantitative Analysis* 42, 143-165.

Garicano, L., and T. N. Hubbard. 2008. Specialization, firms, and markets: The division of labor within and between law firms. *Journal of Law, Economics, and Organization* 25, 339-371.

Guggenheim, S., and K. Henderson. 2008. D&O liability insurance: Lessons learned. Report, Practising Law Institute's 40th Annual Institute on Securities Regulation.

Horowitz, M. 1995. Making ethics real, making ethics work: A proposal for contingency fee reform. *Emory Law Journal* 44, 173-211.

Jensen, M. C., and W. H. Meckling. 1976. Theory of the firm: Managerial behavior, agency costs and ownership structure. *Journal of Financial Economics* 3, 305-360.

Kim, I., and D. J. Skinner. 2012. Measuring securities litigation risk. *Journal of Accounting and Economics* 53, 290-310.
Kinney, T. P. 1994. Stockholder derivative suits: Demand and futility where the board fails to stop wrongdoers. *Marquette Law Review* 78, 172-189.
Kleiner, M. M. 2000. Occupational licensing. *Journal of Economic Perspectives* 14, 189-202.
Krishnan, J. K., and H. M. Kritzer. 1999. Lawyers seeking clients, clients seeking lawyers: Sources of contingency fee cases and their implications for case handling. *Law and Policy* 21, 347-375.
La Porta, R., F. Lopez-de-Silanes, A. Shleifer, and R. W. Vishny. 1997. Legal determinants of external finance. *Journal of Finance* 52, 1131-1150.
La Porta, R., F. Lopez-de-Silanes, A. Shleifer, and R. W. Vishny. 1998. Law and finance. *Journal of Political Economy* 106, 1113-1155.
Larcker, D., and B. Tayan. 2011. *Corporate governance matters: A closer look at organizational choices and their consequences*. FT Press.
Levin, J., and S. Tadelis. 2005. Profit sharing and the role of professional partnerships. *Quarterly Journal of Economics* 120, 131-171.
Lin, C., S. Liu, and G. Manso. 2017. Shareholder litigation and corporate innovation. Working Paper, University of California at Berkeley.
Lowry, M., and S. Shu. 2002. Litigation risk and IPOs. *Journal of Financial Economics* 65, 309-355.
Macey, J. R., and G. P. Miller. 1991. The plaintiffs' attorney's role in class action and derivative litigation: Economic analysis and recommendations for reform. *University of Chicago Law Review* 58, 1-118.
Manso, G. 2011. Motivating innovation. *Journal of Finance* 66, 1823-1860.
Mullainathan, S., and J. Spiess. 2017. Machine learning: An applied econometric approach. *Journal of Economic Perspectives* 31, 87-106.
Rhode, D. H. 2004. Frivolous litigation and civil justice reform: Miscasting the problem, recasting the solution. *Duke Law Journal* 54, 447-483.
Romano, R. 1991. The shareholder suit: Litigation without foundation? *Journal of Law, Economics, & Organization* 7, 55-87.
Rhode, D. L. 2004. Frivolous litigation and civil justice reform: Miscasting the problem, recasting the solution. *Duke Law Journal* 54, 447-483.
Rubin, D. B. 1987. *Multiple Imputation for Nonresponse in Surveys*. J. Wiley & Sons, New York.
Rubin, D. B. 1996. Multiple imputation after 18+ years. *Journal of the American Statistical Association* 91, 473-489.
Seaman, S. R., and I. R. White. 2013. Review of inverse probability weighting for dealing with missing data. *Statistical Methods in Medical Research* 22, 278-295.
Towers Perrin. 2008. *Directors and officers liability: 2008 survey of insurance purchasing trends.*
Yermack, D. 1996. Higher market valuation of companies with a small board of directors. *Journal of Financial Economics* 40, 185-211.
Winston, C., R. W. Crandall, and V. Maheshri. 2009. Measuring lawyers' rents. Working paper, Brookings Institution.
Winston, C., and Q. Karpilow. 2016. Should the US eliminate entry barriers to the practice of law? Perspectives shaped by industry deregulation. *American Economic Review* 106, 171-176.

Table 1 Descriptive statistics

The table reports descriptive statistics for the main variables used in the analysis. For all variables, one observation corresponds to one lawsuit. The variable Settlement | Insurance coverage ($MM) is identical to Settlement ($MM), except in that the sample is restricted to observations where insurance coverage data are available. All dollar quantities are expressed in 2010 dollars. All the variables are defined in Appendix A. The sample is the set of all lawsuits against U.S. public firms filed in the period 1970-2016, contained in the union of the Master Significant Cases & Actions, ISS, Audit Analytics, Stanford Securities Class Action Clearinghouse, and Federal Court Cases databases.

Variable	Mean	St. dev.	Min	P25	Median	P75	Max	N
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Settlement ($MM)	36.932	303.517	0.000	0.000	1.493	8.557	18,947.498	15,595
Settlement | Ins. cvg. ($MM)	45.872	166.864	0.000	0.585	3.692	13.015	1,684.717	1,344
Ins. coverage ($MM)	32.476	144.210	0.000	0.000	2.470	9.345	963.167	1,344
Fees ($MM)	5.757	12.958	0.000	0.456	0.908	4.287	78.817	2,344
Star	0.167	0.373	0.000	0.000	0.000	0.000	1.000	13,111
Star (fees)	0.165	0.371	0.000	0.000	0.000	0.000	1.000	13,111
Rank	0.234	0.423	0.000	0.000	0.000	0.000	1.000	13,111
Rank (fees)	0.167	0.311	0.000	0.000	0.010	0.124	1.000	13,111
Size	0.165	0.310	0.000	0.000	0.010	0.119	1.000	13,111
Sales growth	0.196	0.324	0.000	0.000	0.036	0.201	1.000	13,111
Return	8.025	2.800	2.211	5.896	7.953	9.986	14.337	10,355
Ret. skewness	0.169	0.598	-0.945	-0.006	0.047	0.186	5.038	10,315
Ret. volatility	0.053	0.537	-1.916	-0.192	0.029	0.283	2.221	10,410
Share turnover	0.161	0.700	-1.485	-0.288	0.119	0.593	2.105	10,293

Table 2 Baseline estimates
The table shows the estimates of:

$$y_{ist} = \alpha_i + \alpha_t + \beta Star_{fst} + \gamma' x_{ist} + \varepsilon_{ist}$$

The unit of analysis is one lawsuit s against defendant firm i, settled in year t, where law firm f acts as the plaintiff law firm. In columns (1) and (4) the dependent variable is the log-settlement $\ln(Settlement)$ on lawsuit s involving defendant firm i, taking place in calendar year t. In column (2), the dependent variable is the log-insurance coverage $\ln(Coverage)$. In columns (3) and (5), it is $\ln(Settlement) - \ln(Coverage)$, the difference between log-settlement amounts and log-insurance coverage. $Star_{fst}$ is an indicator variable equal to 1 if plaintiff law firm f ranks among the top 10 firms (whenever multiple plaintiff law firms are present, the indicator is set to 1 if at least one of them is a top-10 firm). x is the vector of control variables used by Kim and Skinner (2012), listed in the table; α_i and α_t denote defendant firm and filing year fixed effects. All the variables are defined in detail in Table A.1 of Appendix A. The *t*-statistics, reported in parentheses, are based on standard errors clustered around defendant company.

Dep. variable:	$\ln(Settlement)$	$\ln(Coverage)$	$\ln(Settlement) - \ln(Coverage)$	$\ln(Settlement)$	$\ln(Settlement) - \ln(Coverage)$
	(1)	(2)	(3)	(4)	(5)
Star	0.536	0.405	0.118	0.406	0.094
	(15.46)	(16.10)	(9.38)	(8.73)	(5.28)
Size				0.127	0.042
				(3.28)	(2.64)
Sales growth				0.127	0.036
				(3.09)	(2.56)
Return				-0.058	-0.011
				(-1.36)	(-0.62)
Ret. skewness				-0.004	0.006
				(-0.21)	(0.77)
Ret. volatility				-0.352	-0.274
				(-1.04)	(-1.88)
Share turnover				0.008	0.005
				(0.97)	(1.40)
Intercept	0.099	0.073	0.026		
	(17.05)	(16.30)	(10.55)		
Filing year f.e.				Y	Y
Defendant firm f.e.				Y	Y
R^2	0.07	0.07	0.02	0.41	0.26
N	13,111	13,111	13,111	8,467	8,467

Table 3 Fees for star plaintiff law firms

The table shows the estimates of:

$$Fees_{ist} = \alpha_i + \alpha_t + \beta Star_{fst} + \gamma' x_{ist} + \varepsilon_{ist}$$

In column (1), the dependent variable is $Fees$, the natural logarithm of the fees charged by the plaintiff law firm (expressed in millions of 2010 dollars); in column (2) the fees also include expense reimbursements. $Star_{fst}$ is the star plaintiff law firm indicator. x is the vector of control variables used by Kim and Skinner (2012); α_i and α_t denote defendant firm and filing year fixed effects. All the variables are defined in detail in Table A.1 of Appendix A. The *t*-statistics, reported in parentheses, are based on standard errors clustered around defendant company.

	(1)	(2)
Star	0.721	0.730
	(10.91)	(11.05)
Controls	Y	Y
Defendant firm f.e.	Y	Y
R^2	0.57	0.57
N	2,344	2,344

Table 4 Robustness

The table reports a number of robustness checks on the baseline results of Table 2. In all panels the dependent variable is $\ln(Settlement) - \ln(Coverage)$. Panel A, columns (1)-(3) considers alternative proxies for law firm status: $Star\ (fees)$ is a top-10 law firm indicator based on fees, $Star\ (count)$ is a top-10 law firm indicator based on the number of lawsuits that a given firm has litigated over the previous five years, and the continuous $Rank$ measure is based on settlement amounts. Columns (4)-(6) consider alternative treatments of the standard errors, running Fama-MacBeth regressions (column (4)), or using two-way clustered standard errors around defendant corporation and year (column (5)) and three-way clustered standard errors around defendant corporation, year, and plaintiff law firm (column (6)). Panel B considers augmented specifications with additional control variables related to the defendant corporation's characteristics (column (1)) and its transparency and governance (column (2)), as well as additional court, lawsuit type, and plaintiff law firm fixed effects (in columns (5)-(6), where the plaintiff law firms are introduced, the regression is estimated on a disaggregated sample where one observation corresponds to one law firm on a given lawsuit, i.e. lawsuits litigated by multiple plaintiff law firms are treated as separate observations for each law firm). Panel C reports a specification where lawsuits with identical defendant firm, court, docket, and filing date, but different settlement date are collapsed (columns (1)), specifications where the sample is split based on the rank of the defendant law firm (low, medium, high, columns (2)-(4); in these columns, the row labeled "% of star plaintiff law firms" reports the fraction of lawsuits with a star plaintiff law firm in each sub-sample), a specification focusing on shareholder lawsuits (class actions and derivative actions, column (5)), and a breakdown of the effects associated with star plaintiff law firms by time period (column (6)). Except in columns (4)-(6) of panel A, the *t*-statistics, reported in parentheses, are based on standard errors clustered around defendant company.

	(1)	(2)	(3)	(4)	(5)	(6)
A. Alternative law firm status proxies and treatment of the standard errors						
Star				0.083	0.094	0.094
				(3.68)	(4.66)	(4.37)
Star (fees)	0.091					
	(5.20)					
Star (count)		0.100				
		(4.47)				
Rank			0.135			
			(5.94)			
Standard errors				Newey-West, 5 lags	Cluster by def. corp. and year	Cluster by def. corp., year, and law firm
Controls	Y	Y	Y	Y	Y	Y
Filing year f.e.	Y	Y	Y	Y	Y	Y
Defendant firm f.e.	Y	Y	Y		Y	Y
R^2	0.26	0.27	0.27	0.29	0.26	0.26
N	8,467	8,467	8,467	8,438	8,467	8,467

Table 4 Robustness – Continued

	(1)	(2)	(3)	(4)	(5)	(6)
B. Additional control variables and fixed effects						
Star	0.083	0.063	0.092	0.078	-0.010	-0.006
	(3.15)	(2.33)	(5.13)	(4.44)	(-0.64)	(-0.43)
Baseline controls	Y	Y	Y	Y	Y	Y
Further firm ctrls	Y	Y				
Governance ctrls		Y				
Defendant firm f.e.	Y	Y	Y	Y	Y	Y
Filing year f.e.	Y	Y	Y	Y	Y	Y
Court f.e.			Y			Y
Lawsuit type f.e.				Y		Y
Law firm f.e.					Y	Y
R^2	0.26	0.34	0.28	0.27	0.66	0.68
N	5,072	3,458	8,253	8,463	22,412	22,286

Table 4 Robustness - Continued

	(1)	(2)	(3)	(4)	(5)	(6)
C. Other robustness checks						
	Collapsed	**Defense law firms rank**			**Shareholder**	**Time**
	cases	**Low**	**Medium**	**High**	**lawsuits**	**Periods**
Star	0.097	0.139	0.154	-0.009	-0.037	
	(5.33)	(1.97)	(2.66)	(-0.46)	(-1.35)	
Star × Class action					0.137	
					(3.74)	
Star × Derivative action					0.095	
					(1.25)	
Class action					0.039	
					(2.97)	
Derivative action					0.028	
					(1.05)	
Star: 1970-2000						0.009
						(0.39)
Star: 2001-2005						0.085
						(2.27)
Star: 2006-2010						0.122
						(3.64)
Star: 2011-2016						0.083
						(2.89)
% star plaintiff law firms		7.80	16.30	19.20		
Controls	Y	Y	Y	Y	Y	Y
Filing year f.e.	Y	Y	Y	Y	Y	Y
Defendant firm f.e.	Y	Y	Y	Y	Y	Y
R^2	0.27	0.48	0.32	0.24	0.27	0.26
N	8,109	1,561	1,551	1,597	8,467	8,467

Table 5 Measurement error

The table reports a number of checks against the possibility that measurement error explains the baseline findings of Table 2, owing to the fact that insurance coverage cannot be observed when a lawsuit is dismissed. We report alternative approaches to dealing with the censored insurance coverage data for dismissed lawsuits. Column (1) is based on list-wise deletion, i.e. the sample is restricted to observations with available data (settled cases). Column (2) applies mean imputation to estimate imputed values for the censored insurance coverage observations. Column (3) also uses imputed values, obtained with the Markov Chain-Monte Carlo Multiple Imputation (MCMC-MI) method. Column (4) also uses imputed values, obtained with the Random Forest (RF) method. In panel A, the dependent variable is $\ln(Settlement) - \ln(Coverage)$, where the insurance coverage may be based on imputed values in columns (2)-(4); in panel B, the dependent variable is $\ln(Coverage)$. The *t*-statistics, reported in parentheses, are based on standard errors clustered around defendant company (except in column (3), where they are based on the Rubin (1996)) formulas).

	List-wise deletion	**Mean imputation**	**MCMC-MI**	**RF**
	(1)	(2)	(3)	(4)
A. Dependent variable: $\ln(Settlement) - \ln(Coverage)$				
Star	0.252	0.103	0.251	0.094
	(1.64)	(2.50)	(2.01)	(5.28)
Controls	Y	Y	Y	Y
Filing year f.e.	Y	Y	Y	Y
Defendant firm f.e.	Y	Y	Y	Y
R^2	0.67	0.37		0.26
N	454	8,467	8,467	8,467
B. Dependent variable: $\ln(Coverage)$				
Star	0.419	0.912	1.159	0.548
	(2.65)	(10.20)	(9.37)	(15.70)
Controls	Y	Y	Y	Y
Filing year f.e.	Y	Y	Y	Y
Defendant firm f.e.	Y	Y	Y	Y
R^2	0.76	0.40		0.32
N	454	8,467	8,467	8,467

Table 6 Over- or under-insurance

The table reports a number of checks against the possibility that the baseline findings of Table 2 are explained by (a) defendant companies that over-insure facing stars, (b) defendant companies that under-insure facing non-stars, or (c) both. Over- and under-insurance are identified as follows. For each defendant company in our data, we estimate the yearly insurance coverage and per dollar insurance price applying the Random Forest algorithm to the database as described in the text and in greater detail in Appendix C. In columns (1)-(3), insurance coverage (price) is then regressed on indicators for size (total assets) quintiles, settlement year, and interactions, obtaining regression residuals. A company is considered over-insured when the coverage residuals are positive and the price residuals negative, and under-insured when the coverage residuals are negative and the price residuals positive. Columns (4)-(6) repeat the procedure, augmenting the insurance coverage and price regressions to include Fama-French 12 industry indicators and their interactions with settlement year indicators; columns (7)-(9) repeat it again, augmenting the insurance coverage and price regressions to include an indicator for above-median number of previous lawsuits and its interactions with settlement year indicators. In columns (1), (4), and (7) the sample excludes over-insured defendant companies facing stars; in columns (2), (5), and (8) under-insured defendant companies facing non-stars, and in columns (3), (6), and (9) it excludes both. In all regressions, the sample is restricted to the subset of lawsuits covered by D&O insurance, as the data uses to establish over-/under-insurance are also based on D&O insurance. The *t*-statistics, reported in parentheses, are based on standard errors clustered around defendant company.

Over-/Under-insurance based on:	**Size**			**Size and industry**			**Size, industry, and litigation history**		
	No over-insured facing stars	**No under-insured facing non-stars**	**Neither**	**No over-insured facing stars**	**No under-insured facing non-stars**	**Neither**	**No over-insured facing stars**	**No under-insured facing non-stars**	**Neither**
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Star	0.063	0.041	0.015	0.065	0.050	0.024	0.078	0.071	0.067
	(3.31)	(1.69)	(0.64)	(3.32)	(2.12)	(1.03)	(3.97)	(3.27)	(3.02)
Controls	Y	Y	Y	Y	Y	Y	Y	Y	Y
Filing year f.e.	Y	Y	Y	Y	Y	Y	Y	Y	Y
Defendant company f.e.	Y	Y	Y	Y	Y	Y	Y	Y	Y
R^2	0.42	0.53	0.54	0.42	0.52	0.52	0.42	0.46	0.46
N	4,150	3,203	3,112	4,084	3,294	3,135	4,073	3,133	3,084

Table 7 Potential relationship between insurance coverage and star plaintiff law firms; cash holdings

The table reports the estimates of regressions analogous to the baseline of Table 2, where the dependent variable is $Settlement - Coverage$, the difference between log-settlement amounts and log-insurance coverage. In columns (1)-(4), the regression is estimated on a matched sample, constructed as follows. For each lawsuit with a star law firm, n matching lawsuits with the closest settlement amount are included in the sample, with $n = 10$ (column (1)), 5 (column (2)), 3 (column (3)), and 1 (column (4)). In columns (5)-(6), the table reports regressions where the overall the defendant corporations are split in two groups based on their cash holdings in the year prior to the lawsuit (above/below the median); separate regressions are estimated for the two groups, and the rows labelled F-test (p-value) report the F test statistic and the associated p-value for the test comparing the coefficient on the star law firm indicator in the two regressions. The *t*-statistics, reported in parentheses, are based on standard errors clustered around defendant company.

	Stratified sample analysis				**Cash holdings**	
	10 matches	**5 matches**	**3 matches**	**1 match**	**High**	**Low**
	(1)	(2)	(3)	(4)	(5)	(6)
Star	0.134	0.134	0.103	-0.048	0.090	0.084
	(0.84)	(0.89)	(0.72)	(-0.36)	(3.84)	(3.11)
F-test					0.031	
(p-value)					(0.86)	
Controls	Y	Y	Y	Y	Y	Y
Filing year f.e.	Y	Y	Y	Y	Y	Y
Defendant firm f.e.	Y	Y	Y	Y	Y	Y
R^2	0.80	0.82	0.87	0.84	0.28	0.35
N	2,172	1,280	889	476	4,080	4,096

Table 8 Changes in governance around corporate lawsuits

The table reports a number of checks against the possibility that star law firms have an impact on the quality of corporate governance, beyond their impact on settlement amounts. Panel A computes average changes around all lawsuits (first row) and shareholder lawsuits (second row) in a number of dimensions of governance: The Bebchuck, Cohen, and Ferrel (2009) E-index (column (1)), changes in board composition (columns (2)-(4)), CEO changes (column (5)), and change in CEO compensation (columns (6)-(8)). Each cell reports the average (or average % change), with the corresponding t-statistic in parenthesis (based on standard errors clustered around defendant company). Panel B reports the estimates of specifications analogous to Table 2, where the dependent variable is one of the governance dimensions analyzed in panel A (all specifications include controls and defendant company and filing year fixed effects). Panel C reports similar regressions, restricting the sample to shareholder lawsuits. In all specifications the *t*-statistics, reported in parentheses, are based on standard errors clustered around defendant company.

	% change in	**Board…**			**CEO**	**% change in CEO…**		
	E-index	**Departures**	**Additions**	**Size**	**change (Y/N)**	**Salary**	**Bonus**	**Equity pay**
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
A. Average across all lawsuits and shareholder lawsuits								
Average	0.012	1.179	1.579	-0.434	0.161	0.243	-0.180	-0.204
	(1.29)	(37.19)	(43.76)	(-21.11)	(32.63)	(12.35)	(-16.35)	(-23.70)
Shareholder lawsuits	0.021	1.075	1.545	-0.489	0.171	0.198	-0.157	-0.211
	(1.02)	(14.25)	(16.30)	(-9.73)	(15.19)	(5.21)	(-5.84)	(-10.71)
B. Regression estimates: All lawsuits								
Star	0.030	-0.139	-0.120	-0.014	0.041	-0.059	0.033	-0.012
	(1.27)	(-2.11)	(-1.34)	(-0.32)	(2.07)	(-1.44)	(0.84)	(-0.41)
R^2	0.77	0.67	0.67	0.76	0.28	0.44	0.47	0.56
N	679	3,064	3,134	3,062	5,440	3,410	3,162	3,374
C. Regression estimates: Shareholder lawsuits								
Star	-0.010	-0.097	-0.124	0.029	0.056	-0.023	-0.056	-0.012
	(-0.52)	(-1.23)	(-1.11)	(0.44)	(2.31)	(-0.31)	(-1.44)	(-0.42)
R^2	0.92	0.70	0.70	0.79	0.47	0.50	0.66	0.71
N	272	1,624	1,642	1,624	2,029	1,258	1,114	1,226

Table 9 Probability of reaching a settlement; shareholder activism

In columns (1)-(2), the table presents the estimates of regressions relating the probability that a given lawsuit is settled to the star law firm indicator, as well as the vector of control variables used throughout and filing year fixed effects. Column (1) reports the estimates of a probit model (the marginal effect estimates are reported); column (2) a linear probability model including defendant firm fixed effects. Column (3) reports the estimates of a regression of (imputed) insurance price per unit (described in Section IV.A, IV.D, and Appendix C) on the star law firm indicator and the vector of controls used throughout. Because the insurance price is based on D&O insurance data, in this column the sample is restricted to lawsuits that are covered by D&O insurance. Columns (4) and (5) report the estimates of regressions of $\ln(Settlement) - \ln(Coverage)$ on the star indicator and the vector of control variables used throughout, as well as filing year and defendant firm fixed effects. In column (4), the sample is restricted to lawsuits for which a Schedule 13D form was filed with the SEC in the two-year period prior to the lawsuit filing, where the lawsuit is more likely related to a shareholder activism episode; in column (5), the sample contains the other lawsuits in our data. The rows labeled F-test and p-value report the F test statistic for the difference between the estimates of the coefficients on the star law firm indicator in the regressions of columns (4) and (5), and the associated p-value.

	Probability of reaching a settlement		**Insurance price**	**Lawsuit follows shareholder activism**	
				Yes	**No**
	(1)	(2)	(3)	(4)	(5)
Star	0.082	0.108	0.001	0.140	0.053
	(10.62)	(8.08)	(0.85)	(2.93)	(3.07)
F-test				3.008	
(p-value)				(0.08)	
Controls	Y	Y	Y	Y	Y
Filing year f.e.	Y	Y	Y	Y	Y
Defendant firm f.e.		Y	Y	Y	Y
R^2		0.46	0.85	0.28	0.33
N	8,467	8,467	4,241	2,046	5,988

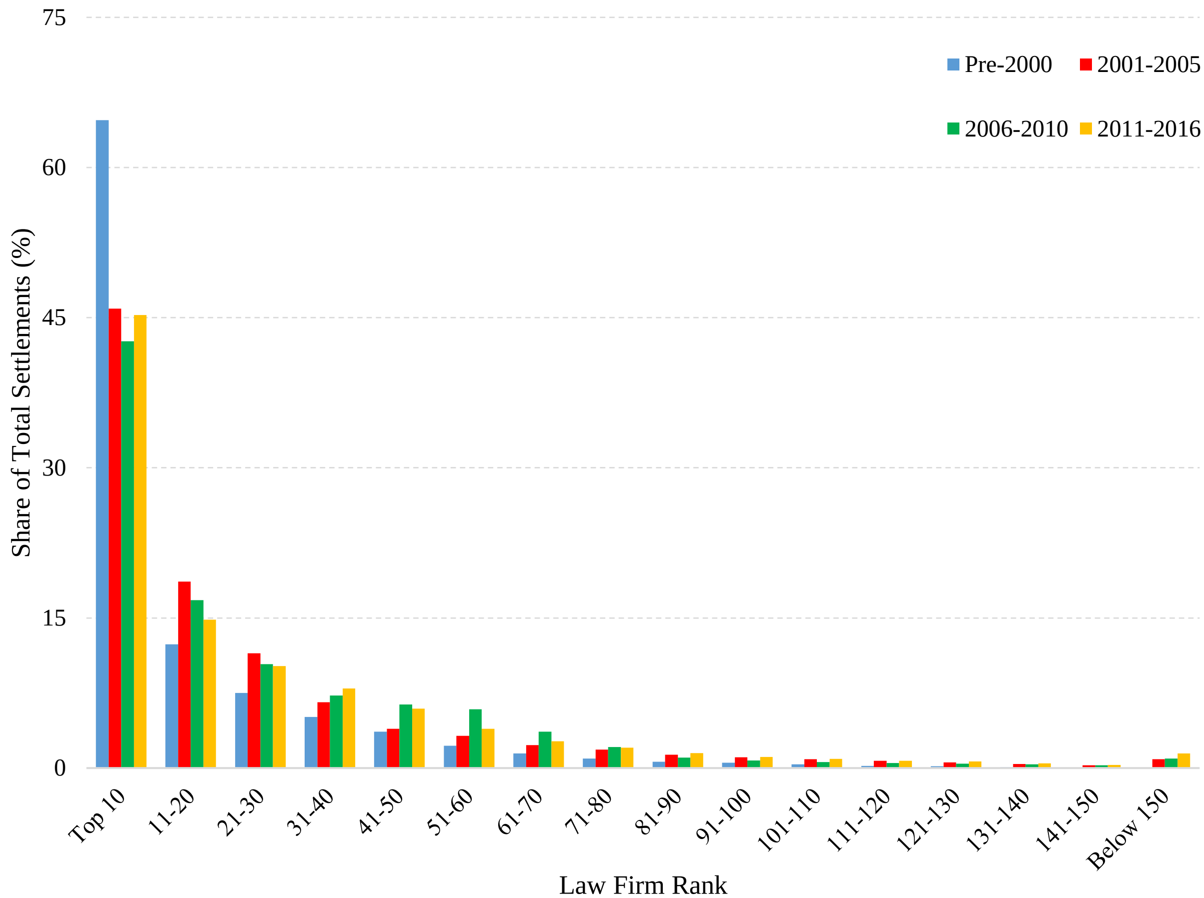


Figure 1 Market concentration among plaintiff corporate law firms

The figure reports the market share of plaintiff corporate law firms over four periods: up to and including 2000, 2001-2005, 2006-2010, 2011-2016. Law firms are ranked based on the total settlement amounts they generate over a given time interval, with the firms with the largest total settlements taking rank 1. They are then aggregated into 10-firm brackets, and their aggregate settlement amounts over a given period are plotted in the graph. The sample combines law plaintiff law firms in corporate lawsuits in the MSCAd, ISS, SCAC, AA, FCC and databases over the period 1970-2016.

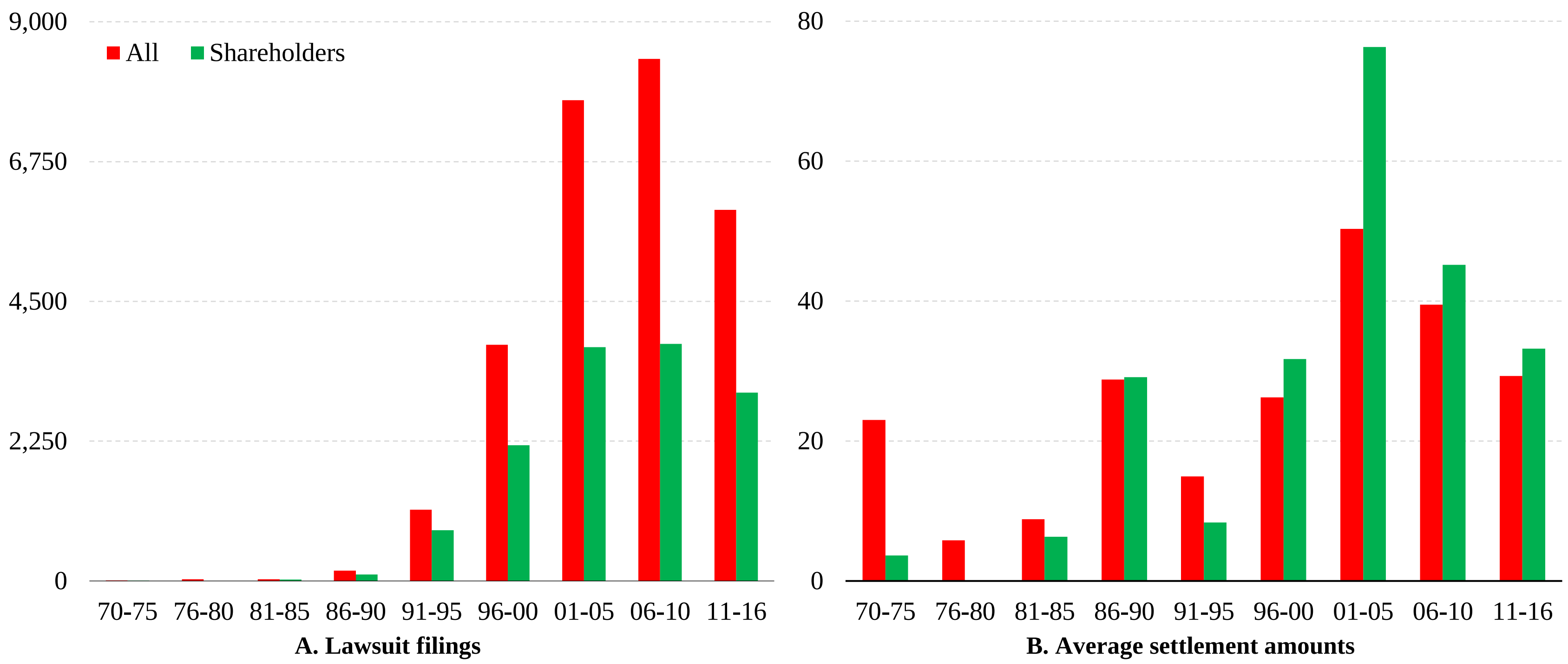


Figure 2 Lawsuit filings and average settlement amounts, 1970-2016
In panel A, the figure plots the number of all corporate lawsuits (red bars) and shareholder lawsuits (green bars) filed in each 5-year period since 1970. In panel B, it plots the average settlement amount (in 2010 $MM) associated with all corporate lawsuits (red bars) and shareholder lawsuits (green bars) in the same periods. The sample combines law plaintiff law firms in corporate lawsuits in the MSCAd, ISS, SCAC, AA, FCC databases over the period 1970-2016.

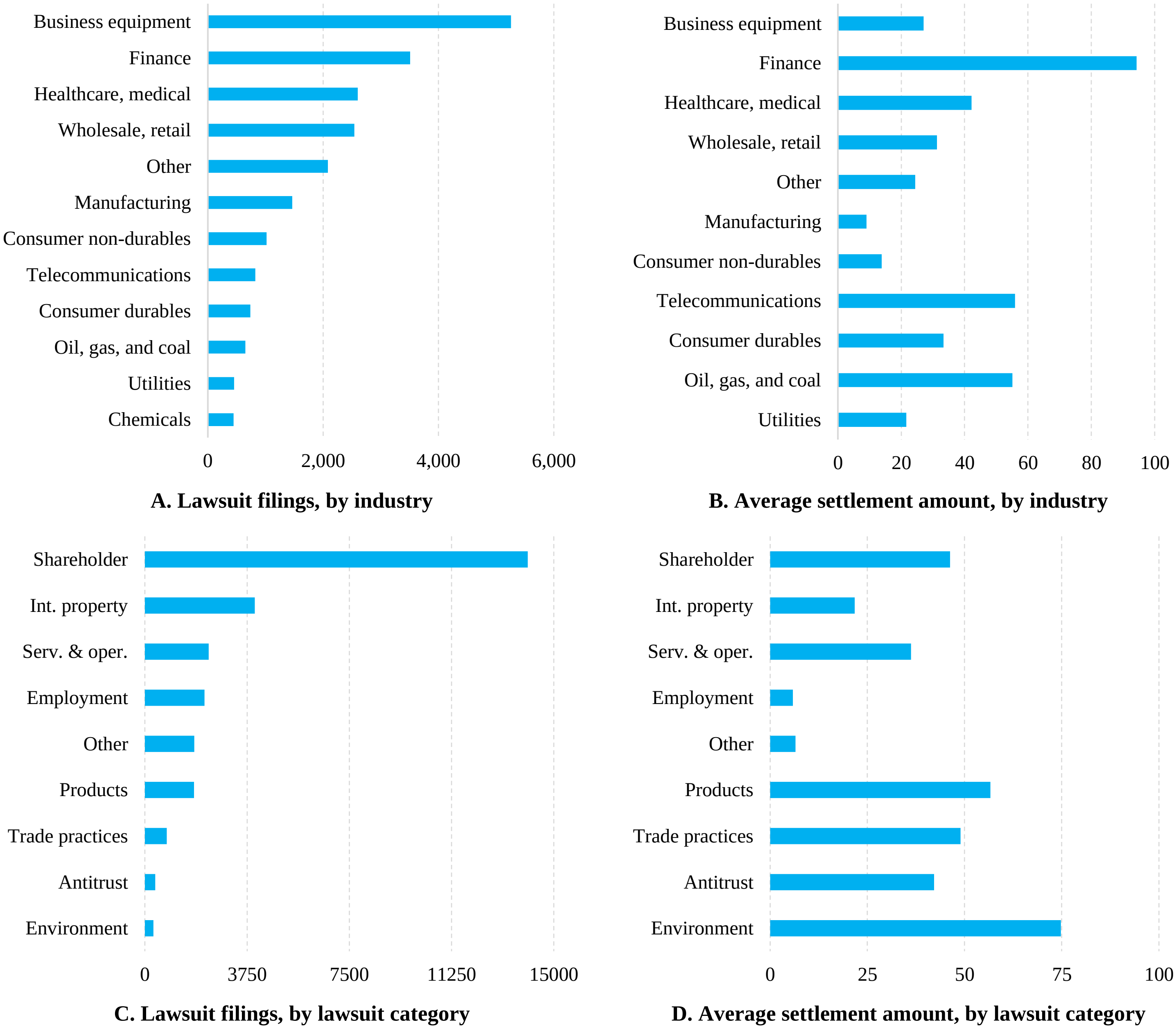


Figure 3 Lawsuit sample composition by industry and lawsuit category
The figure describes the composition of the lawsuit sample by Fama-French 12 industry (panels A and B) and lawsuit category (panels C and D). Panels A and C report the number of lawsuits filed in each industry and lawsuit category respectively, and panels B and D the corresponding average settlement amounts (in 2010 $MM). The sample combines law plaintiff law firms in corporate lawsuits in the MSCAd, ISS, SCAC, AA, FCC databases over the period 1970-2016.

Appendix A Variables description and dataset construction

Table A.1 Variables description

The following table reports the description of all the variables used in the analysis. The data on lawsuits and law firms combines information from the Master Significant Cases & Actions Database (MSCAd), ISS Securities Class Action Services (ISS), Audit Analytics Litigation (AA), Federal Court Cases: Integrated Data Base (FCC), and the Stanford Securities Class Action Clearinghouse (SCAC). All accounting data come from Compustat and stock trading information from CRSP; those variables are expressed in their value as of the end of the fiscal year prior to the lawsuit filing date (the relevant Compustat and CRSP data items are listed in parentheses.). All dollar values are expressed in 2010 constant prices.

Variable name	**Description**	**Source**
Federal case	Indicator variable equal to 1 if MSCAd *juris_trigger* is "federal", or ISS *federal case number* is not missing, or data is from FCC, or AA case docket number contains "cv" indicating that the case is civil; and equal to 0 otherwise.	MSCAd, ISS, AA, FCC
Case filing date	Case filing date equal to MSCAd *filing_date*, or ISS *federal filing date* or *state filing date*, or AA *Case Began*, FCC *filedate*.	MSCAd, ISS, AA, FCC
Case end date	Case settlement or dismissal date equal to MSCAd *disposition_date*, or ISS *final settlement date* or *dismissal date*, or AA *case ended*, or FCC *termdate*. If MSCAd *disposition_date_qualifier* is "estimated", or "unknown", we use the values from the other datasets.	MSCAd, ISS, AA, FCC
Case settled	Indicator variable equal to 1 if MSCAd *case_status* is "award" or "settled", or if ISS *case status* is "settled", or FCC *disp* is 13 ("settled") or FCC *trclact* is 3 ("granted") or if *Settlement* is greater than zero; and it is equal to 0 if MSCAd *case_status* is "dismissed", or ISS *case status* is "dismissed", or FCC *disp* is 2 ("dismissal – want of prosecution") or 3 ("dismissal – lack of jurisdiction") or ("dismissal – voluntarily") or ("dismissal – other") or FCC *trclact* is 2 ("denied").	MSCAd, ISS, FCC
Class action	Indicator variable equal to 1 if MSCAd *class_collective_action* is "class action" or "collective action", or if data is from ISS, or AA *class action* is 1, or if FCC *classact* is 1; and equal to 0 otherwise.	MSCAd, ISS, AA, FCC
Settlement	Total settlement amount, equal to MSCAd *settlement_amount*, or ISS *total amount*, AA *settlement*, or FCC *amtrec*, expressed in million U.S. dollars.	MSCAd, ISS, AA, FCC
Insurance	Portion of *Settlement* covered by the defendant insurer, equal to MSCAd *exposure_insured*, or ISS *insurance amount*, expressed in million U.S. dollars.	MSCAd, ISS
Plaintiff legal fees	Amount spent by the plaintiff in prosecuting the case, for lawyers, law firms, legal representation, and other related expenses, equal to MSCAd, *plaintiff_legal_fees_expenses*. When missing, we replace it with the total of legal fees and expense reimbursements from ISS *plaintiff legal fees description*, which comes in form of a text paragraph. We extracted the amounts using regular expressions and then manually checked whether the information is correct. The variable is expressed in expressed in million U.S. dollars.	MSCAd, ISS
Plaintiff legal fees %	*Plaintiff legal fees* expressed as a percentage of *Settlement*.	MSCAd, ISS
Defence costs	The amount spent by the company in defence of the case, for lawyers, law firms, legal representation, expressed in million U.S. dollars.	MSCAd

Table A.1 continues on the next page.

Table A.1 continues from the previous page.

Variable name	Description	Source
Law firm rank (revenues)	Rank of a law firm based on its revenues. When a case is settled, a plaintiff's law firm earns *Plaintiff legal fees*, and when the case is dismissed, she earns 0. Defendant law firm always earns *Defense costs*. When *Plaintiff legal fees* are missing and the case is settled, we substitute it with the average *Plaintiff legal fees %* times *Settlement*. We aggregate each firm's revenues over year *t-5* to year *t-1* before filing year of the lawsuit. The rank is normalized from 0 to 100, where value of 100 corresponds to the highest aggregate revenues.	MSCAd, ISS
Law firm rank (settlement)	Rank of a law firm based on settlement amounts. When a case is settled, we assign *Settlement* to both plaintiff and defendant law firms. We aggregate the amounts over year *t-5* to year *t-1* before the filing year of the lawsuit. The variable is normalized from 0 to 100, where value of 100 corresponds to the highest aggregate settlement value. To construct this ranking variable, we also use the data from AA, which discloses the law firm names, but not legal fees.	MSCAd, ISS, AA
ln(Total assets)	Natural logarithm of total assets (*at*) expressed in million U.S. dollars.	Compustat
Return	Monthly market-adjusted stock return (*ret* - *sprtrn*) accumulated over 12-month. The accumulation period ends with the fiscal year-end.	CRSP
Skewness	Skewness of the firm's monthly return (*ret*) over 12-month.	CRSP
Return std. dev.	Standard deviation of the firm's monthly returns (*ret*) over 12-months.	CRSP
Stock turnover	Trading volume (*vol*) accumulated over the 12-month period ending with the fiscal year-end divided by the beginning of the year shares outstanding (*shrout*).	CRSP
Filed lawsuits	Number of lawsuits filed against the company over previous five years.	MSCAd, ISS, AA, FCC
Total settlements	Total Settlement amount against the company over previous five years.	MSCAd, ISS, AA, FCC
Book-to-market	Ratio of the book value of equity to market value, computed via the WRDS Financial Ratios Suite based on data from the CRSP/Compustat Merged Database.	CRSP/Compustat
ROA	Return on assets, computed as the ratio of net income to lagged total assets via the WRDS Financial Ratios Suite, based on Compustat data.	Compustat
Debt/Total assets	Ratio of debt to total assets,computed via the WRDS Financial Ratios Suite, based on Compustat data.	Compustat
Dividend payout ratio	Dividend payout ratio, computed as the ratio of dividends to lagged total assets via the WRDS Financial Ratios Suite, based on Compustat data	Compustat
Interest coverage ratio	Dividend payout ratio, computed as the ratio of EBIT to interest payments via the WRDS Financial Ratios Suite, based on Compustat data	Compustat
R&D/Sales	Ratio of R&D expenses to sales, computed via the WRDS Financial Ratios Suite, based on Compustat data	Compustat
Advertising to sales	Ratio of advertising expenses to sales, computed via the WRDS Financial Ratios Suite, based on Compustat data	Compustat
Staff to sales	Ratio of staff expenses to sales, computed via the WRDS Financial Ratios Suite, based on Compustat data	Compustat
Accruals ratio	Ratio of discretionary accruals to the average between lagged and contemporaneous total assets, computed via the WRDS Financial Ratios Suite, based on Compustat data	Compustat

Table A.1 continues on the next page.

Table A.1 continues from the previous page.

Variable name	Description	Source
Analyst forecast dispersion	Dispersion of analyst EPS forecasts, computed as the standard deviation of analyst EPS forecasts from the IBES database, divided by the absolute value of the mean EPS estimate.	IBES
Analyst forecast error	Absolute value of the difference between the mean analyst EPS forecast and the actual EPS, divided by the mean EPS estimate.	IBES
Analyst coverage	Natural logarithm of 1 plus the number of analysts following a given corporation.	IBES
Bid-ask spread	Ratio of the bid-ask spread to the midpoint close price.	CRSP
Amihud ratio	Yearly average Amihud (2002) ratio. The Amihud ratio is defined as the ratio between the absolute daily change in the stock price, divided by the dollar trading volume expressed in millions of dollars.	CRSP
Idiosyncratic volatility	Yearly standard deviation of the daily residuals from the Fama-French three-factor model.	CRSP
E-index	Bebchuk, Cohen, and Ferrell (2009) entrenchment index.	L. Bebchuck's webpage
Board size	Number of directors on the board	BoardEx
CEO salary	Salary of the CEO	ExecuComp
CEO bonus	Annual bonus of the CEO	ExecuComp
CEO equity pay	Annual equity-based compensation of the CEO, defined as the sum of the value of stock options and restricted stocks grants received in a given year	ExecuComp
Institutional ownership	Percentage of the firm's stocks held by 13F institutional investors	Thomson Reuters 13F
Top-10 institutional investor ownership	Percentage of the firm's stocks held by the top 10 13F institutional investors	Thomson Reuters 13F
Institutional block holders	Percentage of the firm's stocks held by block-holders	Thomson Reuters 13F
Number of institutional holders	Number of 13F institutional investors holding any shares of the firm	Thomson Reuters 13F
Number of institutional block-holders	Number of 13F institutional block-holders holding any shares of the firm	Thomson Reuters 13F
Institutional ownership HHI	Herfindhal-index of institutional ownership concentration, based on 13F institutional investors holdings	Thomson Reuters 13F

Table A.2 Lawsuit types

Stockholder Risks - MSCAd *case_category* is Shareholder Risks, Financial Practices, Management & Fiduciary Risks, Corporate Capital Risks or Finance & Investment, or AA NOS or FCC NOS is 160 Stockholders Suits or 850 Securities/Commodities/Exchange.

Employment - MSCAd *case_category* is Employment or Workplace, or AA NOS or FCC NOS is 330 Federal Employers Liability, 442 Employment, 710 Fair Labor Standard Act, 720 Labor/Management Relations, 730 Labor/Management Reporting and Disclosure Act, 740 Railway Labor Act, 790 Other Labor Litigation, and 791 Employee Retirement Income Security Act.

Products - MSCAd *case_category* is Products, or AA NOS or FCC NOS is 245 Tort Product Liability, 365 Personal Injury Product Liability or 385 Property Damage Product Liability.

Intellectual Property - MSCAd *case_category* is Intellectual property, or AA NOS or FCC NOS is 820 Copyrights, 830 Patent, or 840 Trademark.

Service & Operations - MSCAd *case_category* is Service & Operations, or AA NOS or FCC NOS is 290 All Other Real Property.

Trade Practice Risks - MSCAd *case_category* is Trade Practice Risks, or AA NOS or FCC NOS is 890 Other Statutory Actions.

Environment - MSCAd *case_category* is Environment or AA NOS or FCC NOS is 893 Environmental Matters.

Antitrust - *AA NOS or FCC NOS is 410 Antitrust.*

Other Contracts and Fraud for residual categories.

Table A.3 Dataset construction

Lawsuit characteristics and law firm names come from Master Significant Cases & Actions Database (MSCAd), ISS Securities Class Action Services (ISS), Audit Analytics Litigation (AA), Federal Court Cases: Integrated Data Base (FCC), and the Stanford Securities Class Action Clearinghouse (SCAC). MSCAd and ISS contain settlement amounts, law firm names, legal fees, and insurance covering case settlement expenses; AA also contains law firm names and settlement amount. The FCC data only report settlement amount, but cover the majority of federal cases filed in the U.S. and therefore provides a good approximation of the federal caseload.

We merge the datasets by Compustat ID (GVKEY), filing date, court docket number, and court name. Both MSCAd and AA data already contain GVKEY identifiers. ISS and SCAC do not contain GVKEYs, but they contain Ticker labels, which we use to link it to the CRSP-Compustat Merged database (CCM). The FCC data only contain defendant company names and no other company identifier. Thus, we match FCC with the other datasets using the following strategy. First, we merge FCC with each of the other datasets by filing date, court docket number, and court name, and then we fuzzy-match using defendant company names. In the final sample, we retain the lawsuits with known lawsuit outcome (settled or dismissed), outcome date, settlement amount, and plaintiff law firm names. Table A.4 presents the composition of the final sample.

Table A.4 Sources of data

The table presents the sources of data on lawsuits and law firms tabulated at the lawsuit level. The data sources are Master Significant Cases & Actions Database (MSCAd), ISS Securities Class Action Services (ISS), Audit Analytics Litigation (AA), Stanford Class Action Clearinghouse (SCAC), and Federal Court Cases: Integrated Data Base (FCC). Combinations indicate that the information on lawsuits comes from two or more of these sources. FCC does not contain information on the law firms and it is only used in combination with other data sources. Panel A presents the breakdown in the whole universe of lawsuits. Panel B presents the breakdown for the sample of the lawsuits used in the baseline regressions (Table 2, columns (1)-(3)).

Panel A: all lawsuits

Data source	**# lawsuits**	**% in total**
MSCAd	9,882	36.12
ISS	3,824	13.98
AA	3,482	12.73
SCAC	1,404	5.13
Combinations	8,770	32.05
Total	**27,362**	**100**

Panel B: lawsuits in sample for regressions in Table 2, columns (1)-(3)

Data source	**# lawsuits**	**% in total**
MSCAd	4,786	36.50
ISS	1,255	9.57
AA	1,761	13.43
SCAC	984	7.51
Combinations	4,325	32.99
Total	**13,111**	**100**

Table A.5 Liability insurance types

The following table reports the number of lawsuits categorized by type of insurance that defendant companies purchase to cover lawsuits. The MSCAd dataset provides the most detailed liability insurance classification. ISS and SCAC contain only securities lawsuits (identified by NOS code = 850) that are insured with the Directors & Officers (D&O) liability insurance. Panel A presents the breakdown in the whole universe of lawsuits. Panel B presents the breakdown for the sample of the lawsuits used in the baseline regressions (Table 2, columns (1)-(3)).

A: all lawsuits

Liability insurance type	**# lawsuits**	**% in total**
Directors & Officers (D&O)	14,201	51.93
Professional	4,854	17.75
Employment	2,133	7.80
Products	1,703	6.23
Cyber/Tech	663	2.42
Environmental	305	1.12
Automobile	282	1.03
General and Other	3,204	11.72
Total	**27,345**	**100**

Panel B: lawsuits in sample for regressions in Table 2, columns (1)-(3)

Liability insurance type	**# lawsuits**	**% in total**
Directors & Officers (D&O)	6,764	51.59
Professional	2,509	19.14
Employment	966	7.37
Products	942	7.18
Cyber/Tech	396	3.02
Environmental	116	0.88
Automobile	70	0.53
General and Other	1,348	10.220
Total	**13,111**	**100**

Table A.6 Predictive power of insurance coverage

The table reports the estimates of regressions where the dependent variable is $\ln(Settlement)$, the log-settlement amount, regressed on a number of explanatory variables. In column (1), the explanatory variables are the predictors indicated by Kim and Skinner (2012). In column (2), the regression is augmented by $\ln(Coverage)$, the log-insurance coverage amount. In column (3), log-settlement is regressed on log-insurance coverage alone. In column (4), all explanatory variables are included, in addition to filing year and defendant firm fixed effects. The sample is based on the sample of lawsuits analyzed throughout the paper, restricted to the settled lawsuits where the insurance coverage can be directly observed; one observation corresponds to one lawsuit. In all specifications the t-statistics, reported in parentheses, are based on standard errors clustered around defendant company.

	(1)	(2)	(3)	(4)
$\ln(Coverage)$		1.110	1.108	0.907
		(31.16)	(30.20)	(9.01)
Size	0.102	0.093		-0.378
	(2.93)	(5.18)		(-1.11)
Sales growth	0.240	0.049		0.720
	(1.96)	(0.94)		(1.54)
Return	-0.224	-0.067		0.154
	(-1.86)	(-1.03)		(0.53)
Ret. skewness	-0.164	0.094		-0.182
	(-1.70)	(1.71)		(-0.88)
Ret. volatility	1.176	0.307		-5.349
	(1.32)	(0.61)		(-2.35)
Share turnover	-0.010	-0.005		0.114
	(-0.35)	(-0.29)		(1.49)
Intercept	1.098	-0.361	0.352	
	(3.66)	(-2.23)	(5.03)	
Filing year f.e.				Y
Defendant firm f.e.				Y
R^2	0.04	0.67	0.65	0.87
N	761	761	761	454

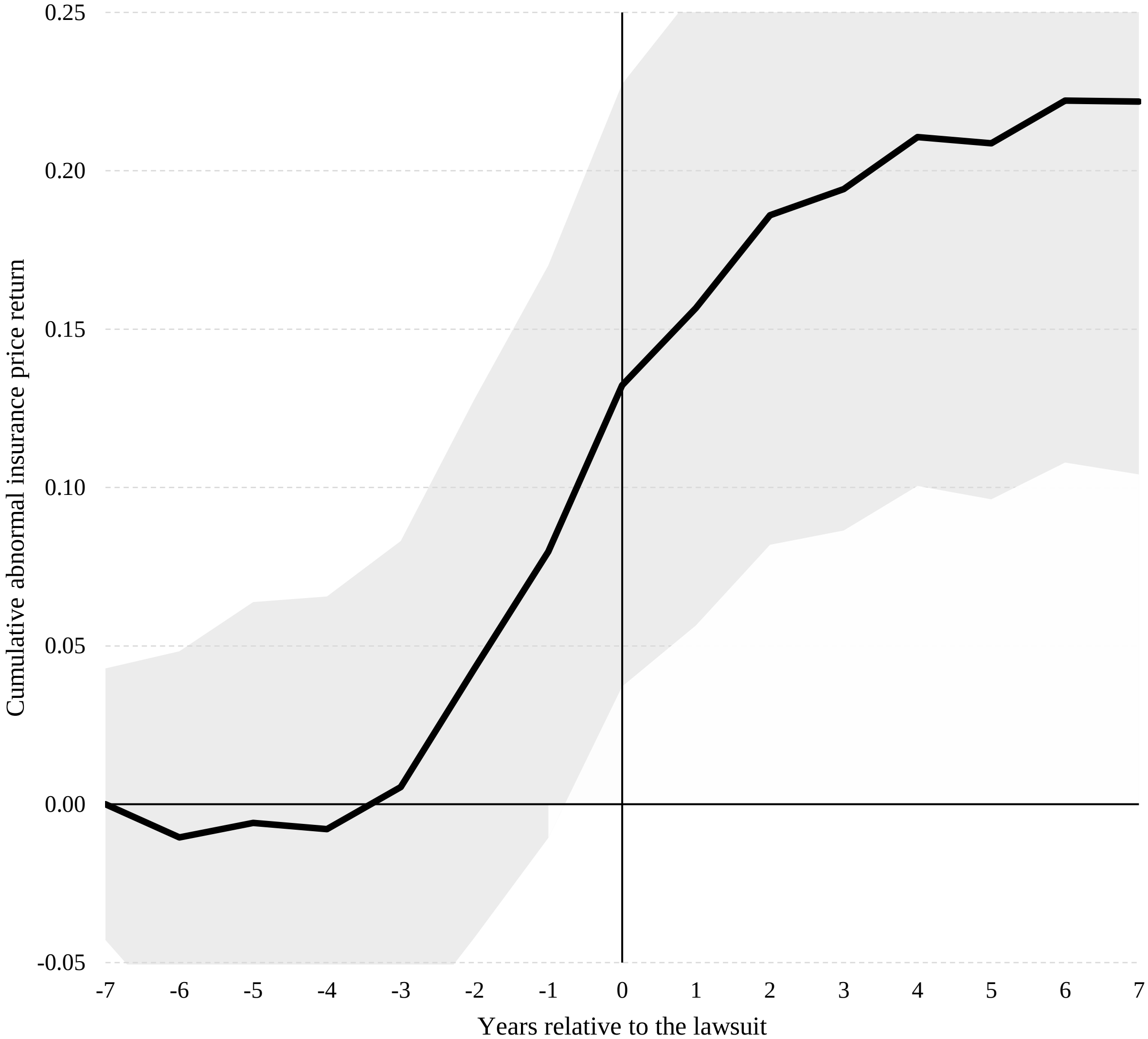


Figure A.1 Change in insurance pricing around corporate lawsuits
The graph plots the cumulative abnormal insurance price return over the (-7,+7)-year period around corporate lawsuits, based on the sample of the portfolio of insurance contracts of the leading D&O insurance provider. Those data contain detailed information about the price per unit paid by defendant companies. We compute yearly percentage changes (returns) on the price per unit paid by each firm, net of a benchmark return for all firms in the same Fama-French 12 industry; we refer to this quantity as the abnormal insurance price return. The graph plots the cumulative abnormal insurance price return, and the shaded are marks the 95% confidence band around it.

Table A.7 Defendant companies facing multiple lawsuits

The table tests examining the relationship between the baseline effect documented in Table 2 and the number of lawsuits that a given defendant company faces in a given calendar year. The variable *Nr. lawsuits* equals the number of lawsuits filed against a given company in a given year. The variable prior lawsuits ratio *PriorLS* is defined as the ratio between the total settlement amount the defendant firm faces in a given year and the average yearly settlement amount it has faced over the previous 5 years. In specification (1), the *Star* law firm indicator is interacted with the natural logarithm of *Nr. lawsuits*; in specification (2), it is interacted with indicators for number of lawsuits equal to 2, between 3 and 5, 6 and 10, and greater than 10. In specification (3), the *Star* law firm indicator is interacted with the natural logarithm of *PriorLS*; in specification (4), it is interacted with an for *PriorLS* larger than its median (equal to 1).

	(1)	(2)	(3)	(4)
Star	0.096	0.039	0.032	0.008
	(4.15)	(1.77)	(2.36)	(1.01)
Star × log-Nr. lawsuits	-0.007			
	(-0.35)			
log-Nr. lawsuits	0.039			
	(4.06)			
Star × (Nr. lawsuits = 2)		0.093		
		(2.37)		
Star × (3 ≤ Nr. lawsuits ≤ 5)		0.066		
		(1.78)		
Star × (6 ≤ Nr. lawsuits ≤ 10)		0.034		
		(0.45)		
Star × (Nr. lawsuits > 10)		-0.086		
		(-2.54)		
Star × Prior settlements ratio			0.002	
			(2.39)	
Prior settlements ratio			0.002	
			(4.15)	
Star × (Pr. settlements ratio > 50^{th} pctl)				0.210
				(4.24)
Controls	Y	Y	Y	Y
Nr. lawsuits group indicators		Y		
Pr. settlements ratio > 50^{th} pctl indicator				Y
Filing year f.e.	Y	Y	Y	Y
Defendant firm f.e.	Y	Y	Y	Y
R^2	0.27	0.27	0.36	0.30
N	8,467	8,467	8,467	8,467

Appendix B Imputation of insurance coverage data with EM and MCMC-MI data augmentation

This appendix illustrates the Markov Chain-Monte Carlo with multiple imputation (MCMC-MI) data augmentation algorithm used to impute insurance coverage values in the tests discussed in section III.D. The random forest algorithm, which is used in that section too, is presented separately in Appendix C.

The problem we face is that when lawsuits are dismissed, both the settlement amount and the insurance coverage are set to zero. Most likely, however, the insurance coverage is not zero, i.e. the censoring due to a given lawsuit's dismissal masks the law firm's negative performance. We thus seek to obtain imputed values for the insurance coverage in the dismissed cases, using the available information. To illustrate the approach, let $Coverage_{obs}$ and $Coverage_{cen}$ denote the observed and censored insurance coverage observations, and let x denote the vector of regressors used throughout the analysis ($Star$ indicator and Kim and Skinner (2012) control variables, including any fixed effects).

The MCMC-MI data augmentation approach combined with multiple imputation (Rubin (1987)), addresses this difficulty. The MCMC-MI approach is based on a two-step iteration. The first "imputation" step (I-step) takes a vector of parameter estimates $\hat{\beta}^{(0)}$ as given, as an input to estimate the parameters of the distribution of $\widehat{Coverage}_{cen}$. A vector $\widehat{Coverage}_{cen}^{(0)}$ is then obtained, as a random draw from the conditional distribution $\Pr\left(Coverage_{cen}|x, \hat{\beta}^{(0)}\right)$. The vast majority of applications, including this paper, obtains that distribution under an assumption of joint normality of $Coverage$ and the variables in x; Monte Carlo evidence shows that this yields consistent estimates even when the underlying variables are not jointly normal (Schaefer (1997)). The second "prediction" step (P-step) obtains a revised estimate of the vector of parameters $\hat{\beta}^{(1)}$, as a random draw from the conditional distribution $\Pr\left(\beta \left| Coverage_{obs}, \widehat{Coverage}_{cen}^{(0)}, x\right.\right)$. The I-step and the P-steps are iterated, generating a Markov chain. Under mild conditions, for a sufficiently large number of iterations the Markov chain converges to a stationary distribution, from which the vector of imputed values $\widehat{Coverage}_{cen}$ is drawn. In our application, we "burn-in" the first 500 iterations of the Markov chain and use the next 10,000 iterations to reach convergence. This concludes the MCMC part of the approach.

The procedure is then repeated m times, yielding m multiple imputations for $\widehat{Coverage}_{mis}$. In our tests, we set $m = 500$. By the law of iterated expectations, for a given parameter ϑ of interest such as the coefficient on the $Star$ law firm indicator in our tests:

$$\Pr(\vartheta|Coverage_{obs}) = \int \Pr(\vartheta|Coverage_{obs}, Coverage_{cen}) \Pr(Coverage_{cen}|Coverage_{obs}) dCoverage_{cen}$$

so that it is possible to make inference on ϑ by averaging its realizations across the m imputations. We follow Rubin (1996), who provides the following formula for the standard error on $\hat{\vartheta}$:

$$V_B + V_W + V_B/m$$

where V_B is the "between" variance, i.e. the variance of the realizations of $\hat{\vartheta}$ across the m imputations, V_W is the "within" variance, i.e. the average square of the standard errors of $\hat{\vartheta}$ in each of the m imputations, and V_B/m is a correction factor. The efficiency of the MCMC-MI approach relative to the benchmark with no missing data is given by:

$$\left(1 + \frac{\lambda}{m}\right)^{-1}$$

where λ denotes the fraction of dismissed cases in the sample. In our data, $\lambda = 53\%$, implying a relative efficiency of 99% with 500 imputations.

Appendix C Predicting price per insurance with machine learning

For a subset of defendant companies the D&O insurer provided us with the details on the D&O insurance premium and coverage. For these companies, we calculate the price per unit of insurance by dividing the insurance premium by insurance coverage. For other defendant companies, we predict price per unit of insurance using machine learning Random Forest approach. We follow the three-stage procedure described in Acharya et al. (2018):

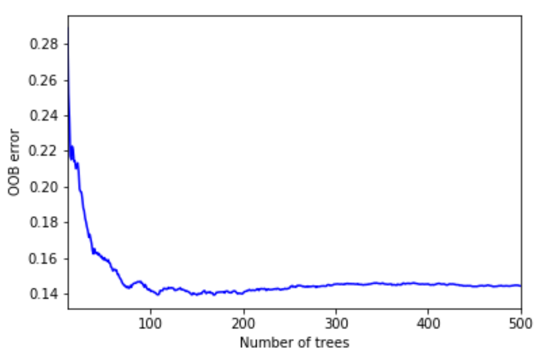
(1) *Tuning model parameters* to select optimal parameter values, which enable us to obtain the highest accuracy in predicting the price per unit of insurance.

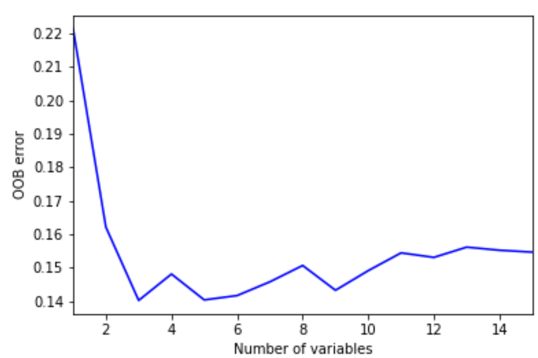
(2) *Estimating the model* with the selected optimal parameters using data from the portfolio of contracts of the leading D&O insurer introduced in section III.D.

(3) *Predicting price per unit of insurance* for cases where the data is not available from the D&O insurer.

Below we describe each step in detail:

(1) Random forest requires fitting only two main parameters: the number of trees and number of nodes or the maximum number of features that would be randomly selected out of all the features to build a tree. Random Forest averages over the predictions made by each tree, which improves out-of-sample prediction accuracy. Following the above authors, we look at the out-of-bag (OOB) error to evaluate the model performance, defined as 1 minus the model prediction accuracy on a subset of observations that were not used to fit the model. First, we fit the model using a wide range of values for a number of trees. The left-hand size figure shows that the OOB error stabilizes after 100. Second, we select the optimal value for the number of nodes. The right-hand figure shows that the OOB stabilizes as soon as the number of features is equal to 3. Therefore, we set the number of trees to 100 and the number of variables to 3 when fitting the model and making a prediction.





(2) To fit the Random Forest, we set the number of features to 100 and the number of variables to 3. Prediction is based on the following variables: Filed lawsuits, Total settlements, Total assets, ROA, Cash/Total assets, Sales growth, Market-to-book, Stock return, Return skewness, Return standard deviation, and Stock turnover. All variables are defined in Table A.1 of Appendix A.

(3) When the price per unit of insurance data is not available from the D&O insurer, we use the Random Forest fitted on the previous steps to make a prediction. This approach does not generate a set of model coefficients, but enables us to evaluate which features contribute most to the classification accuracy.