

WILL DELAWARE BE DIFFERENT? AN EMPIRICAL STUDY OF *TC HEARTLAND* AND THE SHIFT TO DEFENDANT CHOICE OF VENUE

Ofer Eldar[†] & Neel U. Sukhatme[‡]

Why do some venues evolve into litigation havens while others do not? Venues might compete for litigation for various reasons, like enhancing their judges' prestige and increasing revenues for the local bar. This competition is framed by the party that chooses the venue. Whether plaintiffs or defendants primarily choose venue is crucial because, we argue, the two scenarios are not symmetrical.

*The Supreme Court's recent decision in *TC Heartland LLC v. Kraft Foods LLC* illustrates this dynamic. There, the Court effectively shifted venue choice in many patent infringement cases from plaintiffs to corporate defendants. We use *TC Heartland* to empirically measure the impact of this shift using an event study, which measures how the stock market reacted to the decision. We find that likely targets of "patent trolls"—entities that own and assert patented inventions but do not otherwise use them—saw their company valuations increase the most due to *TC Heartland*. This effect is particularly pronounced for Delaware-incorporated firms. Our results match litigation trends since *TC Heartland*, as new cases*

[†] Associate Professor, Duke University School of Law; Research Fellow, Duke Innovation & Entrepreneurship Initiative.

[‡] Associate Professor, Georgetown University Law Center; Affiliated Faculty, Georgetown McCourt School of Public Policy.

The authors thank Mark Lemley, Shawn Miller, and students at the Patent Troll Litigation Practicum for access to the Stanford Non-Practicing Entity Litigation Dataset. We also thank Lex Machina for additional data provided. In addition, we thank participants at the 2018 American Law and Economics Association Conference, the 2018 Conference on Empirical Legal Studies, and the 2018 Conference of the Society for Institutional and Organizational Economics, as well as workshop participants at Boston University School of Law, George Washington University Law School, and Georgetown University Law Center. We are also grateful for comments and feedback from Michael Abramowicz, Jonas Anderson, Dhammika Dharmapala, John de Figueiredo, Michael Frakes, Jens Frankenreiter, Maria Glover, John Golden, Erik Hovenkamp, Dmitry Karshtedt, Daniel Klerman, Mark Lemley, Lisa Ouellette, Arti Rai, Greg Reilly, David Schwartz, Neil Siegel, Emily Strauss, and Urska Velikonja. We further thank Michael Yang for assistance with fuzzy matching, and Gaurav Bagwe, Austin Elliott, and Flora Feng for excellent research assistance. All errors are the authors' own.

have dramatically shifted to the District of Delaware from the Eastern District of Texas, previously the most popular venue for infringement actions.

Why do investors believe Delaware will do better than Texas in curbing patent-troll litigation? Unlike Texas, Delaware's economy depends on attracting large businesses that pay high incorporation fees; it is thus less likely to encourage disruptive litigation and jeopardize its privileged position in corporate law. More broadly, we explain why giving defendants more control over venue can counterbalance judges' incentives to increase their influence by encouraging excessive litigation. Drawing on Delaware's approach to corporate litigation and bankruptcy proceedings, we argue that Delaware will compete for patent litigation through an expert judiciary and well-developed case law that balances both patentee and defendant interests.

INTRODUCTION	103
I. THE BATTLE OVER PATENT VENUE	109
A. The Rise of the Patent Troll and the Eastern District of Texas	110
B. Analyzing the Eastern District of Texas's Popularity	114
C. Growing Resistance and <i>TC Heartland</i>	119
D. Evolving Aftermath: The Flight to Delaware ...	122
II. DELAWARE AS THE HUB OF BUSINESS LITIGATION	124
A. Corporate Litigation	125
B. Bankruptcy Filings	130
III. MEASURING THE EFFECT OF <i>TC HEARTLAND</i> ON FIRM VALUE	134
A. Empirical Strategy	135
B. Constructing the Dataset and Summary Statistics	138
C. The Value of <i>TC Heartland</i> to Shareholders....	141
IV. <i>TC HEARTLAND</i> 'S IMPACT ON THE MARKET FOR INCORPORATION	146
V. THE FUTURE OF PATENT TROLLS AFTER <i>TC HEARTLAND</i>	152
A. Will Delaware Curb Patent Trolls?	152
B. Will Delaware Forum Sell to Corporate Defendants?	156
VI. CHOICE OF VENUE BY CORPORATE DEFENDANTS: TWO-STEP SELECTION	158
CONCLUSION	162

INTRODUCTION

In the United States, a plaintiff is the “master of its complaint,” allowing it to file a lawsuit in the forum it prefers the most. This choice is constrained by the constitutional and statutory requirements of subject-matter jurisdiction and personal jurisdiction, as well as statutes that govern venue. But in many instances, plaintiffs have a choice among multiple possible forums in federal or state court.

While this ability to “forum shop” has been well studied, some scholars have recently begun to home in on a parallel phenomenon—the tendency of certain jurisdictions to “forum sell” to encourage new case filings in their courts.¹ A concern is that forum selling might cause jurisdictions to bias substantive laws and procedural rules in favor of the party that brings suit. And while most venues might have little incentive to forum sell, it only takes a few such venues to substantially impact the market for litigation.

We build on this growing literature by focusing on a key fact—while plaintiffs file lawsuits, *defendants* often control where those suits can be filed. For example, by deciding where to file articles of incorporation, corporations can influence where corporate litigation and bankruptcy filings occur.² Most public companies use forum-selection-by-law provisions to restrict shareholder-litigation suits to the state of incorporation. Likewise, corporations can and usually do file for bankruptcy in their state of incorporation. Delaware, the most popular state for firm incorporations, has become the jurisdiction of choice for both types of actions.³

We argue that this distinction between plaintiff and defendant choice of venue is important yet underappreciated. Because of incentives grounded in political economy considerations, forums that “sell” to defendants, primarily Delaware, do not produce litigation equal and opposite in result to those that “sell” to plaintiffs.

¹ See, e.g., Daniel Klerman & Greg Reilly, *Forum Selling*, 89 S. CAL. L. REV. 241, 243 (2016) (arguing that several jurisdictions now make the law more pro-plaintiff to attract certain plaintiffs to those courts); J. Jonas Anderson, *Court Competition for Patent Cases*, 163 U. PA. L. REV. 631, 634 (2015) (“[F]orum shopping in patent law is driven, at least in part, by federal district courts competing for litigants.”); Megan M. La Belle, *The Local Rules of Patent Procedure*, 47 ARIZ. ST. L.J. 63, 87–88 (2015) (arguing how local rules have created advantages to filing in certain jurisdictions).

² See *infra* Part II.

³ See *infra* Part II.

We illustrate this dynamic in the context of patent-infringement litigation, an area of significant economic importance where forum selling has been both highly publicized and roundly criticized. Until recently, patentees could sue alleged infringers for patent infringement in virtually any federal district court in the country.⁴ The bar for establishing proper venue was very low: the corporation simply had to be subject to personal jurisdiction in that district.⁵ What emerged was a system in which patentees flocked to one forum: the Eastern District of Texas. This forum attracted plaintiffs by promulgating local rules and administrative procedures that favored patentees, such as by reducing the likelihood of granting summary judgment and transfer motions, and by promoting faster discovery and pretrial deadlines.⁶

The rise of the Eastern District of Texas was largely driven by litigation from patent-assertion entities, often referred to as “patent trolls.” These entities own patents but do not practice the underlying invention. Their sole purpose is to sue defendants (often large corporations) for patent infringement and to extract payments for licensing agreements.⁷ Commentators and members of both political parties have widely criticized this system.

In May 2017, however, things arguably changed when the Supreme Court decided *TC Heartland LLC v. Kraft Foods Group Brands LLC*.⁸ There, the Court held that corporate defendants in patent-infringement cases “reside” in a state for venue purposes only if they are incorporated in that state.⁹ In many instances, *TC Heartland* will greatly limit plaintiffs’ choice over venue and allow corporate defendants, through their decisions where to incorporate and situate business facilities, to control where they can be sued. Accordingly, *TC Heartland* will make venue selection in patent-infringement cases more like that in corporate litigation and bankruptcy filings.

TC Heartland provides a natural framework to analyze how shifting control over venue from plaintiffs to defendants affects future litigation. Post-*TC Heartland*, new patent filings have already shifted dramatically away from the Eastern District of

⁴ See *VE Holding Corp. v. Johnson Gas Appliance Co.*, 917 F.2d 1574, 1576 (Fed. Cir. 1990).

⁵ *Id.*

⁶ See *infra* subpart I.B.

⁷ See, e.g., Christopher A. Cotropia, Jay P. Kesan & David L. Schwartz, *Unpacking Patent Assertion Entities (PAEs)*, 99 MINN. L. REV. 649, 651 (2014).

⁸ *TC Heartland LLC v. Kraft Foods Grp. Brands LLC*, 137 S. Ct. 1514 (2017).

⁹ *Id.* at 1515.

Texas to the District of Delaware, the state where most public firms are incorporated.¹⁰ Yet it is unclear whether this shift to a defendant-driven forum will have a material and long-term impact on patent litigation. Some argue, with plausible reasons, that the decision will not curb patent-troll litigation but merely move it to Delaware.

In this Article, we bring new empirical evidence to bear on this topic. We conduct a stock market event study that measures how investors reacted to *TC Heartland*.¹¹ In particular, if the companies that were most affected by the decision saw their valuations increase the most, then their investors likely believe the decision will benefit them. More generally, our empirical analysis allows us to quantify how much venue matters to these investors.

To conduct the event study, we first create a new database that links patent-infringement lawsuits, filed between 2000 and 2015, to publicly-traded companies. We then compute the probability that these public companies will be sued for patent infringement using relevant predictors, such as research and development expenses, cash holdings, and controls for the firm's industry. Incorporating a new dataset from Stanford Law School, we also measure the probability that a patent troll will sue a public company. We then evaluate the abnormal returns for all public firms on the day that *TC Heartland* was decided—that is, the change in stock-market value for these firms in excess of what would have been expected absent the decision.¹²

We obtain two main results.¹³ First, the most likely targets of patent trolls (but not other patent lawsuits) saw modest increases in stock price. This suggests the market expects *TC Heartland* to have a greater impact on troll litigation than on lawsuits by non-trolls. Second, firms incorporated in Delaware experienced a materially stronger stock price effect than other firms. That is, there is a tangible “Delaware effect”—Delaware firms that are most likely to be sued by trolls were most optimistic about *TC Heartland*'s impact. In contrast, the stock prices of firms not implicated by the decision, such as firms

¹⁰ See *infra* subpart I.D.

¹¹ See *infra* Part III.

¹² See *infra* Part III.

¹³ See *infra* subpart III.C.

incorporated overseas, though traded in the United States, were not materially affected by the decision.¹⁴

Overall, the results indicate that investors are optimistic that the flow of patent litigation from the Eastern District of Texas to the District of Delaware will benefit corporate defendants. But is the investors' optimism about Delaware warranted? And more importantly, why do they believe Delaware will be different? To answer these questions, we explore the political economy of Delaware and the litigation produced by this defendant-driven venue.

Delaware actively competes for firm incorporations, and its economy depends on incorporation fees. Delaware's fees are much higher than those of other states, reaching up to \$200,000 per year (as of January 2018) for larger firms.¹⁵ We argue that Delaware has limited incentives to produce rules that materially harm corporate defendants because high costs from patent-troll litigation might dissuade firms from incorporating in Delaware. As many studies have documented, judges, even federal ones, tend to internalize the incentives of their home state, in part to increase their influence and to assist the local economy and bar.¹⁶ This is what fueled the Eastern District of Texas to cater to plaintiffs' interests. Because Delaware's interests point in the opposite direction, we argue that its courts are unlikely to follow in Texas's footsteps.

Moreover, as is also well known, Delaware's courts have developed a reputation for expertise and predictable case law because it is the most favored jurisdiction for both corporate-shareholder litigation and bankruptcy filings. While some complain that this phenomenon leads Delaware courts to bias their jurisprudence in favor of corporate defendants and their managers, the evidence for the most part presents a more benign picture. Delaware Chancery courts are well known for their expertise in corporate law and the predictability of their judgments.¹⁷ Likewise, the Delaware bankruptcy courts have

¹⁴ The *TC Heartland* Court explicitly stated that its ruling did not implicate such firms. See 137 S. Ct. at 1520 n.2. Hence, the lack of market reaction for these firms is consistent with how we would expect their investors to react.

¹⁵ See *How to Calculate Franchise Taxes*, DEL. DIVISION CORPS., <https://corp.delaware.gov/frtaxcalc.shtml> [<https://perma.cc/T8AJ-M6DC>]. Before January 2018, the maximum fee was \$180,000. See Lawrence A. Hamermesh, *The Policy Foundations of Delaware Corporate Law*, 106 COLUM. L. REV. 1749, 1753–54 (2006).

¹⁶ See Klerman & Reilly *supra* note 1, at 272; Jonathan R. Macey & Geoffrey P. Miller, *Toward an Interest-Group Theory of Delaware Corporate Law*, 65 TEX. L. REV. 469, 496, 511 (1987).

¹⁷ See *infra* subpart II.A.

developed a reputation for more efficient procedures and more predictable outcomes than other bankruptcy courts.¹⁸ And Delaware's federal district court already has significant expertise in patent litigation¹⁹—recent appointments to the bench²⁰ suggest that its expertise will only increase.

Given its leadership role in business law and strong connection to Delaware institutions, we believe the District of Delaware is unlikely to fritter away its state's strong reputation in this field to become a new patent-troll haven. As documented in many studies, judges have strong incentives to attract and keep high profile cases in order to enhance their reputation and prestige, even when they have life tenure.²¹ Trying to emulate the Eastern District of Texas would needlessly cause Delaware to risk losing its stature.

To be sure, there is some risk that Delaware will become too friendly to corporate defendants.²² This risk is arguably stronger in patent litigation than in corporate litigation and bankruptcy filings. In corporate litigation, if Delaware were to unduly deter shareholder litigation, investors would be less likely to invest in Delaware firms. In bankruptcy filings, workouts need to be approved by the creditors, and, in any case, the debtor-in-possession (DIP) lender increasingly has more control over the process than the company itself. Analogous safeguards are not likely present in patent litigation.

Nonetheless, we believe this risk is limited for several reasons.²³ First, judges have incentives to allow litigation of many cases in order to develop expertise and increase their influence. Second, Delaware has incentives not only to maximize incorporation fees but also to further the interests of its local attorneys. More patent cases in Delaware will likely benefit the local patent bar and legal industry. Similar incentives have moti-

¹⁸ See *infra* subpart II.B.

¹⁹ Lauren H. Cohen, Umit G. Gurun & Scott Duke Kominers, *Patent Trolling Isn't Dead—It's Just Moving to Delaware*, HARV. BUS. REV. (June 28, 2017), <https://hbr.org/2017/06/patent-trolling-isnt-dead-its-just-moving-to-delaware> [<https://perma.cc/3LDJ-2ZDD>] (noting that Delaware was the second most popular venue for patentees prior to *TC Heartland*).

²⁰ Tom McParland, *Trump Nominates Connolly, Noreika for Delaware District Court*, DEL. L. WKLY. (Dec. 21, 2017), <https://www.law.com/delawarelawweekly/sites/delawarelawweekly/2017/12/21/trump-nominates-connolly-noreika-for-delaware-district-court/> [<https://perma.cc/WP9T-V37W>].

²¹ See, e.g., Anderson, *supra* note 1, at 664 (citing several reasons for judges to attract and keep high-profile cases: it can lead to favorable post-judicial opportunities, benefit the local communities, and increase the legal work within the communities).

²² See *infra* subpart V.B.

²³ *Id.*

vated Delaware's treatment of corporate litigation, which has been rampant for many years, despite its effect on corporate defendants. Most Delaware federal judges come from the Delaware bar and other Delaware state institutions, and they are likely to be mindful of these institutions' interests. Thus, they are unlikely to disregard patentees' interests to the extent that patentees could boost the local legal community. Finally, because some patentees will likely have some choice among venues, the District of Delaware will still have competition for patent litigation that should deter them from adopting an extreme pro-defendant bias.

We also consider the wider implications of *TC Heartland*. First, we speculate whether the case will further enhance Delaware's stature in the market for incorporation. Following *TC Heartland*, firms that are likely to be sued by trolls may take potential patent-infringement liability into account when making incorporation (or reincorporation) decisions. Our estimates suggest that for a company with an average (median) likelihood of facing a lawsuit by a patent troll, incorporation in Delaware could be worth approximately \$8.43 million (\$411,684) per year.²⁴ This may be an additional incentive for firms to incorporate in Delaware.

Finally, we consider more broadly whether it is better to give corporate defendants some control over choice of jurisdiction rather than ceding full control to plaintiffs.²⁵ A comparison of Delaware corporate litigation and bankruptcy processes (where choice effectively vests with defendants) and patent-infringement laws before *TC Heartland* (where choice vested with plaintiffs) suggests that the former approach is more even-handed and balanced. Regardless of which party chooses the venue, judges have incentives to encourage litigation to enhance their prestige and to benefit the local bar. Giving plaintiffs full control over venue appears to exacerbate these incentives because judges need only adopt plaintiff-friendly rules to attract new cases.

In contrast, when defendants have more control over venue, judges need to balance their own interests in encouraging litigation and defendants' interests in curbing litigation. In particular, because plaintiffs maintain some control over venue, even in a defendant-driven system, courts have incentives not to forum sell too hard to defendants. What results is a two-step venue selection process: first, defendants select po-

²⁴ See *infra* subpart III.C.

²⁵ See *infra* Part VI.

tential venues; second, plaintiffs choose where to file suit from among those venues. We believe this two-step process generates particularly strong incentives for judges to develop a reputation for quality and predictability.

Our Article proceeds as follows. Part I details the importance of venue in patent-infringement cases, focusing on the rise of litigation in the Eastern District of Texas and the impact of patent trolls, and discussing how *TC Heartland* and subsequent decisions have shifted litigation to Delaware. Part II provides background on Delaware as a center for business litigation, focusing on how it has cultivated judicial expertise and highly-developed case law in corporate-shareholder actions and bankruptcy filings.

Part III describes our data and empirical framework and presents our results. Most importantly, we find the Delaware corporations most likely to be sued by patent trolls saw their corporate valuations increase the most due to *TC Heartland*.

In Part IV, we discuss the potential impact of *TC Heartland* on the market of incorporation. We consider whether existing firms and new companies may take into account how patentee-friendly a jurisdiction is when making incorporation or reincorporation decisions, and we consider Delaware's relative advantages in this market.

In Part V, we explore why investors are optimistic that Delaware will be different. In particular, we highlight why the District of Delaware is unlikely to adopt pro-patentee or pro-troll rules similar to the Eastern District of Texas, given the court's previous actions in patent cases and, more importantly, the state's dependence on business incorporations. We also explain why the Delaware court is unlikely to go too far in the other direction and actively disfavor patentees in infringement litigation.

In Part VI, we tie this discussion into a broader analysis of plaintiff versus defendant choice over venue. As we show in the patent context, giving defendants choice over venue can sometimes be effective at deterring excessive litigation, such as that seen in the Eastern District of Texas.

I

THE BATTLE OVER PATENT VENUE

Venue is fiercely contested terrain in patent-infringement litigation. This Part briefly describes the history of venue in infringement cases, explaining how the rise of the Eastern District of Texas and the growth of patent trolls are intertwined

and highlighting reasons for the district's popularity. This Part also details the growing backlash against venue shopping, culminating with *TC Heartland* and its aftermath.

A. The Rise of the Patent Troll and the Eastern District of Texas

Federal district courts have exclusive subject-matter jurisdiction over all patent-infringement suits.²⁶ Patent venue, governed by 28 U.S.C. § 1400(b), has two separate clauses that specify alternate ways of determining which federal district(s) are appropriate for suit. First, venue is proper if the defendant “resides” in the judicial district in which the case is brought. Second, venue is proper if the defendant has both “committed acts of infringement” in the district and has a “regular and established place of business” there.²⁷

Since 1990, patentees have relied exclusively on the first clause to support their choice of venue.²⁸ This is because the U.S. Court of Appeals for the Federal Circuit, which decides all patent appeals,²⁹ held in *VE Holding Corp. v. Johnson Gas*

²⁶ 28 U.S.C. § 1338(a) (2018) (“The district courts shall have original jurisdiction of any civil action arising under any Act of Congress relating to patents No State court shall have jurisdiction over any claim for relief arising under any Act of Congress relating to patents”). Patentees can also file suit before the U.S. International Trade Commission to block imports of allegedly infringing products. See 19 U.S.C. § 1337 (2018).

²⁷ See 28 U.S.C. § 1400(b) (2018) (“Any civil action for patent infringement may be brought in the judicial district where the defendant resides, or where the defendant has committed acts of infringement and has a regular and established place of business.”). Note that “venue” typically refers to the geographic region in which a suit is brought, such as Massachusetts or East Texas, whereas “forum” generally refers to a particular court, such as the District of Delaware, or the Third Judicial Circuit for the State of Illinois. Because patent-infringement litigation occurs exclusively in the federal system, forum and venue are synonymous in this context and refer to the particular federal district court in which suit is brought.

²⁸ Prior to 1990, the leading case on patent venue was *Fourco Glass Co. v. Transmirra Prods. Corp.* 353 U.S. 222 (1957). The plaintiff there claimed the court should rely on the general venue statute, 28 U.S.C. § 1391(c), to determine where a defendant corporation resided. *Id.* at 224–28. Under this approach, venue was proper throughout the country for corporations that distribute their products (i.e., “do business”) nationally. But the Supreme Court disagreed, noting that section 1400(b) trumped section 1391(c) because the “law is settled that [h]owever inclusive may be the general language of a statute, it ‘will not be held to apply to a matter specifically dealt with in another part of the same enactment.’” *Id.* at 228 (quoting *Ginsberg & Sons v. Popkin*, 285 U.S. 204, 208 (1932)). And when interpreting section 1400(b), the Court held that residence for a corporate defendant meant its state of incorporation. *Id.* at 229.

²⁹ Notably, the Federal Circuit was created in 1982 as a unified court for all patent appeals largely to eliminate forum shopping among various circuit courts. Because each circuit had different precedent, patentees in the 1970s would shop among the circuits (often preferring the Fifth, Sixth and Seventh Circuits). The

*Appliance Co.*³⁰ that a corporate defendant “resides” in any venue in which it is subject to personal jurisdiction when suit is commenced.³¹ Hence, section 1400(b) did not impose any additional constraints on plaintiffs beyond the constitutional³² and statutory³³ requirements of personal jurisdiction. And a manufacturer’s decision to target a venue by selling its product there was sufficient to show that both personal jurisdiction and venue were proper over the manufacturer.³⁴

After *VE Holding*, patentees could sue corporate defendants with a national presence in almost any federal district court. At first, the most popular districts were near major population or technology centers. For example, the five most popular districts from 1995 to 1999 were the Central District of California (Los Angeles), the Northern District of California (San Francisco and Silicon Valley), the Northern District of Illinois (Chicago), the Southern District of New York (Manhattan), and the District of Massachusetts (Boston and Cambridge).³⁵ Other districts became popular because they pushed cases to trial faster. This included the Eastern District of Virginia (ranked #8 from 1995 to 1999) and its famed “rocket docket.”³⁶

creation of the Federal Circuit ended circuit shopping but not venue shopping. See Anderson, *supra* note 1, at 646–49.

³⁰ 917 F.2d 1574 (Fed. Cir. 1990).

³¹ The *VE Holding* court justified departing from the rule announced in *Fourco Glass Co.*, 353 U.S. at 229, by claiming Congress changed patent venue law in 1988 when it amended section 1391(c) to read (in relevant part): “*For purposes of venue under this chapter*, a defendant that is a corporation shall be deemed to reside in any judicial district in which it is subject to personal jurisdiction at the time the action is commenced.” *VE Holding*, 916 F.2d at 1578. The Court held the amended language indicated that section 1400(b) incorporated the definition of residence under section 1391(c): “We now have exact and classic language of incorporation: ‘For purposes of venue under this chapter’ Congress could readily have added ‘except for section 1400(b),’ if that exception, which we can presume was well known to the Congress, was intended to be maintained. Certainly it would not be sensible to require Congress to say, ‘*For purposes of this chapter, and we mean everything in this chapter*’ in order to ensure that it has covered everything in a chapter of the statutes.” *Id.* at 1579.

³² See, e.g., *Int’l Shoe Co. v. Washington*, 326 U.S. 310, 316 (1945) (for personal jurisdiction to exist, a party must have “certain minimum contacts with [the forum] such that the maintenance of the suit does not offend ‘traditional notions of fair play and substantial justice.’”).

³³ State long-arm statutes spell out the extent to which a state court may exercise personal jurisdiction over an out-of-state defendant.

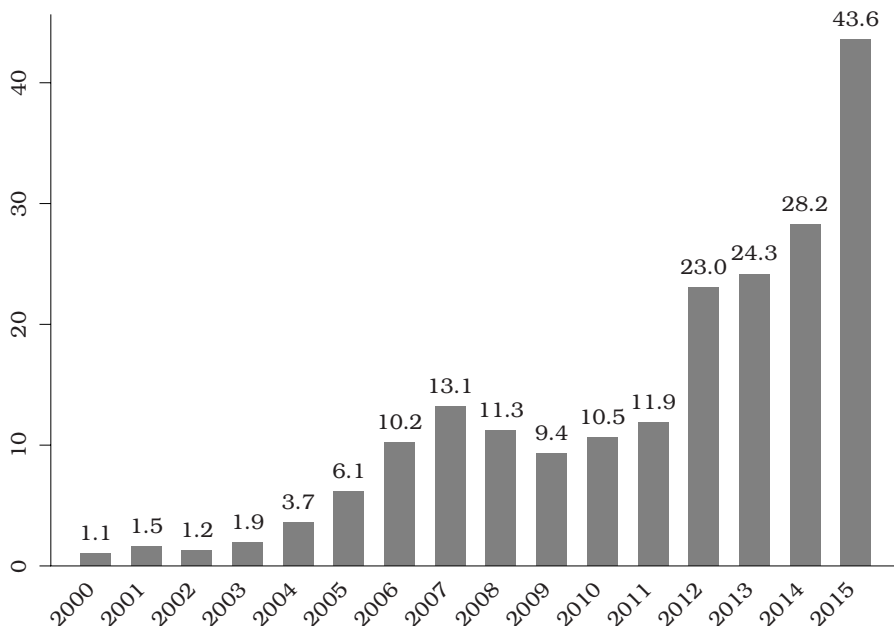
³⁴ See, e.g., *Asahi Metal Indus. Co. v. Superior Court*, 480 U.S. 102, 112 (1987) (foreign company might be subject to personal jurisdiction if aware its products might end up in a forum state via “stream of commerce”).

³⁵ See Kimberly A. Moore, *Forum Shopping in Patent Cases: Does Geographic Choice Affect Innovation?*, 83 J. PAT. & TRADEMARK OFF. SOC’Y 558, 571 tbl.1 (2001).

³⁶ The Eastern District of Virginia still has the nation’s fastest trial docket. See Robert M. Tata, *Virginia’s ‘Rocket Docket’ Continues To Roar*, LAW360 (Apr. 17,

But these early spikes were just precursors to the main event: the rise of the Eastern District of Texas as the dominant venue for patent-infringement litigation. Using our dataset, we show the district's spectacular growth in Figure 1, which graphs patent suits filed in the Eastern District of Texas each year from 2000 through 2015 as a percentage of all infringement cases.

FIGURE 1
PERCENT SUITS FILED IN E.D. TEXAS: 2000–2015



*All data from Stanford NPE dataset as of 1/2/2018

Apart from a slight decline in 2008 and 2009, the share of lawsuits filed in the Eastern District of Texas increased every year starting in 2002. And the growth has been dramatic: only 1.2% of all patent-infringement suits were filed in the Eastern District in 2002 while an incredible 43.6% of all infringement suits were filed there in 2015.

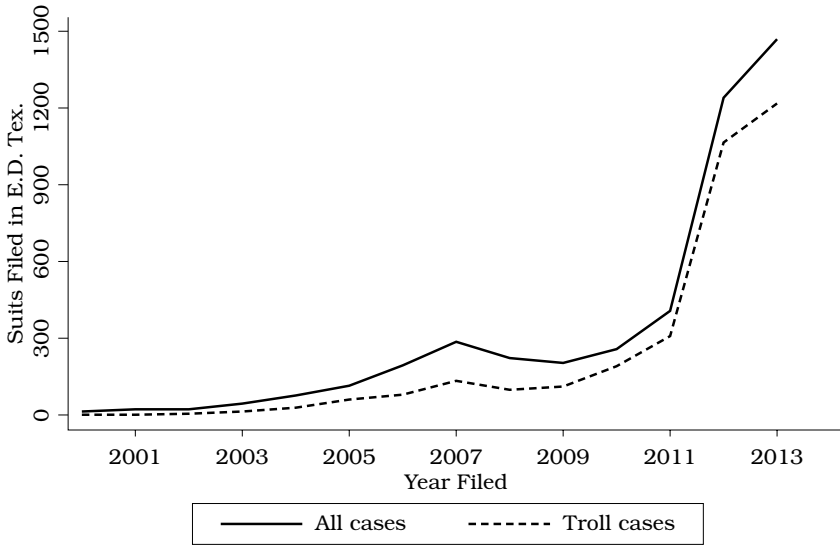
How did the Eastern District of Texas become the predominant venue for patent-infringement litigation? Largely, it was

2015, 10:13 AM), <https://www.law360.com/articles/644064/virginia-s-rocket-docket-continues-to-roar> [<https://perma.cc/RD5A-4TPQ>] (noting that it “had the fastest trial docket in the country in 2014. Once again. For the seventh year in a row.”). Other top 10 districts in terms of popularity included the District of Delaware (6), the Southern District of Florida (7), the District of New Jersey (9), and the District of Minnesota (10). See Moore, *supra* note 35, at 571 tbl.1.

because the district became the forum of choice for patent-assertion entities, more commonly referred to as patent trolls, whose sole purpose is to bring patent-infringement suits and obtain licensing payments for inventions they do not practice.

Figure 2 illustrates this dynamic. The solid line shows the number of suits filed in the Eastern District of Texas by year; the dashed line shows the proportion of patent infringement suits in the Eastern District that were brought by trolls.³⁷ While there was a significant amount of non-troll litigation in the Eastern District (much of it between competitors), the growth in litigation in the Eastern District of Texas was primarily driven by the increase in troll litigation over time, with a sharp spike beginning around 2010.³⁸

FIGURE 2
RISE OF E.D. TEXAS AND PATENT TROLLS: 2000–2013



*All data from Stanford NPE dataset as of 1/2/2018

³⁷ Figure 2 is limited to lawsuits whose plaintiffs have been coded as part of the Stanford Non-Practicing Entity Litigation Dataset as of early 2018. This encompasses about 82% of all patent lawsuits filed between 2000 and 2013. We see a similar graph, however, if we use a random sample of all cases, as selected by the Stanford coders. So, we expect Figure 2 is largely representative of the entire universe of patent-infringement cases.

³⁸ Part of this spike is attributable to changes in joinder rules under the Leahy-Smith America Invents Act, signed into law on September 16, 2011. See *infra* note 65 and accompanying text. To account for this change in joinder rules, we also looked at how the number of publicly traded defendants across suits (rather than the total number of lawsuits) changed over time in the Eastern District of Texas. The results are like those in Figure 2, with most lawsuits in the Eastern District of Texas being brought by patent trolls and with a significant increase in defendants around 2010.

So, the Eastern District's rise is largely intertwined with a story of how patent trolls became the dominant filers of patent-infringement suits.³⁹

B. Analyzing the Eastern District of Texas's Popularity

Why did the Eastern District of Texas become so popular with patentees, and, in particular, with patent trolls? It is not because of size—the entire district contains only 1% of the United States' population but hosted almost 45% of all patent-infringement suits in 2015. And that year, almost 1,700 new patent cases (out of 5,819 filed nationwide) ended up in a single federal district court in Marshall, Texas—which has fewer than 24,000 people.⁴⁰

The Eastern District's popularity largely stems from actions the court itself took to encourage infringement suits.⁴¹ For example, the Eastern District was one of the first districts to adopt patent local rules.⁴² These kinds of rules, on their own, are not necessarily patentee-friendly;⁴³ however, the ones

³⁹ Patent-assertion entities in the Eastern District of Texas primarily filed lawsuits in the software, computing, and telecommunications industries. See Brian J. Love & James Yoon, *Predictably Expensive: A Critical Look at Patent Litigation in the Eastern District of Texas*, 20 STAN. TECH. L. REV. 1, 8 (2017); see also *id.* at 12–13 (“[C]ases litigated in the Eastern District of Texas overwhelmingly involve patents covering inventions made elsewhere, asserted against parties located elsewhere, and by plaintiffs with little or no connection to the region prior to filing a complaint.”).

⁴⁰ Kayleigh Rogers, *The Small Town Judge Who Sees a Quarter of the Nation's Patent Cases*, VICE: MOTHERBOARD (May 5, 2016, 9:00 AM), https://motherboard.vice.com/en_us/article/aek3pp/the-small-town-judge-who-sees-a-quarter-of-the-nations-patent-cases [<https://perma.cc/8KPE-EACX>].

⁴¹ That the Eastern District of Texas actively encourages patent litigation is no secret. As Judith Guthrie, a former federal magistrate judge in Tyler, Texas, said, “Anybody who applies to be a judge in the Eastern District knows what the deal is It's like an unspoken job description. It will continue until the bar decides to file elsewhere or until Congress changes the law.” See Loren Steffy, *Patently Unfair*, TEX. MONTHLY, (Oct. 2014), <https://www.texasmonthly.com/politics/patently-unfair/> [<https://perma.cc/AR9Z-EM6R>].

⁴² In 2001, Judge T. John Ward, who sat in Marshall, Texas, imported and modified procedural rules for his court based on patent local rules created in the Northern District of California. The full Eastern District of Texas adopted these rules in 2005. See Anderson, *supra* note 1, at 652; see also *id.* at 634 (noting that differences among district courts pertain to local procedures since all patent infringement cases are governed by the same legal rules and the same Federal Rules of Civil Procedure); La Belle, *supra* note 1 (arguing against proliferation of local patent rules, which promote non-uniformity across forums and increase forum shopping); Mark A. Lemley, *Where to File Your Patent Case*, 38 AIPLA Q.J. 401, 403–04 (2010).

⁴³ Patent local rules, for example, often require patentees to provide infringement contentions early in the litigation, which in turn requires the patentee to be specific about the claims it is asserting and the allegedly infringing features in defendants' products or services. These rules might also speed things forward to

adopted and applied in the Eastern District included patentee-friendly provisions such as compressing discovery timelines⁴⁴ and reducing parties' ability to delay discovery and trial dates.⁴⁵ Importantly, speeding up discovery and hastening trial systematically favor patent-assertion entities—because these firms own patents but do not practice the underlying inventions, there is very little, if anything, they have to produce during discovery. By contrast, corporate patent defendants often spend tens or even hundreds of thousands of dollars in legal and other fees to produce discovery on their allegedly infringing products.

Other more informal administrative rules or case management procedures created by Eastern District of Texas judges also favor patentees. For example, judges in the Eastern District disproportionately allow cases to go to trial rather resolving them on summary judgment,⁴⁶ a practice that generally disfavors patent defendants. This is also significant in part because, due to the region's history, the local population appears to be friendly to patentees. East Texas was previously a hub for class action and mass-tort litigation, particularly actions against railroads. These cases, the argument goes, instilled a tradition of distrust in local jurors against corporate defendants, which carries on today into the patent context.⁴⁷ Relatedly, some commentators argue that Eastern District jurors view patents almost like real property—hence, a patent-infringement action is viewed akin to a trespass.⁴⁸ This belief

claim construction, where a favorable ruling can help a defendant kill a case relatively quickly.

⁴⁴ For example, the Eastern District of Texas set discovery deadlines of nine months instead of eighteen months, which was the timeline in the Northern District of California. See Anderson, *supra* note 1, at 652.

⁴⁵ See *id.* at 652; Klerman & Reilly, *supra* note 1, at 268–70.

⁴⁶ See Klerman & Reilly, *supra* note 1, at 251–54; Love & Yoon, *supra* note 39, at 17 (noting that “judges in the Eastern District of Texas grant summary judgment in defendants' favor at a rate of about half the national average”); see also Nate Raymond, *Taming Texas*, AM. LAW., Mar. 2008, at 100, 104 (quoting retired Eastern District of Texas Judge T. John Ward who noted that “[m]ost of the time we feel like there are fact questions,” and that “I don't strain to get a summary judgment if I believe there's a fact question”); see also *id.* (quoting Paul Janicke, an IP professor at the University of Houston who stated that “[East Texas judges] thought trial was the American way of doing things”).

⁴⁷ See Yan Leychkis, Note, *Of Fire Ants and Claim Construction: An Empirical Study of the Meteoric Rise of the Eastern District of Texas as a Preeminent Forum for Patent Litigation*, 9 YALE J.L. & TECH. 193, 213 (2007). Of course, many patents are owned or developed by corporate entities, but the romanticized vision of an individual, working in his or her garage to create the next big invention, still has considerable popular appeal.

⁴⁸ See *id.*, at 213–14; see also Adam Mossoff, *The Trespass Fallacy in Patent Law*, 65 FLA. L. REV. 1687, 1692–96 (2013) (noting that numerous courts and

arguably exists because folks in the district were used to “fighting with oil companies over royalties for their mineral rights.”⁴⁹

These features have led some commentators to argue that potential jurors in the Eastern District of Texas are particularly plaintiff-friendly. The empirical evidence on this point, however, is mixed—to the extent plaintiff-win rates reflect how plaintiff-friendly its jurors are (a highly dubious proposition, because win rates depend on the selection of cases that plaintiffs bring and the selection of cases that do not settle), the Eastern District of Texas appears plaintiff-friendly but not excessively so, at least in more recent years.⁵⁰ Nonetheless, what matters is that patentees seem to believe the district and its jurors are more favorable for them, hence motivating them to file suit there.

Furthermore, the Eastern District of Texas is not easy for defendants to escape, because Eastern District judges are less likely to grant motions to transfer outside of their district.⁵¹ And these judges take longer to decide such motions, as well as summary-judgment motions, than judges in other courts, extending the time patent defendants can expect to spend there even if they win their case or are able to transfer it.⁵² The

commentators have analogized patent infringement to trespass and arguing that this analogy is flawed).

⁴⁹ See Raymond, *supra* note 46, at 103; see also Leychkis, *supra* note 47, at 213. Some also claim Eastern District jurors have special respect for the government, which favors patentees, because jurors view the government grant of a patent as an imprimatur of its validity. See *id.* at 213–14.

⁵⁰ Compare Andrei Iancu & Jay Chung, *Real Reasons the Eastern District of Texas Draws Patent Cases—Beyond Lore and Anecdote*, 14 SMU SCI. & TECH. L. REV. 299, 305 (2011) (finding a patentee win rate of 73% in the Eastern District of Texas between 1991 to 2010, with some prominent districts the same or higher (C.D. Cal. at 73%; E.D. Va. at 79%) and others lower (N.D. Cal. at 66%; D. Del. at 61%), and Lemley, *supra* note 42, at 419–22 (2010) (noting the Eastern District of Texas is not among the top five most desirable districts in terms of patentee win rate at trial for all cases between 2000 to 2010), with Leychis, *supra* note 47, at 210–11 (patentees won 90% of all jury trials in the Eastern District of Texas between 1998 and 2006). See also Anderson, *supra* note 1, at 653 (noting “no plaintiff had ever lost a patent trial in the Eastern District until 2005: twelve trials had resulted in twelve verdicts of valid and infringed”); Raymond, *supra* note 46, at 102 (noting that Eastern District defendants began to fare better in 2007, winning seven out of nine cases tried to a verdict).

⁵¹ See, e.g., Klerman & Reilly, *supra* note 1, at 260–63. On multiple occasions, the Federal Circuit has found that the Eastern District of Texas clearly abused its discretion by denying motions to transfer venue. See Bijal Vakil, *Venue Challenges: Increasingly Common in Patent Infringement Cases Filed in the Eastern District of Texas*, WHITE & CASE (Aug. 4, 2011), <https://www.whitecase.com/publications/article/venue-challenges-increasingly-common-patent-infringement-cases-filed-eastern> [<https://perma.cc/C77U-53UD>].

⁵² See Love & Yoon, *supra* note 39, at 17 (noting the district is on average 100 days slower than the national average when it grants summary judgment); see *id.*

accumulated effect of such procedures makes litigation in the Eastern District of Texas predictably more expensive for patent defendants—thereby incentivizing these defendants to settle cases and boosting the district’s popularity among patent trolls.⁵³

Finally, plaintiffs generally like to know ahead of time which judge will be assigned to their case. While the Eastern District of Texas technically assigns cases randomly, a combination of its small size and general orders issued by the district’s chief judge allow plaintiffs to predict with high probability which judge will be assigned to their case.⁵⁴ This ability to “judge shop”—to hand pick which judge will hear a case—makes the Eastern District especially desirable for patentees.⁵⁵

But why would the Eastern District of Texas encourage patent litigants to file suit there? Patent cases are complicated and time-consuming; why would judges increase their workload while their salary (and the number of hours in their day) remains fixed? There are many potential reasons;⁵⁶ we focus on two primary ones here.

First, the more plaintiffs choose the Eastern District and the longer their lawsuits last, the more local resources litigants require. The economic effect of patent cases in East Texas has been well documented. Restaurants and catering,⁵⁷ hotels, liti-

at 16 (“Cases transferred out of the Eastern District of Texas are over twice as old as those transferred out of the Northern and Central Districts of California.”); *see also id.* at 26 (“Eastern District of Texas [judges] are less likely than their counterparts in other parts of the country to stay lawsuits pending patent office challenges of the patent-in-suit [in parallel administrative proceedings]”); Klerman & Reilly, *supra* note 1, at 263–65; Saurabh Vishnubhakat, Arti K. Rai & Jay P. Kesan, *Strategic Decision Making in Dual PTAB and District Court Proceedings*, 31 BERKELEY TECH. L.J. 45, 84 (2016) (noting “the relative reluctance of the Eastern District of Texas to grant stays”).

⁵³ *See* Love & Yoon, *supra* note 39.

⁵⁴ *See* Anderson, *supra* note 21, at 671–72 (noting, as of April 2014, “one could file a patent case in the Tyler division and enjoy a 95% chance of drawing Judge [T. Ward] Davis” and how all cases filed in the Marshall Division were assigned with certainty to Judge [Rodney] Gilstrap); Klerman & Reilly, *supra* note 1, at 254–57.

⁵⁵ *See* Anderson, *supra* note 1, at 671–72; *see also* Jonas Anderson, *Judge Shopping in the Eastern District of Texas*, 48 LOY. U. CHI. L.J. 539, 544–50 (2016) [hereinafter *Judge Shopping*] (discussing how the court’s unique case assignment procedure allows patentees to shop among the court’s judges).

⁵⁶ *See generally* Anderson, *supra* note 1, at 661–66 (discussing several reasons why a judge would be motivated to engage in the forum shopping game with litigants); Klerman & Reilly, *supra* note 1, at 270–77 (explaining why several jurisdictions have engaged in forum selling).

⁵⁷ *See* Melissa Repko, *How Patent Suits Shaped a Small East Texas Town Before Supreme Court’s Ruling*, DALLAS NEWS (May 23, 2017), <https://>

gation support, and commercial office space⁵⁸ all benefit from the legions of well-heeled patent attorneys who regularly visit Marshall and other Eastern District towns. And although local counsel is not required in the Eastern District of Texas (unlike some other federal districts), companies often still rely on local counsel, creating a boon for local attorneys. So if Eastern District judges want to be economic “rainmakers” for their local community, it makes sense they would encourage litigation there.⁵⁹

Second, patent litigation put the Eastern District of Texas on the national map, and it arguably made the district’s judges the most important jurists in patent law outside of the Federal Circuit and the Supreme Court. To the extent this kind of prestige motivates judges—and prestige is thought to be an especially important consideration for judges who deal with specialized litigation, like patent or bankruptcy cases⁶⁰—then it also explains why the Eastern District of Texas fostered the growth of patent litigation in its courts.⁶¹

www.dallasnews.com/business/technology/2017/05/24/east-texas-supreme-court-ruling-setback-towns-final-verdict-locals-say [<https://perma.cc/54PK-FW7L>] (“A hotel bought a subscription to PACER—an electronic docket that monitors federal court cases—to track upcoming trials and sell rooms to attorneys.”); Steffy, *supra* note 41 (profiling the upscale Blue Frog Grill and the out-of-town lawyers who order catering from it).

⁵⁸ Repko, *supra* note 57 (“Out-of-town companies began renting empty offices, in the hopes of appearing to have East Texas ties.”).

⁵⁹ Klerman & Reilly, *supra* note 1, at 272–75; Anderson, *supra* note 211, at 664–65.; *see generally* Diego A. Zambrano, *The States’ Interest in Federal Procedure*, 70 STAN. L. REV. 1805 (2018) (discussing in-depth the states’ myriad interests in federal procedure).

⁶⁰ *See* Anderson, *supra* note 1, at 662–64 (noting ancillary benefits for judges becoming specialized experts that include receiving invitations to speak before specialized bar groups and bar associations at national conferences, as well as lucrative post-judicial careers in the private sector); Klerman & Reilly, *supra* note 1, at 271–72, 275–77. *See generally* J. Jonas Anderson, *Court Capture*, 59 B.C. L. REV. 1543 (2018) (discussing how federal courts, like federal agencies, can be “captured” and citing the Eastern District of Texas as an example).

⁶¹ Indeed, other federal district courts have tried, and continue to try, to encourage patent litigants to file infringement suits in their districts. For example, the District of Massachusetts is considering changing its local rules to make patent litigation more efficient and entice more patentees to file suits there. *See* Matthew Bultman, *Change to Local Rules May Bring More Patent Cases to Mass.*, LAW360 (Jan. 11, 2018, 8:07 PM), <https://www.law360.com/publicpolicy/articles/999288/change-to-local-rules-may-bring-more-patent-cases-to-mass-> [<https://perma.cc/WDE2-9DSR>] (noting that the new local rules were drafted based on suggestions from local patent litigators).

C. Growing Resistance and *TC Heartland*

As the Eastern District of Texas gained in prominence and the social costs of patent trolls became more apparent, criticism of patent-venue rules mounted.⁶² Frustratingly, much of the growth in troll activity occurred post-2011, after passage of the Leahy-Smith America Invents Act (AIA), which was the most significant patent reform legislation in decades.⁶³

While some of the AIA's reforms specifically targeted patent trolls and venue shopping,⁶⁴ they were met with limited success. For example, the AIA tightened joinder rules in an attempt to curb the common troll practice of suing large numbers of defendants in the same lawsuit to avoid upfront costs.⁶⁵ But this change did not stem the tide of troll litigation; if anything, as Figure 2 suggests, troll litigation continued to increase after 2011. Trolls simply split up defendants into separate lawsuits instead of reducing the total number of defendants they sued.⁶⁶ Presumably, the fixed costs of bringing separate suits were simply not high enough for the change in joinder rules to make a difference.

As troll litigation and venue shopping continued to increase, political actors grew increasingly concerned. In 2013,

⁶² See, e.g., Jeanne C. Fromer, *Patentography*, 85 N.Y.U. L. REV. 1444, 1478 (2010) (proposing that venue be constrained to “the district of the principal place of business of any of the defendants”).

⁶³ Most notably, the AIA created the Patent Trial and Appeal Board (PTAB), a new venue in which third parties could seek *inter partes* review of already-granted patents in hopes of having them invalidated. The PTAB was created primarily to address the perceived problem of weak patents—those patents that were improperly granted because they did not meet the statutory standard of patentability. See, e.g., Neel U. Sukhatme, “Loser Pays” in *Patent Examination*, 54 HOUS. L. REV. 165, 206 (2016) (discussing the role of the PTAB). Many scholars believe patent trolls disproportionately use weak patents. See, e.g., ADAM B. JAFFE & JOSH LERNER, *INNOVATION AND ITS DISCONTENTS* 29–31 (3d prtg. 2007) (highlighting that disputes over patents generally involve weak patents). Hence, reducing the number of such patents should deter troll litigation.

⁶⁴ See generally Jim Harlan, Chad Everingham, Douglas M. Kuehl, Lisa A. Dolak & David O. Taylor, *The America Invents Act: Target, the Eastern District of Texas*, 15 SMU SCI. & TECH. L. REV. 471, 474–75 (2012) (evaluating several of the AIA reforms that targeted patent trolls and venue shopping).

⁶⁵ See *id.* at 472–73; Klerman & Reilly, *supra* note 1, at 257–59. Under the AIA, patentees could sue multiple defendants in the same suit only if the claims against them “[arose] out of the same transaction, occurrence, or series of transactions or occurrences relating to the making, using, importing into the United States, offering for sale, or selling of the *same accused product or process*.” Leahy-Smith America Invents Act of 2011, 35 U.S.C. § 299 (2012) (emphasis added).

⁶⁶ This is apparent in our data. For example, using the sample of cases that the Stanford NPE project has coded thus far, the total number of publicly traded defendants sued by patent trolls in the Eastern District of Texas from 2009 to 2013 by year were 483, 1,167, 1,088, 1,018, and 1,282, respectively.

the Obama administration authorized the Federal Trade Commission to conduct a comprehensive study of patent assertion entities, allowing it to use its subpoena powers to obtain detailed private data on these entities.⁶⁷ In 2015 and 2016, various bills were introduced in the Republican-controlled Senate and House to attempt to limit venue shopping.⁶⁸ Hillary Clinton also explicitly endorsed patent-venue reform as part of her failed 2016 presidential campaign.⁶⁹ But, like many other pieces of proposed legislation during this time period, no venue reform bill ever passed.

In December 2016, however, venue reformers were heartened by the prospect of judicial intervention when the Supreme Court granted certiorari in *TC Heartland*.⁷⁰ Although it had been on the books for over 26 years, petitioners attacked *VE Holding*, claiming the Federal Circuit had improperly incorporated the broader general venue statute, 28 U.S.C. § 1391(c), within the terms of the patent venue statute, 28 U.S.C. § 1400(b).⁷¹ As such, petitioners argued the Federal Circuit

⁶⁷ FTC, PATENT ASSERTION ENTITY ACTIVITY 2 (2016) [hereinafter, "FTC STUDY"]; see also Matthew L. Spitzer, *Trolls, Nuisance Suits, and the FTC* (Nw. Univ. Pritzker Sch. of Law, Law & Econ. Series No. 17-14, 2017). The report was authorized under section 6(b) of the Federal Trade Commission Act. Among other things, the report classified patent-assertion entities into two categories: "portfolio PAEs," which offer manufacturers licenses to large portfolios prior to suing, and "litigation PAEs," which sue first and seek licenses later.

⁶⁸ Venue Equity and Non-Uniformity Elimination Act of 2016 ("VENUE Act"), S. 2733, 114th Cong. (2016); PATENT Act, S. 1137, 114th Cong. (2015); Innovation Act, H.R. 9, 114th Cong. (2015).

⁶⁹ See Brady Dale, *Clinton Endorses Patent Venue Reform as Apple Takes \$25M Hit*, OBSERVER, (July 12, 2016, 7:17 AM), <http://observer.com/2016/07/patent-venue-reform/> [<https://perma.cc/U6MN-LR7R>].

⁷⁰ Petitioners' certiorari petition was supported by a raft of amicus briefs, many of which focused on how the Federal Circuit's interpretation of section 1400(b) had led to rampant venue shopping and the rise of the Eastern District of Texas. See, e.g., Brief of Amici Curiae 56 Professors of Law and Economics in Support of Petition for Writ of Certiorari, *TC Heartland LLC v. Kraft Foods Group Brands LLC*, 137 S. Ct. 1514 (2017) (No. 16-341). Ironically, *TC Heartland* did not involve the Eastern District of Texas—it involved a corporate defendant who was incorporated in Indiana but sued in Delaware. Hence, in that case, limiting suit to the defendant's state of incorporation meant moving the case out of Delaware.

⁷¹ Specifically, a sole question was presented in the cert petition: "Whether 28 U.S.C. § 1400(b) is the sole and exclusive provision governing venue in patent infringement actions and is not to be supplemented by 28 U.S.C. § 1391(c)." Petition for a Writ of Certiorari at i, *TC Heartland LLC v. Kraft Foods Grp. Brands LLC*, 137 S. Ct. 1514 (2017) (No. 16-341); see *supra* notes 27–28 and accompanying text for discussion of these provisions. Petitioners argued that the Supreme Court had already held sixty years earlier in *Fourco Glass Co. v. Transmirra Products Corp.*, 353 U.S. 222 (1957) that under section 1400(b), a corporate defendant "resides" in its state of incorporation. The petitioners claimed Congress had not amended the statutes in any meaningful way since then to abrogate *Fourco Glass*, and hence, the Federal Circuit's decision in *VE Holding* was im-

had improperly interpreted venue more broadly than section 1400(b) allowed.

At first, the Supreme Court's decision to grant certiorari was thought likely to herald the end of venue shopping in the Eastern District of Texas,⁷² particularly since the Court has repeatedly reversed the Federal Circuit in recent years.⁷³ Still, substantial uncertainty remained, especially after oral argument, as to whether the Supreme Court would actually overturn *VE Holding* given that the case had been governing law for so long and Congress had not stepped in to change the law in the interim.⁷⁴

The uncertainty was finally resolved on May 22, 2017, when the Court issued its unanimous decision in favor of petitioners.⁷⁵ In particular, the Court held that intervening

proper. Petition for a Writ of Certiorari at 14, *TC Heartland*, 137 S. Ct. 1514 (2017) (No. 16-341).

⁷² See, e.g., Dennis Crouch, *Goodbye E.D. Texas as a Major Patent Venue*, PATENTLY-O (Dec. 14, 2016), <https://patentlyo.com/patent/2016/12/goodbye-patent-venue.html> [<https://perma.cc/66CM-EQFQ>] (noting the case had “the potential to truly shake-up the current state of patent litigation” and “[a]n 8-0 reversal of the Federal Circuit is quite likely, although my headline is likely premature”); Brent Kendall, *Supreme Court to Hear Patent Case That Could Limit Venue Shopping*, WALL ST. J. (Dec. 14, 2016, 5:35 PM), <https://www.wsj.com/articles/supreme-court-to-hear-patent-case-that-could-limit-venue-shopping-1481749533> [<https://perma.cc/24MN-7V87>] (noting the justices would have an opportunity to end the “dominance of the Eastern District of Texas”); Jeff John Roberts, *Supreme Court to Mess With Texas Over Patents*, FORTUNE (Dec. 16, 2016), <http://fortune.com/2016/12/16/supreme-court-patent-venue/> [<https://perma.cc/D7XQ-64Z9>] (noting this was “a case that will likely put an end to a special Texas cottage industry that has been a thorn in the side of big business”).

⁷³ See, e.g., Peter Lee, *The Supreme Assimilation of Patent Law*, 114 MICH. L. REV. 1413, 1415 (2016) (discussing how the Supreme Court in recent years has sought to minimize exceptionalism in patent law and bring it in line with other legal fields); David Forman, *Why Does the U.S. Supreme Court Keep Reversing the Federal Circuit?*, OSHA LIANG LLP (Mar. 31, 2017), <https://oshaliang.com/newsletter/why-does-the-u-s-supreme-court-keep-reversing-the-federal-circuit/> [<https://perma.cc/AH6V-LWGJ>] (noting the Supreme Court has reversed the Federal Circuit in twenty-two out of twenty-seven patent cases since 2005). But see Paul R. Gugliuzza, *How Much Has the Supreme Court Changed Patent Law?*, 16 CHL-KENT J. INTELLECTUAL PROP. 330, 330–31 (2017) (suggesting the effect of recent Supreme Court cases on patent law is not as dramatic as some might suggest).

⁷⁴ See, e.g., Daniel Fisher, *Supreme Court Seems Unenthusiastic About Eliminating Patent-Troll Venue*, FORBES (Mar. 28, 2017, 9:44 AM), <https://www.forbes.com/sites/danielfisher/2017/03/28/supreme-court-seems-unenthusiastic-about-eliminating-patent-troll-venue/#56bf63ec1022> [<https://perma.cc/NR4Y-ZL8G>] (noting questions from Justices Sonia Sotomayor, Elena Kagan, and Anthony Kennedy suggesting they did not want to upset the longstanding rule) Tim Ryan, *High Court Unlikely to Disturb Patent-Suit Hub*, COURTHOUSE NEWS SERV. (Mar. 27, 2017), <https://www.courthousenews.com/high-court-unlikely-disturb-patent-suit-hub/> [<https://perma.cc/VU9E-8K4B>] (noting the justices' apparent unwillingness to change over twenty-five years of practice).

⁷⁵ *TC Heartland LLC v. Kraft Foods Grp. Brands LLC*, 137 S. Ct. 1514 (2017).

changes to the general venue statute, 28 U.S.C. § 1391(c), had no impact on the specialized venue statute, 28 U.S.C. § 1400(b).⁷⁶ Accordingly, the Supreme Court overturned *VE Holding* and, following the Court's earlier precedent, held that a corporation resides only in its state of incorporation for purposes of the patent-venue statute.

D. Evolving Aftermath: The Flight to Delaware

TC Heartland was undoubtedly important, and many believed it would immediately weaken the Eastern District of Texas's dominant hold on patent-infringement litigation.⁷⁷ And in fact, during the summer of 2017, there was significant movement of new patent-infringement filings away from the Eastern District of Texas and toward the District of Delaware.⁷⁸

Still, many observers remained skeptical whether *TC Heartland* would have a lasting and significant impact on venue shopping and troll litigation.⁷⁹ While the decision limited patentees' choice of venue under the first clause of section 1400(b) (based on a corporate defendant's residence), it did not address the second clause. That provision, as discussed previously, allows a patentee to sue a corporate defendant in a fed-

⁷⁶ Perhaps surprisingly, the Court's opinion in *TC Heartland* does not mention venue shopping or the Eastern District of Texas and remains narrowly focused on the statutory interpretation question at hand.

⁷⁷ See, e.g., Joe Mullin, *Supreme Court Makes It Much Harder for Patent Trolls to Sue in East Texas*, ARS TECHNICA (May 22, 2017, 4:25 PM), <https://arstechnica.com/tech-policy/2017/05/supreme-court-makes-it-much-harder-for-patent-trolls-to-sue-in-east-texas/> [<https://perma.cc/C96X-KXWX>] (noting the decision would "surely reduce the workload and influence of the Eastern District of Texas").

⁷⁸ See Brian Howard, *Patent Litigation Trends in the Three Months after T.C. Heartland*, LEX MACHINA (Oct. 18, 2017), <https://lexmachina.com/patent-litigation-trends-in-the-three-months-after-t-c-heartland/> [<https://perma.cc/QX5R-XTKX>]. Interestingly, while Delaware's share of patent litigation has increased, total patent litigation decreased by about 10% from 2016 to 2017. See Lisa Ouellette, *What Happened in Patent Law in the Past Year?*, WRITTEN DESCRIPTION (Jan. 22, 2018, 2:56 PM), <https://writtendescription.blogspot.com/2018/01/what-happened-in-patent-law-in-past-year.html> [<https://perma.cc/W32S-RD72>] (noting that Lex Machina reported 4,057 patent case filings in 2017 (with over 750 in Delaware) versus 4,529 in 2016 (with less than 500 in Delaware)).

⁷⁹ See, e.g., Josh Landau, *TC Heartland's Effects: A Bang Or A Whimper?*, PATENT PROGRESS (July 3, 2017), <https://www.patentprogress.org/2017/07/03/tc-heartland-effects-bang-or-whimper/> [<https://perma.cc/X5DS-QPZP>] (noting the Eastern District still has more patent cases than reasonable, though less than before); Tom McParland, *So Much for 'TC Heartland' Effect. One Apple Store Enough for Venue, Judge Says*, LAW.COM (Aug. 14, 2017, 7:47 AM), <https://www.law.com/sites/almstaff/2017/08/10/judge-single-apple-store-makes-dela-ware-venue-proper-for-patent-litigation-against-tech-giant/> [<https://perma.cc/EN8L-CPA3>] (discussing court's interpretation of the second prong for patent venue).

eral jurisdiction “where the defendant has committed acts of infringement and has a regular and established place of business.” Selling a patented good without permission is an act of infringement. So, the key question is what constitutes “a regular and established place of business.”

The U.S. district judge with the most patent cases on his docket—Judge Rodney Gilstrap of the Eastern District of Texas⁸⁰—quickly addressed this question after *TC Heartland*. Rejecting a motion to transfer by Cray Inc., Judge Gilstrap created a new four-factor test as to what constitutes “a regular and established place of business” under the second prong of section 1400(b).⁸¹ Cray then petitioned the Federal Circuit for a writ of mandamus vacating Judge Gilstrap’s order.

The Federal Circuit granted the writ and held that a “regular and established place of business” must be: (a) an actual physical presence in the district; (b) that is stable and established (i.e., not temporary); and (c) that is “the place of the defendant,” not just the defendant’s employee (e.g., an employee’s home office).⁸² *In re Cray* clarified that businesses without a physical location in the Eastern District of Texas cannot be sued there. So, while retailers with stores in the Eastern District might still be sued in that venue, it would be more difficult to sue other companies there.⁸³

Even more recently, district courts have rejected other arguments that tried to stretch what constitutes a “regular and established place of business.”⁸⁴ While this remains an unsettled area of law, the general tenor of these cases suggests the

⁸⁰ In 2015, 5,819 new patent-infringement cases were filed in the United States; over one quarter of them ended up in front of Judge Gilstrap. See Rogers, *supra* note 40.

⁸¹ See *Raytheon Co. v. Cray, Inc.*, 258 F. Supp. 3d 781, 793 (E.D. Tex. 2017) (analyzing prior relevant precedent, *In re Cordis Corp.*, 769 F.2d 733 (Fed. Cir. 1985) and rejecting motion to transfer).

⁸² *In re Cray Inc.*, 871 F.3d 1355, 1364–67 (Fed. Cir. 2017) (concluding that two employees who work remotely from home is not enough to establish a “regular and established place of business”).

⁸³ We explore this topic in our empirical analysis below. See *infra* Part III.

⁸⁴ See, e.g., *BMC Software, Inc. v. Cherwell Software, LLC*, No. 1:17-cv-01074, slip op. at 4 (E.D. Va. Dec. 21, 2017) (concluding that renting business servers in district was insufficient to establish place of business); *Niazi v. St. Jude Med. S.C., Inc.*, No. 17-cv-183-jdp, 2017 WL 5159784, at *4 (W.D. Wis. Nov. 7, 2017) (concluding that the district was not a place of business when employees were not required to live in the district, owned their own homes, and did not store company inventory or conduct business there); *Regents of Univ. of Minn. v. Gilead Scis., Inc.*, 299 F. Supp. 3d 1034, 1043–44 (D. Minn. 2017) (rejecting plaintiffs’ argument that defendant’s storage locker in Minnesota constituted a place of business). See generally Ryan Davis, *What Is a ‘Place of Business’? Here’s What We Know Now*, LAW360 (Jan. 10, 2018, 6:09 PM), <https://>

“place of business” approach will not be so liberally interpreted as to gut *TC Heartland*. As such, these decisions increase the significance of *TC Heartland* in limiting patentees’ choice of venue.⁸⁵

II

DELAWARE AS THE HUB OF BUSINESS LITIGATION

In the last few decades, Delaware has emerged as the main hub for business litigation in the United States. Delaware’s status emanates from two main factors. First, while firms may choose to incorporate in any U.S. state, over 60% of all U.S. public firms decide to incorporate in Delaware. These are primarily large firms with high institutional shareholding.⁸⁶

Second, a firm’s state of incorporation does not determine where it can be sued; rather, state of incorporation determines which state’s corporate law applies to the firm. However, under some legal regimes, corporate defendants may choose venue from a menu of available options, which include the state of incorporation. These legal regimes primarily include corporate litigation and bankruptcy filings.⁸⁷ Under these regimes, Delaware emerges as the most popular jurisdiction.

www.law360.com/articles/999306/what-is-a-place-of-business-here-s-what-we-know-now [<https://perma.cc/2A9A-LTNN>] (discussing these three cases).

⁸⁵ *TC Heartland* also generated uncertainty for defendants whose cases were pending in the Eastern District of Texas when *TC Heartland* was decided. Generally, a motion to dismiss for improper venue is waivable; if a defendant does not make the motion in its first responsive pleading or in a separate motion prior to that pleading, then the argument is waived. See FED. R. CIV. P. 12(b)(3); FED. R. CIV. P. 12(h)(1). However, there is an exception that allows late venue transfer motions when there has been a change in intervening law. And the Federal Circuit recently confirmed in *In re Micron* that *TC Heartland* did change the law on venue, freeing many defendants in already-pending cases to seek transfer out of the Eastern District of Texas. *In re Micron Tech., Inc.*, 875 F.3d 1091, 1099–102 (Fed. Cir. 2017).

⁸⁶ Ofer Eldar & Lorenzo Magnolfi, *Regulatory Competition and the Market for Corporate Law* 1–2 (Yale Law & Economics Research Paper No. 528, 2017), <https://ssrn.com/abstract=2685969> [<https://perma.cc/W9CP-G4C5>].

⁸⁷ Unlike other types of business litigation, the venue for most securities litigation is plaintiff-selected. Securities Act of 1933, Pub. L. No. 73-22, 48 Stat. 74, 86–87 (codified as amended at 15 U.S.C. § 77v(a)); Securities Exchange Act of 1934, Pub. L. No. 73-291, 48 Stat. 881, 902–03 (codified as amended at 15 U.S.C. § 78aa (2006)). Nonetheless, recent evidence suggests that pernicious forum shopping is not a major concern in this arena. Specifically, the Private Securities Litigation Reform Act and the Securities Litigation Uniform Standards Act push most securities class actions into federal courts and impose theoretically uniform high pleading standards. Brian Cheffins, John Armour & Bernard Black, *Delaware Corporate Litigation and the Fragmentation of the Plaintiffs’ Bar*, 2012 COLUM. BUS. L. REV. 427, 449–50 (2012). There is some variation in how courts interpret these standards. See James D. Cox, Randall S. Thomas & Lynn Bai, *Do Differences in Pleading Standards Cause Forum Shopping in Securities Class Ac-*

As patent litigation shifts to Delaware, it is crucial to understand how Delaware acquired its status as the choice location for business litigation, and why its judges have incentives to attract such litigation. This is important, in part, because we know local incentives can influence the policies of federal courts—indeed, this is exactly what we saw for patent infringement cases in the Eastern District of Texas.⁸⁸

We focus below on the two areas of business law where Delaware undoubtedly leads over all competitors: corporate litigation, which occurs primarily in state courts, and bankruptcy filings in federal court. Overall, the evidence suggests Delaware competes for litigation primarily through its expert judiciary, as well as its predictable and detailed case law. Moreover, at least in the corporate and bankruptcy contexts, Delaware has ample incentives to take claimants' interests into account. We argue, therefore, that the risk that Delaware will adopt procedures that are too defendant-friendly is relatively modest.

A. Corporate Litigation

Delaware state courts are without a doubt the most important courts for shareholder lawsuits arising under corporate law. Their role stems from Delaware's status as the most popular state of incorporation. Under the internal affairs doctrine, corporations are subject to the corporate law of the state of incorporation, irrespective of the location of their headquarters.

Delaware fiercely competes for firm incorporations in large part to increase its income from incorporation fees. Unlike

tions?: Doctrinal and Empirical Analyses, 2009 WIS. L. REV. 421, 431–36 (2009) (discussing the three different approaches to scienter under the PSLRA). Nonetheless, plaintiffs generally opt to sue defendants in their home jurisdictions. *Id.* at 429 (finding that 85% percent of securities class actions are filed in the defendant's home jurisdiction, and that the remaining 15% tend to be relatively low-value cases). Professors Cox, Randall, and Bai explain that this occurs for two reasons. First, where many lawsuits are filed in different jurisdictions based on the same facts, these actions are consolidated by the multi-district litigation panel, generally in the defendant's home venue. This obviates any advantage plaintiffs might achieve by filing in a "friendlier" venue. Second, even where lawsuits are not consolidated, defendants may move to change venue on *forum non conveniens* grounds. These motions are often successful, and, even when they are not, they may delay lawsuits that plaintiffs would rather push forward. *Id.* at 440.

⁸⁸ See *supra* subpart I.B. Analogizing between state and federal judges might be especially relevant in Delaware because, unlike other states, Delaware state judges are appointed rather than elected, like their federal brethren. Although they do not have life tenure, they serve for twelve-year terms, substantially longer than most state judges. DEL. CONST. art. IV, § 3; Exec. Order No. 4, 12 Del. Reg. Regs. 1439 (May 1, 2009).

other states, Delaware charges substantial fees for firm incorporation, which can reach up to \$200,000 for large firms. This is a major source of revenue for Delaware; over 20% of its state budget comes from these fees.⁸⁹

Delaware's rise as the primary locus for corporate litigation occurred largely in the 1980s. Although relatively rare in the 1970s, corporate litigation exploded in the 1980s as a result of the prolific merger activity during that time.⁹⁰ Defenses to hostile takeovers and leveraged buyouts gave rise to plausible claims that managers had acted out of self-interest; judges and practitioners complained that the filing of such lawsuits was almost "automatic" following the announcement of a deal.⁹¹ Delaware state courts became the primary forum for these cases. Since then, Delaware courts have continued to attract the most shareholder lawsuits arising under corporate law, generating canonical jurisprudence.⁹²

Historically, Delaware had policies that were friendly to plaintiffs and their attorneys. For example, unlike many other state courts, Delaware did not require plaintiffs to post security for costs in derivative actions.⁹³ And when multiple lawsuits based on the same facts were filed in the same jurisdiction, Delaware routinely awarded the lucrative lead counsel position to the first plaintiffs to file, incentivizing plaintiffs to file quickly.⁹⁴ Finally, Delaware courts were generous in awarding fees to plaintiffs' lawyers.⁹⁵ Easy approval of fee petitions and settlements was part of the "Delaware brand."⁹⁶

However, a firm's incorporation in Delaware only means that courts must apply Delaware law when adjudicating suits against that firm, not that the litigation itself must take place in Delaware. Since the mid-1990s, plaintiffs' lawyers have increasingly filed corporate lawsuits against Delaware corpora-

⁸⁹ See *supra* note 15.

⁹⁰ Cheffins et al., *supra* note 87, at 450–51.

⁹¹ *Id.* at 451.

⁹² ROBERTA ROMANO, THE GENIUS OF AMERICAN CORPORATE LAW 41 (1993); E. Norman Veasey, *Musings from the Center of the Corporate Universe*, 7 DEL. L. REV. 163, 164, 167 (2004).

⁹³ Macey & Miller, *supra* note 16, at 496, 511.

⁹⁴ John Armour, Bernard Black & Brian Cheffins, *Delaware's Balancing Act*, 87 IND. L.J. 1345, 1372–73 (2012); Cheffins et al., *supra* note 87, at 465.

⁹⁵ Unlike other states, which awarded fees for hours worked, Delaware based fee awards on relief obtained, which was largely thought to be a more generous system. Macey & Miller, *supra* note 16, at 497.

⁹⁶ Armour et al., *supra* note 94, at 1370–71.

tions in other state courts and in federal court.⁹⁷ Because virtually all firms incorporated in Delaware have their headquarters elsewhere, plaintiffs' lawyers can easily establish personal jurisdiction over defendants in another state, and the courts of general jurisdiction in that state have subject-matter jurisdiction over those suits.⁹⁸

Corporate defendants, however, have resisted this development and have sought to restrict litigation to Delaware. Since 2010, many corporations have adopted exclusive forum-selection bylaw provisions, which require shareholders to sue corporations and their managers in the state in which the firm is incorporated, typically Delaware.⁹⁹ Following the Delaware court's *Boilermakers* decision,¹⁰⁰ which held such bylaw provisions to be valid, many public corporations have since adopted them, especially when going public.¹⁰¹ The forum-selection bylaws thus allow corporate defendants to choose the venue for corporate litigation, and the choice for most public corporations has been Delaware state court.

So why did plaintiffs' lawyers prefer to sue corporate defendants outside of Delaware? Primarily, it seems, it is because Delaware took steps to curb the intensity of excessive shareholder litigation, especially strike suits challenging mergers and acquisitions. Prominent Delaware judges have explicitly criticized the plaintiffs' bar by expressing concerns that plaintiffs' attorneys hastily file groundless lawsuits just to force corporate defendants to settle. These lawsuits often yield few

⁹⁷ *Id.* at 1367; John Armour, Bernard Black & Brian Cheffins, *Is Delaware Losing Its Cases?*, 9 J. EMPIRICAL LEGAL STUD. 605, 610 (2012) [hereinafter *Losing Its Cases?*].

⁹⁸ Armour et al., *supra* note 94, at 1351.

⁹⁹ Joseph A. Grundfest, *The History and Evolution of Intra-Corporate Forum Selection Clauses: An Empirical Analysis*, 37 DEL. J. CORP. L. 333, 336 (2012).

¹⁰⁰ *Boilermakers Local 154 Ret. Fund v. Chevron Corp.*, 73 A.3d 934, 954 (Del. Ch. 2013); *see also City of Providence v. First Citizens Bancshares, Inc.*, 99 A.3d 229, 240 (Del. Ch. 2014) (permitting designation of another state's court). In 2015, the Delaware legislature stepped in and added a provision to the state's corporate code—Section 115—to make clear that either the charter or the bylaws of a Delaware corporation may include a forum-selection provision for “internal corporate claims.” Such provisions often do not require shareholder approval. Section 115 codified the 2013 decision permitting bylaw provisions to designate Delaware courts as exclusive fora. But it overruled the 2014 decision permitting the provision to designate another state's court as an exclusive forum. DEL. CODE ANN. tit. 8, § 115 (2018).

¹⁰¹ Roberta Romano & Sarath Sanga, *The Private Ordering Solution to Multijurisdiction Shareholder Litigation*, 14 J. EMPIRICAL LEGAL STUD. 31, 33 (2017). As of 2014, the number is 746, and it has likely increased since then.

benefits for the shareholder-clients, though they generate substantial fees for the lawyers.¹⁰²

In recent years, Delaware judges have also scrutinized fee petitions more closely, showing readiness to cut plaintiff lawyers' fees, even when observing "significant litigation efforts."¹⁰³ Most recently, in *In re Trulia*, the Chancery court rejected disclosure-only settlements on the ground that the disclosures were not helpful to the shareholders and were likely only designed to generate fees for attorneys.¹⁰⁴ Delaware no longer automatically designates the first-to-file plaintiff as lead counsel, but rather balances various factors, including the quality of the pleadings, the energy and enthusiasm demonstrated by the attorneys, and the economic stake each plaintiff has in the litigation.¹⁰⁵ In contrast, other states have been more willing to continue following the custom of allowing first-filers to serve as lead counsel. And unlike the courts of other states, Delaware does not permit discovery in derivative actions prior to a motion to dismiss, and rarely grants expedited discovery requests.¹⁰⁶

Delaware's efforts at curbing strike suits are yielding results. The flood of lawsuits, primarily takeover litigation, has substantially decreased, likely due in large part to the *In Re Trulia* decision, which made it more difficult for plaintiffs to extract rents from disclosure-only settlements.¹⁰⁷ Overall, these events demonstrate that Delaware seeks to ensure large corporate defendants are not subject to excessive and potentially frivolous lawsuits. The Delaware judiciary is sensitive to the concerns that excessive litigation, including that which occurs in other states, could diminish the value of Delaware incorporation and hence harm Delaware's ability to charge large incorporation fees.

Was Delaware too harsh toward plaintiffs and too friendly toward corporate defendants? The evidence suggests it was not. Delaware corporations are still subject to substantial litigation, and a large fraction of transactions continue to be liti-

¹⁰² Armour et al., *supra* note 87, at 1367–70. Notably, similar arguments have been raised about patent trolls. See, e.g., FTC STUDY, *supra* note 67, at 9–11 (noting high rates of settlement within first twelve months of litigation).

¹⁰³ Armour et al., *supra* note 87, at 1370–72.

¹⁰⁴ *In re Trulia, Inc. Stockholder Litig.*, 129 A.3d 884, 891–92 (Del. Ch. 2016).

¹⁰⁵ TCW Tech. Ltd. P'ship, 2000 WL 1654504, at *4 (Del. Ch. Oct. 17, 2000).

¹⁰⁶ Armour et al., *supra* note 87, at 1379.

¹⁰⁷ Matthew D. Cain & Steven Davidoff Solomon, *Takeover Litigation in 2015*, 3 (Jan. 14, 2016), <https://ssrn.com/abstract=2715890> or <http://dx.doi.org/10.2139/ssrn.2715890> [<https://perma.cc/6KRF-TJFG>].

gated.¹⁰⁸ Likewise, plaintiffs' attorneys continue to earn substantial fees in shareholder litigation, which in fact exceed those in other state courts.¹⁰⁹ The empirical evidence shows firms that adopted exclusive forum provisions, mostly Delaware firms choosing Delaware venues, experienced a positive change to stock price upon adoption,¹¹⁰ and there is no evidence that adoption is due to poor shareholder monitoring or managerial entrenchment.¹¹¹

Moreover, there are several reasons why Delaware still has incentives not to unduly restrict plaintiffs in corporate litigation. First, Delaware judges take pride in the reputation of the Delaware judiciary for excellence and expertise, and they have strong non-economic incentives to maintain this prestige.¹¹² Part of the product that Delaware sells is the expertise of its judiciary and the predictability of its case law; an excessively pro-defendant approach could be self-defeating because the judges would have little opportunity to develop their expertise or their case law. Rather, Delaware judges have incentives to maintain the flow of cases that may generate important precedents and affect major transactions. The Delaware approach is thus not to eliminate all litigation, but rather to discourage lawsuits that are likely to be disruptive while maintaining ones that are likely to be productive. Indeed, some Delaware judges are vocal in their insistence that good cases be vigorously pursued, as shareholder lawsuits are a "cornerstone of sound corporate governance."¹¹³

Second, Delaware judges are drawn from practicing Delaware attorneys, or lawyers who serve in public roles in Delaware state institutions. Accordingly, they are more likely to believe in the efficacy of Delaware courts, and are likely to adopt procedural rules that facilitate litigation in those courts.¹¹⁴ In fact, as discussed previously, before the 1990s and the wave of excessive litigation, Delaware actually had

¹⁰⁸ *Id.* at 5–6.

¹⁰⁹ See, e.g., Matthew D. Cain & Steven Davidoff Solomon, *A Great Game: The Dynamics of State Competition and Litigation*, 100 IOWA L. REV. 465, 469 (2015) (finding that Delaware awards higher attorney fees but dismisses a greater proportion of cases than other states).

¹¹⁰ Jared I. Wilson, *The Value of Venue in Corporate Litigation: Evidence from Exclusive Forum Provisions*, 5 (Oct. 2016), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2646312 [<https://perma.cc/ZZJ5-W8KM>].

¹¹¹ Romano & Sanga, *supra* note 101, at 70–71.

¹¹² William T. Allen, *The Pride and the Hope of Delaware Corporate Law: Key-note Address by the Honorable William T. Allen*, 25 DEL. J. CORP. L. 70, 73 (2000).

¹¹³ Armour et al., *supra* note 87, at 1367, 1369.

¹¹⁴ Macey & Miller, *supra* note 1, at 502.

rules that were more plaintiff-friendly than those of most states, despite its strong incentive to attract firm incorporations.¹¹⁵

Finally, Delaware judges are unlikely to excessively restrict plaintiffs because, if they limit shareholders lawsuits to a degree that managers can engage in activities that harm shareholders, the value of Delaware firms may decrease, and investors may be less likely to invest in them.¹¹⁶ This in turn will discourage firms from incorporating in Delaware. We emphasize that this consideration does not exist in other legal processes where the claimants are not shareholders, such as bankruptcy filings (and patent-infringement lawsuits). Nonetheless, at least for corporate suits, Delaware's balanced process appears to take into account not only the interests of corporate defendants, but also claimants-creditors.

B. Bankruptcy Filings

Over the past few decades, Delaware has also become the leading bankruptcy forum. Since 1978, the Bankruptcy Code has provided firms seeking to reorganize under Chapter 11 a broad choice of potential forums. The Code permits a firm to file its petition in any district where the company has its principal place of business, its principal assets, its domicile, or its residence,¹¹⁷ which includes the state of incorporation.¹¹⁸

In the 1980s, most bankruptcy filings were made either in the district where the debtor had its principal place of business or in the Southern District of New York.¹¹⁹ The shift to Dela-

¹¹⁵ *Id.* at 510-13.

¹¹⁶ There is ample evidence that Delaware incorporation is associated with higher firm value. *See generally* Robert Daines, *Does Delaware Law Improve Firm Value?*, 62 J. FIN. ECON. no. 3, 525, 527-28 (2001) (finding that Delaware firms are worth significantly more than similar firms incorporated elsewhere and are significantly more likely to receive takeover bids and be acquired); Roberta Romano, *Law as a Product: Some Pieces of the Incorporation Puzzle*, 1 J. L. ECON. & ORG., no. 2, 225, 261 (1985) (finding statistically significant positive abnormal returns when firms reincorporated in Delaware, primarily for merger and acquisition purposes); *cf.* Guhan Subramanian, *The Disappearing Delaware Effect*, 20 J. L. ECON. & ORG., no. 1, 32, 33 (2004) (finding small Delaware firms were worth more than small non-Delaware firms from 1991-1996, but not afterwards, and larger firms exhibited no Delaware effect).

¹¹⁷ 28 U.S.C. § 1408(1).

¹¹⁸ *In re Ocean Properties of Delaware, Inc.*, 95 B.R. 304, 305 (Bankr. D. Del. 1988) (holding that the state of incorporation is a corporation's residence for purposes of the Bankruptcy Code).

¹¹⁹ Marcus Cole, *"Delaware is Not a State": Are We Witnessing Jurisdictional Competition in Bankruptcy?*, 55 VAND. L. REV. 1845, 1850 (2002); David A. Skeel, Jr., *Bankruptcy Judges And Bankruptcy Venue: Some Thoughts On Delaware*, 1 DEL. L. REV. 1, 1 (1998).

ware occurred in 1990 when one company, Continental Airlines, chose to file in Delaware. Following its successful reorganization, there was a steady increase in Delaware bankruptcy filings, such that by 1996, Delaware had become the venue of choice for 86% of reorganizations involving large publicly traded debtors.¹²⁰ Despite legislative attempts to curtail this dominance,¹²¹ Delaware has maintained its position as the most popular venue for bankruptcy filings ever since.¹²²

What made Delaware so attractive to corporate debtors? Delaware appears to offer several advantages to bankruptcy filers. Like Delaware state courts, the District of Delaware bankruptcy court developed a reputation for expertise in complex bankruptcy matters¹²³ and has a predictable body of case law.¹²⁴ It further acquired a reputation for highly efficient and speedy bankruptcy processes, which reduce costs. In particular, Delaware became known for pre-packaged workouts, in which the debtor and its major creditors negotiate the terms of

¹²⁰ Cole, *supra* note 119, at 1850. A study of bankruptcy venue in the 1990s showed that the Southern District of New York was consistently a distant second to Delaware. *Id.* at 1850–51. Moreover, studies have concluded that proceedings in the Southern District of New York are significantly slower than those in Delaware. See Theodore Eisenberg & Lynn M. LoPucki, *Shopping for Judges: An Empirical Analysis of Venue Choice in Large Chapter 11 Reorganizations*, 84 CORNELL L. REV. 967, 988–89 (1999) (finding that the mean and median processing times in Delaware were 510 and 463 days respectively, versus New York mean and median processing times of 765 and 582 days).

¹²¹ Reform legislation introduced by the House in 1999 removed state of incorporation as a basis for citizenship in bankruptcy proceedings. However, Delaware senators, including Joe Biden, hit back, defending firms' ability to reorganize in Delaware. See Robert K. Rasmussen & Randall S. Thomas, *Timing Matters: Promoting Forum Shopping by Insolvent Corporations*, 94 NW. U. L. REV. 1357, 1381 (2000). Biden continued to defend Delaware's dominance in bankruptcy in more recent years. See Joseph Biden, *Give Credit to Good Courts*, LEGAL TIMES 67 (June 20, 2005).

¹²² Rasmussen & Thomas, *supra* note 121, at 1367. Note that forum shopping in bankruptcy proceedings is driven by large firms, as smaller firms do not have multiple options for venue. Indeed, the shift to Delaware was driven by very large firms that collectively owned over 70% of the assets of public firms filing for bankruptcy during that period. *Id.*

¹²³ See Cole, *supra* note 119, at 1864 (noting that Delaware bankruptcy judges are viewed as expert in part because they have handled many similar matters, and that this expertise is valuable to counsel who can rely on Delaware judges to understand and resolve cases accurately and quickly); see also Kenneth Ayotte & David A. Skeel Jr., *An Efficiency-Based Explanation for Current Corporate Reorganization Practice*, 73 U. CHI. L. REV. 425, 461 (2006) (finding that corporate debtors from districts with less experienced bankruptcy courts were more statistically more likely to file for bankruptcy in Delaware, and concluding that the determinant of venue choice was Delaware's expertise).

¹²⁴ Cole, *supra* note 119, at 1860 (“[T]he existence of precedent in complex cases [lends] predictability to new filings there.”).

the reorganization before filing for bankruptcy and submit a proposed reorganization along with or shortly after the filing.¹²⁵

The incentives of judges to develop expertise and speed, however, do not follow immediately from Delaware's incentives to attract firm incorporations. Bankruptcy judges are federal, and thus they are appointed by federal courts of appeals rather than Delaware itself.¹²⁶ However, judges care about their own prestige and the satisfaction of being selected to do an important job well.¹²⁷ In this respect, Delaware's state court reputation appears to affect its bankruptcy judges, who take pride in the reputation for responsiveness and predictability that makes Delaware a choice venue for business litigation.¹²⁸

Moreover, bankruptcy judges are often drawn from the Delaware bankruptcy bar, and the bar plays a role in the selection and appointment process of bankruptcy judges, just as it does with Delaware state-court nominations.¹²⁹ The Delaware bar clearly benefits from the flow of bankruptcy cases into Delaware. In addition, because jurisdiction in bankruptcy is bundled with firms' decisions to incorporate in a given state, Delaware lawyers and judges have an incentive to maintain Delaware's reputation as the leading venue for bankruptcy matters.¹³⁰

That Delaware bankruptcy judges have incentives to attract corporate debtors raises the concern they will unduly favor debtors at the expense of creditors' interests. If this argument has merit, then Delaware judges may be too lax with managers, and more likely to approve reorganizations in which managers keep their jobs.¹³¹ Moreover, attorneys for corporate debtors and their managers are more likely to choose a venue that will approve their large attorneys' fees.¹³² In support of this argument, one study shows that debtors benefiting from

¹²⁵ Rasmussen & Thomas, *supra* note 121, at 1374–76. Prior to 1990, pre-packaged bankruptcies were relatively rare. However, they became more popular in the 1990s, jumping from roughly 1% of bankruptcies to 11%. *Id.* at 1375. During that time, half of pre-packaged bankruptcies were filed in Delaware. *Id.* Moreover, studies have found that in the 1990s, pre-packaged bankruptcies made up nearly 40% of the large bankruptcy cases filed in Delaware. See Eisenberg & LoPucki, *supra* note 120, at 992–93.

¹²⁶ 28 U.S.C. § 152(a)(1) (courts of appeals to make appointments “after considering the recommendations of the Judicial Conference”).

¹²⁷ Cole, *supra* note 119, at 1848.

¹²⁸ *Id.* at 1892.

¹²⁹ Skeel, *supra* note 119, at 31–33.

¹³⁰ Cole, *supra* note 119, at 1893.

¹³¹ Lynn M. LoPucki & Joseph W. Doherty, *Delaware Bankruptcy: Failure in the Ascendancy*, 73 U. CHI. L. REV. 1387, 1414–15 (2006).

¹³² *Id.* at 1415.

Delaware pre-packaged workouts are more likely to file again for bankruptcy.¹³³

However, it seems implausible that managers and their lawyers can control Delaware's bankruptcy process. Since the mid-1990s, most large corporate debtors have depended on extensive bank financing immediately before and during the bankruptcy process. Debtor-in-possession (DIP) financiers seem to influence where to file for bankruptcy, and, more broadly, the steps that debtors must undertake as part of a reorganization. These DIP financiers are unlikely to let managers keep their jobs or acquiesce to attorneys' fees if these measures provide no value for the company.¹³⁴ Second, all reorganizations, whether pre-packaged or not, must be approved by a vote of the debtor's creditors. That Delaware reorganizations tend to be approved relatively quickly suggests that creditors do not typically view them as disadvantageous.¹³⁵

There is some empirical evidence that firms choosing to file in Delaware are more likely to file for bankruptcy again, suggesting that Delaware approves ill-advised reorganizations at the expense of creditors.¹³⁶ But this result appears to be largely driven by selection effects because firms that are likely to underperform in the future are also likely to select a cheaper, faster process. Companies that file for bankruptcy in Delaware have more secured debt than those that file elsewhere, suggesting that lenders may be involved in the decision to file in Delaware.¹³⁷ In addition, firms that file for bankruptcy in Delaware tend to come from states where the bankruptcy courts handle fewer bankruptcy cases, suggesting Delaware's expertise is driving choice of venue.¹³⁸ More convincingly, a recent study shows that the deviation between prices of financial claims at the beginning of the bankruptcy process and the final bankruptcy payoff is smaller in Delaware bankruptcy than in

¹³³ Lynn M. LoPucki & Sara D. Kalin, *The Failure of Public Company Bankruptcies in Delaware and New York: Empirical Evidence of a "Race to the Bottom,"* 54 VAND. L. REV. 231, 270 (2001).

¹³⁴ Ayotte & Skeel, *supra* note 123, at 456–57.

¹³⁵ *Id.* at 457–58.

¹³⁶ See Lynn M. LoPucki & Joseph W. Doherty, *Why Are Delaware and New York Bankruptcy Reorganizations Failing?*, 55 VAND. L. REV. 1933, 1956 (2002); LoPucki & Kalin, *supra* note 133, at 255. These papers also suggest that firms reorganized in Delaware have higher operating losses than firms reorganized elsewhere; however, this evidence appears to be driven by write-downs of intangible assets and amortization of post-reorganization goodwill, and different measures that exclude noncash charges, such as EBITDA, do not support this conclusion. Ayotte & Skeel, *supra* note 123, at 444–49.

¹³⁷ *Id.* at 460–61.

¹³⁸ *Id.* at 461.

any other forum; this supports the view that Delaware provides more predictable outcomes than other forums.¹³⁹

III

MEASURING THE EFFECT OF *TC HEARTLAND* ON FIRM VALUE

As we discussed, Delaware has strong incentives to maintain its status in the market for incorporation. This suggests that following *TC Heartland*, its courts are less likely to be patentee-friendly, and more likely to cater to the interests of corporate defendants than the Eastern District of Texas would. The reason for this is simple: if incorporating in Delaware greatly heightens firms' patent liability, then they might choose to incorporate elsewhere. Of course, such firms would forego the advantages of Delaware corporate law, but if they face a particularly high risk of costly litigation, some firms might consider that cost worthwhile.

We believe Delaware has incentives to be responsive to these concerns, and therefore to conduct patent litigation differently from the Eastern District of Texas. This prediction is corroborated by media reports that came out immediately after *TC Heartland*, some of which characterized the decision as a massive blow to patent-troll litigation.¹⁴⁰ Accordingly, we would expect the decision to benefit corporations who are likely to be sued by trolls, with their firm value boosted on the day of the Supreme Court decision.

¹³⁹ Jared A. Ellias, *What Drives Bankruptcy Forum Shopping? Evidence from Market Data*, 47 J. LEGAL. STUD. 119 (2018), <https://ssrn.com/abstract=2795824> [<https://perma.cc/RK4P-ECRZ>] or <http://dx.doi.org/10.2139/ssrn.2795824> [<https://perma.cc/LC33-932N>]. Ellias also finds similar evidence with respect to bankruptcy filings in the Southern District of New York, but the result is not statistically significant in all specifications. *Id.*

¹⁴⁰ See, e.g., Adam Liptak, *Supreme Court Ruling Could Hinder 'Patent Trolls'*, N.Y. TIMES, (May 22, 2017), <https://www.nytimes.com/2017/05/22/business/supreme-court-patent-lawsuit.html> [<https://perma.cc/SAW5-MHQM>] (describing *TC Heartland* as "a unanimous decision that was a blow to so-called patent trolls."); *Editorial: Supreme Court Ruling Puts Patent Trolls in Their Place*, MERCURY NEWS, (May 28, 2017, 6:00 AM) <https://www.mercurynews.com/2017/05/28/editorial-supreme-court-ruling-puts-patent-trolls-in-their-place> [<https://perma.cc/4HXT-MEF6>] ("*TC Heartland* should mean the end of patent trolls shopping for plaintiff-friendly district courts across the nation that have a reputation for handing trolls a better chance of winning."); *Supreme Court Patent Victory*, WALL ST. J. (May 22, 2017, 7:11 PM) <https://www.wsj.com/articles/supreme-court-patent-victory-1495494661> [<https://perma.cc/B5MC-UXZN>] ("Trolls who forum shop for judges will now have a harder time.").

A. Empirical Strategy

To test this hypothesis, we conduct an event study that examines how stocks responded to *TC Heartland*, particularly for firms that face a high likelihood of being sued for patent infringement. Event studies are often used to study the impact of legal changes, particularly in corporate law and finance,¹⁴¹ and have also been used to measure the impact of patent-troll litigation on firm value.¹⁴² The underlying assumption of event studies is that markets are efficient, so when a case is decided, stock prices automatically reflect the news.¹⁴³ Accordingly, if *TC Heartland* reduced the odds that certain firms would be sued by patent trolls, or decreased the expected losses in those suits, those firms' stock prices should correspondingly increase.¹⁴⁴

The first step in an event study is to define the event of interest and the date or dates when the market learned about the event. In our primary specification, the event window is Monday, May 22, 2017, the date when *TC Heartland* was decided. We define this event day as date 0. We believe a one-day window is reasonable—that is, the market reacted to the decision the very day the case was decided—given the high degree

¹⁴¹ For detailed descriptions of the event study methodology, see generally Sanjai Bhagat & Roberta Romano, *Event Studies and the Law: Part I: Technique and Corporate Litigation*, 4 AM. L. & ECON. REV. 141 (2002); Sanjai Bhagat & Roberta Romano, *Event Studies and the Law: Part II: Empirical Studies of Corporate Law*, 4 AM. L. & ECON. REV. 380 (2002); A. Craig MacKinlay, *Event Studies in Economics and Finance*, 35 J. ECON. LITERATURE 13 (1997).

¹⁴² Using an event study methodology around the dates that defendants were sued by non-practicing entities, James Bessen, Jennifer Ford, and Mike Meurer estimated that NPE litigation resulted in \$500 billion in lost wealth to defendants, primarily technology companies. See James Bessen, Jennifer Ford, & Michael J. Meurer, *The Private and Social Costs of Patent Trolls 2* (Bost. Univ. Sch. of Law, Working Paper No. 11-45, 2011).

¹⁴³ Cf. MacKinlay, *supra* note 141, at 13 ("The usefulness of [an event study] comes from the fact that, given rationality in the marketplace, the effects of an event will be reflected immediately in security prices.").

¹⁴⁴ The gains measured here are gains to the firms' shareholders via increases in its stock market price, and hence, increases to the firms' market capitalization. Depending on one's view of markets, it is possible this gain does not reflect the same gain obtained by the firm itself—that value might be higher or lower than the amount received by the firms' shareholders. Compare Glynn S. Lunney, Jr., *On the Continuing Misuse of Event Studies: The Example of Bessen and Meurer*, 16 J. INTELL. PROP. L. 35, 36–37 (2008) with JAMES BESSEN & MICHAEL J. MEURER, PATENT FAILURE: HOW JUDGES, BUREAUCRATS, AND LAWYERS PUT INNOVATORS AT RISK (2008). Still, to the extent the firms' true gain is proportional to the gain to its investors, our results remain the same—Delaware firms that were not present in the Eastern District of Texas and that were more likely to be sued by patent trolls saw larger increases in value than other firms. Moreover, we care primarily about what investors thought about the *TC Heartland* decision; as such, changes in firms' stock market value are directly relevant to that question.

of anticipation and broad news coverage surrounding the decision. Regardless, our results remain robust for longer time windows.¹⁴⁵

The next step is to estimate what the expected return for each stock would have been during the event period if the event had not occurred (i.e., if *TC Heartland* had not been decided). The abnormal return that is attributable to the event (i.e., the stock price effect of the event) is the actual return minus the expected return. To compute the expected return on the event window, we use the following regression model,

$$R_{it} = \alpha_i + \beta_i R_{mt} + \varepsilon_{it}$$

where R_{it} is the return on stock i on date t ; R_{mt} is the market return on date t ; and ε_{it} is an error term, common to all regression models. The model is estimated using observations from a window of 180 trading days prior to the event date [-180,-1].

This first regression yields estimated parameters, $\hat{\alpha}$ and $\hat{\beta}$, which we can then use to calculate the expected return on the event date. This equals $\hat{\alpha}_i + \hat{\beta}_i R_{mt}$, using the market return on the event day. The abnormal return, AR_{it} , for stock i is then simply the actual stock return minus the expected stock return:

$$AR_{it} = R_{it} - \hat{\alpha}_i - \hat{\beta}_i R_{mt}$$

Typically, to estimate the impact of an event, we would calculate the average abnormal return for the event for each stock, and then average across all stocks affected by the event. This approach, however, does not make sense here for two reasons.

First, *TC Heartland* did not directly affect some companies. These include firms traded on a U.S. stock exchange but incorporated outside the country.¹⁴⁶ Moreover, some firms will still likely be suable for patent infringement in the Eastern District of Texas post-*TC Heartland*, either because they are incorporated in Texas, or because they are somehow physically present in the Eastern District (e.g., via their corporate headquarters or a store). We refer to this category of firms as

¹⁴⁵ We will also look at a longer event window, which starts on the day of the judgment and ends on Friday, May 26, 2017 (i.e., date [0,+4]).

¹⁴⁶ The *TC Heartland* Court noted that foreign incorporated firms were not affected by the decision. See 137 S. Ct. 1514, 1520 n.2 (2017). We note, though, that in principle *TC Heartland* could affect firms that are not incorporated in the United States if the market predicts that they will reincorporate into a U.S. state. Moreover, it is possible that future litigation or legislation could affect the status of foreign incorporated firms as well.

“Texas firms” for simplicity. We therefore divided public companies into an *Affected* group—non-Texas firms incorporated in the United States—and an *Unaffected* group—all other firms in our sample. Our hypothesis is that the stock price impact of *TC Heartland* should be positive and significantly higher for the Affected group than for the Unaffected group.

Second, firms within the Affected group might vary in how sensitive they are to *TC Heartland*, because many companies in this group might rarely be sued for patent infringement. For companies that face a high (low) probability of being sued, the abnormal return should be higher (lower). Accordingly, we estimate the probability of facing patent infringement litigation using the following model:

$$L_{it} = \gamma X_{it} + \mu_t + \tau_j + \varepsilon_{it}$$

where L_{it} is a dummy variable that is equal to 1 if a firm is subject to a patent-infringement lawsuit in year t and 0 otherwise; X_{it} are firm-year financial controls, such as cash levels and expenditures on research and development; μ_t are year-fixed effects, and τ_j are industry-fixed effects.¹⁴⁷ We estimate this model using data on patent lawsuits from 2000 to 2015, as described below. For the main specification, we use a logistic regression model, but our results are robust to other models too.¹⁴⁸ Using the estimates from the regression, we compute the predicted litigation probability of public firms as of the end of 2016. We focus in particular on the probability that a firm will be sued by a patent troll, the most common and arguably most disruptive form of patent litigation.¹⁴⁹

Our final step is to regress the abnormal return of each firm on the probability of being sued by a patent troll. We predict that the higher this probability, the higher the abnormal returns for the Affected firms. In other words, an Affected firm that is very likely to be sued by a patent troll in 2016 will have a larger positive abnormal return than an Affected firm that is unlikely to be sued by a troll. We do not predict any

¹⁴⁷ This model is largely the same as that used in Lauren Cohen, Umit Gurun, & Scott Duke Kominers, *Patent Trolls: Evidence from Targeted Firms* 8–11 (Nat'l. Bureau of Econ. Research Working Paper No. 20322, 2014).

¹⁴⁸ All the results are largely the same when we use a probit model, also commonly used for regressions involving binary dependent variables.

¹⁴⁹ We emphasize that for our purposes, it is not essential for this regression to establish that the variables that predict litigation have a causal impact on litigation probability; rather, it is sufficient that the variables can predict the likelihood of litigation, and in particular, distinguish between predictors of troll litigation and non-troll litigation.

effect on Unaffected firms, since the *TC Heartland* decision did not impact where they could be sued.

Furthermore, because we are interested in the potential effect of Delaware courts on patent litigation, we also split the group of Affected firms into those incorporated in Delaware and those incorporated elsewhere. We examine whether the abnormal returns of each group are related to the probability of litigation. If the market expects Delaware to provide greater expertise and predictability for patent-infringement lawsuits, then the abnormal returns of Affected Delaware firms will be more sensitive to litigation probability than those of the Affected non-Delaware firms or the Unaffected firms.

We note that in regressing the abnormal returns on a predicted probability we run the risk that our estimates will be biased. This is because predicted probability is, in econometric terms, a “generated regressor,” meaning that it is not observed in the data, but is estimated using other data (here, from the logistic probability regression). Therefore, it is inevitably measured with some error, and the estimates on these probabilities could be biased.¹⁵⁰ To address this problem, we compute the standard errors of the estimates using a two-step bootstrapping process, which ensures that our estimates are consistent.¹⁵¹

B. Constructing the Dataset and Summary Statistics

We first construct a panel dataset to estimate the probability that a firm will be sued for patent infringement. Our sample is the universe of public firms from 2000 to 2015 in Compustat, a leading financial and corporate database. We match public firm names to data on patent-infringement litigation, sourced from the patent-litigation dataset released in 2017 by the Office of the Chief Economist at the USPTO.¹⁵² This dataset in turn contains information obtained from Public Access to Court Electronic Records (PACER) on all patent-infringement suits filed in federal district courts from 1963 to

¹⁵⁰ See Kevin M. Murphy & Robert H. Topel, *Estimation and Inference in Two-Step Econometric Models*, 3 J. BUS. & ECON. STAT. 370, 375 (1985); Adrian Pagan, *Econometric Issues in the Analysis of Regressions with Generated Regressors*, 25 INT'L ECON. REV. 221, 233–35 (1984).

¹⁵¹ We follow largely the same procedure as in Quamrul Ashraf & Oded Galor, *The “Out of Africa” Hypothesis, Human Genetic Diversity, and Comparative Economic Development*, 103 AM. ECON. REV. 1, 18–19 (2013).

¹⁵² The Patent Litigation Dataset is described in Alan C. Marco, Asrat Tesfayesus, & Andrew A. Toole, *Patent Litigation Data from US District Court Electronic Records (1963-2015)*, (USPTO Econ. Working Paper No. 2017-06, 2017), <https://ssrn.com/abstract=2942295> [<https://perma.cc/Z9YZ-V4YW>].

2015.¹⁵³ The matching to Compustat is based on defendant names using a mix of exact, fuzzy, and manual means.¹⁵⁴ We further categorized each lawsuit by type of plaintiff, using the Stanford Non-Practicing Entity Litigation Dataset, which categorizes plaintiffs based on whether they are non-practicing entities (NPEs), and if so, whether the NPE is a practicing assertion entity (PAE) as opposed to, for example, a university.¹⁵⁵ We treat any lawsuit filed by a PAE as patent-troll litigation.

The variables we use to predict litigation probability include standard accounting measures from the Compustat database: total assets, market value, R&D expense, and cash level. We use lagged variables for the previous year and apply log transformations to these variables. We further include past returns, which are the firm's stock returns for the past twelve months. In addition, we include a variable, *CashShock*, which is equal to 1 if a firm's change in cash in the prior fiscal year is among the top 5% of cash changes in the firm's industry in that year. We calculate the book-to-market ratio, which is the ratio of firm book-value of equity to market value of equity, as of the end of the previous fiscal year.¹⁵⁶ We also construct a variable *Patents*, which includes the number of patents issued to the firm in the past five years, using data from Kogan et al.¹⁵⁷

¹⁵³ *Id.* at 5. This dataset was supplemented by additional data provided by Lex Machina on defendant names for a random subsample of cases.

¹⁵⁴ Our resulting dataset appears to roughly match the raw numbers and time trends in data used by Cohen et al., *supra* note 147, at 29, who combined patent litigation data with proprietary data on patent trolls and publicly-traded firms from RPX Corporation, as well as hand-coded data from Cotropia et al., *supra* note 7.

¹⁵⁵ See Shawn P. Miller et al., Introduction to the Stanford NPE Litigation Dataset, 1–2 (Oct. 23, 2017) (Draft). The Stanford NPE dataset categorizes plaintiffs into one of thirteen categories. They are: (1) Acquired patents; (2) University heritage or tie; (3) Failed startup; (4) Corporate heritage; (5) Individual-inventor-started company; (6) University/Government/Non-profit; (7) Startup, pre-product; (8) Product company; (9) Individual; (10) Undetermined; (11) Industry consortium; (12) IP Subsidiary of product company; (13) Corporate-inventor-started company. Category 8 includes practicing entities; categories 1, 4, and 5 collectively are considered patent-assertion entities. *Id.* at 6–7.

¹⁵⁶ Book value of equity is the sum of stockholders equity (SEQ), Deferred Tax (TXDB), and Investment Tax Credit (ITCB), minus Preferred Stock (PREF). Depending on data availability, we use redemption (item PSTKRV), liquidation (item PSTKL), or par value (item PSTK) to represent the book value of preferred stock.

¹⁵⁷ See generally Leonid Kogan et al., *Technological Innovation, Resource Allocation, and Growth*, 132 Q.J. ECON. 665 (2017). This database contains utility patents issued by the USPTO between January 1, 1926 and November 2, 2010. Utility patents are patents issued for the invention of new and useful processes, machines, manufactures, or compositions of matter, or new and useful improvements thereof. Similar to Cohen et al., *supra* note 147, at Table A1, we use the

Finally, we add dummy variables equal to 1 for missing data on R&D and missing data on patents.

Table 1 describes the data. The final database includes 82,311 firm-year observations and 11,922 firms. The average firm faces 0.20 patent infringement lawsuits per year, and 0.10 lawsuits per year by patent trolls.

TABLE 1: FIRM DESCRIPTIVE STATISTICS, 2000–2015

	Mean	25% perc.	Median	75% perc.	Std. Dev.
Patent Lawsuits	0.20	0.00	0.00	0.00	1.37
Lawsuits by Trolls	0.10	0.00	0.00	0.00	0.81
Cash Level	297.96	2.28	16.38	90.42	1,832.89
Cash Shock	0.06	0.00	0.00	0.00	0.23
R&D Expense	61.56	0.00	0.00	6.89	447.50
Total Assets	5,860.55	30.63	211.75	1,343.42	45,525.42
Market Value	3,739.42	34.14	219.93	1,241.13	17,478.86
Book/Market	2.08	0.21	0.48	0.87	109.30
Past Returns	0.36	-0.34	0.00	0.31	20.84
Patents	37.99	0.00	0.00	1.00	407.20
Missing R&D	0.43	0.00	0.00	1.00	0.49
Missing Patents	0.28	0.00	0.00	1.00	0.45

This table shows descriptive statistics for the sample used for estimating the probability of patent-infringement lawsuits. The sample includes 11,922 public firms from 2000–2015 (82,311 firm-year observations). All variables are defined in the Appendix.

We calculate daily returns using data on stock prices and dividends sourced from the Center for Research in Security Prices (CRSP).¹⁵⁸ We keep the data for only the firms that (1) trade on a U.S. stock exchange (2) have at least 170 trading days in the estimation period prior to the event date (3) whose stock traded throughout the week of the event date and (4) that did not issue new stocks or redeem their shares in the relevant period. For the market return, we use the value-weighted return of all CRSP firms incorporated in the United States and listed on the NYSE, AMEX, or NASDAQ.

We also divide firms into several groups. The first is Affected firms, which are all firms incorporated in the United States excluding (1) firms incorporated in Texas (2) firms whose headquarters are located in the Eastern District of Texas and (3) firms that have a store in the Eastern District of Texas based

final year of the database to proxy for the patent stock of companies between 2011 and 2015.

¹⁵⁸ Returns are equal to today's price plus any dividends, divided by yesterday's price.

on manual checks of firms' websites.¹⁵⁹ We compute the litigation probability using the estimates from the litigation probability regressions and the variable values for the 2016 fiscal year.

The final sample includes 1,548 firms. Seventy-four percent of the firms in the sample are in the Affected group, 47% are Affected firms incorporated in Delaware and 26% are Affected firms not incorporated in Delaware (see Table 2).

TABLE 2: *TC HEARTLAND* EVENT STUDY — DESCRIPTIVE STATISTICS

	Mean	25% perc.	Median	75% perc.	Std. Dev.
Affected	0.74	0.00	1.00	1.00	0.44
Affected DE	0.47	0.00	0.00	1.00	0.50
Affected No DE	0.26	0.00	0.00	1.00	0.44
Market Value	9,195.80	290.98	1,295.13	4,798.19	32,226.16
R&D Expense	148.19	0.00	0.00	22.11	941.86
Cash	671.07	20.41	77.06	300.00	3,640.37
Patents	73.60	0.00	0.00	1.00	757.52

This table shows descriptive statistics for firms in the event study of the impact of *TC Heartland* on firm value. The sample includes 1,548 public firms from 2017. All variables are defined in the Appendix.

C. The Value of *TC Heartland* to Shareholders

The first-stage regressions show which factors predict the probability of patent litigation. These regressions are in Table 3. In column 1 we examine the general probability of facing patent-infringement litigation, and in column 2, we evaluate the probability of facing litigation brought by patent trolls. The signs and magnitudes for the coefficients in columns 1 and 2 are mostly similar.

As expected, the estimates for the coefficients on R&D expense and the number of patents are positive and statistically significant in columns 1 and 2. This means that firms with

¹⁵⁹ To identify whether firms have stores in the Eastern District of Texas, we identify specific industries that are more likely to engage in retail, and firms that have a retail business segment based on the Compustat historical segments database. We manually check the websites of these companies to determine if they have a store in the Eastern District of Texas. Undoubtedly, this labor-intensive process will include some errors. However, to the extent these are "classic measurement errors" that are uncorrelated with the probability that the firm is likely to be sued for patent infringement and uncorrelated with the firm's stock market performance during the event study, then if anything, these measurement errors attenuate our result, which would be even stronger in the absence of such errors. See, e.g., JOHN BOUND, CHARLES BROWN, & NANCY MATHIOWETZ, *Measurement Error in Survey Data*, in 5, HANDBOOK OF ECONOMETRICS, 3705–3843 (2001).

more R&D expenses and more patents are more likely to be sued. We also find, similar to a study by Cohen et al., that plaintiffs tend to sue firms with high levels of cash, presumably to increase their chances of monetary recovery.¹⁶⁰

In column 3, we evaluate the probability of a lawsuit only by a non-troll entity; the dependent variable is a dummy equal to 1 if a firm is subject to a patent lawsuit that is not a troll lawsuit (i.e., it was not filed by a PAE). Interestingly, the coefficients on cash and R&D expenditures are smaller than in columns 1 and 2, and they are only statistically significant at the 10% level. This suggests that the probability of lawsuits by trolls may be materially different than the probability of lawsuits by non-trolls.

We use these estimates to generate predicted probabilities for each firm for which we calculated abnormal returns. The average and median lawsuit probabilities are 13.8% and 6.7%, the average and median troll probabilities are 8.1% and 2.8%, respectively, and for non-troll lawsuits the average and median are 5.6% and 2.8% (see Table 4).

TABLE 3: PATENT INFRINGEMENT LAWSUIT PROBABILITY DETERMINANTS

	(1) All Lawsuits		(2) Troll Lawsuits		(3) Non-Troll Lawsuits	
Cash Level	0.0612***	(2.69)	0.114***	(3.74)	0.0430*	(1.66)
Cash Shock	0.0412	(0.83)	0.0812	(1.31)	0.0877	(1.63)
R&D Expense	0.0961***	(3.70)	0.137***	(3.99)	0.0494*	(1.76)
Total Assets	0.158***	(4.87)	0.224***	(5.02)	0.127***	(3.37)
Market Value	0.229***	(7.39)	0.161***	(3.85)	0.273***	(7.56)
Book/Market	-0.194***	(-2.66)	-0.291***	(-3.01)	-0.113	(-1.21)
Past Returns	0.000625***	(2.85)	0.000720***	(3.15)	0.000592***	(2.72)
Patents	0.137***	(7.16)	0.122***	(4.77)	0.132***	(6.47)
Missing R&D	-0.232***	(-2.62)	-0.0169	(-0.14)	-0.385***	(-3.85)
Missing Patents	-0.433***	(-4.90)	-0.459***	(-3.85)	-0.379***	(-3.83)
<i>Pseudo R</i> ²	0.284		0.350		0.261	
N (firm-year obs)	82,311		82,311		82,311	

z statistics in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 3 presents the results of the logit model. The dependent variable in column (1) is a dummy variable equal to 1 if the firm is sued for patent infringement in a given year. The dependent variable in column (2) is a dummy equal to 1 if the firm is sued for patent infringement in a given year and the plaintiff is a patent assertion entity. The dependent variable in column (3) is a dummy equal to 1 if the firm is sued for patent infringement and the plaintiff is not a patent assertion entity. All variables are defined in the Appendix.

¹⁶⁰ Cohen et al., *supra* note 147.

Next, we calculate the average abnormal returns and the one working-week cumulative abnormal returns for the total sample.¹⁶¹ The average and median abnormal returns on the day *TC Heartland* was decided are both -0.1%. The average and median cumulative abnormal returns are -1.0% and -0.7% (see Table 4).

TABLE 4: EVENT STUDY OF *TC HEARTLAND* — RESULTS AND PREDICTED LAWSUIT PROBABILITIES

	Mean	25% perc.	Median	75% perc.	Std. Dev.
Abnormal returns (May 22, 2017)	-0.001	-0.009	-0.001	0.007	0.017
Cumulative Abnormal Returns (May 22-26, 2017)	-0.010	-0.028	-0.007	0.012	0.040
Lawsuit Probability	0.138	0.028	0.067	0.172	0.174
Non-Troll Probability	0.056	0.011	0.028	0.069	0.078
Troll Probability	0.081	0.010	0.028	0.090	0.133

This table shows the results of the stock-price event study around *TC Heartland* for a sample of 1,548 public firms from 2017. The first row reports the abnormal returns on the day *TC Heartland* was decided—May 22, 2017. The Cumulative Abnormal Returns reports the sum of abnormal returns for the week in which *TC Heartland* was decided (May 22-26, 2017). The table also shows the predicted lawsuit probability, non-troll litigation probability and troll probability for firms in the sample, which are based on the estimates presented in Table 3 (with definitions in the Appendix).

The main results of our analysis are reported in Table 5. Panel A of the table shows results for Affected firms, and Panel B divides Affected firms into those incorporated in Delaware and other firms not incorporated in Delaware. The coefficients of interest are the interaction of the various litigation probabilities with the dummy variable for Affected firms.¹⁶² Both columns in both panels denote a different litigation proxy (LP). In column 1, we use the probability of non-troll lawsuits, and in column 2, we focus on the probability of lawsuits by patent trolls.

Our first results in Panel A suggest that *TC Heartland* did not disparately affect firms facing a high probability of non-troll litigation. Thus, the coefficient on non-troll lawsuit probability is small and statistically insignificant, including for firms affected by the decision (see column 1 of Panel A).

¹⁶¹ We trim 1% of the observations in order to exclude stocks that experienced very high or low increase or drop in value, which is more likely to be the result of firm-specific events rather than the court's decision.

¹⁶² Note that the coefficient on Affected is just a control for any factors that might have affected the value of Affected firms on the event day(s).

When we examine column 2, we see that firms certain to be sued by patent trolls (i.e., with probability 1) experienced no meaningful increase in returns, whereas those affected by the decision experienced an increase of 0.975%. This result suggests that *TC Heartland* was good news primarily for Affected firms that face a high risk of troll litigation, rather than just any patent-infringement lawsuit.

TABLE 5: THE IMPACT OF *TC HEARTLAND* ON FIRM VALUE AND LITIGATION PROBABILITY — ONE DAY ABNORMAL RETURNS [0]

Panel A			Panel B		
	(1) Non-Troll Probability	(2) Troll Probability		(1) Non-Troll Probability	(2) Troll Probability
Litigation Proxy (LP)	0.00271 (0.008)	0.00011 (0.004)	Litigation Proxy (LP)	0.00271 (0.007)	0.00011 (0.004)
Affected	-0.00102 (0.001)	-0.00164 (0.001)	Affected DE	-0.00129 (0.001)	-0.00202 (0.001)
Affected × LP	0.00127 (0.009)	0.00975** (0.005)	Affected DE × LP	0.00264 (0.010)	0.01131** (0.005)
			Affected NODE	-0.00057 (0.001)	-0.00093 (0.001)
			Affected NODE × LP	-0.00093 (0.010)	0.00530 (0.006)
Constant	-0.00040 (0.001)	-0.00026 (0.001)	Constant	-0.00040 (0.001)	-0.00026 (0.001)

$N = 1,548$. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Bootstrap standard errors, accounting for use of generated regressors, are reported in parentheses.

Table 5 reports OLS regression results, where the dependent variable is firm abnormal returns on May 22, 2017, the day *TC Heartland* was decided. Litigation Proxy (LP) is Non-Troll Probability in column (1), and Troll Probability in column (2). Affected × LP, Affected DE × LP, Affected NODE × LP are all interaction terms between Litigation Proxy and Affected, Affected DE or Affected NODE, respectively. All variables not defined here are defined in the Appendix.

Panel B shows our key result: the coefficients of interest for non-troll litigation are economically small and statistically insignificant (see column 1), but the coefficient on *Affected DE* × *LP* is positive and statistically significant when LP measures the probability of facing troll litigation (see column 2). More specifically, Affected Delaware firms certain to face patent troll litigation experienced a 1.131% increase in stock price. This means investors viewed *TC Heartland* as a favorable outcome primarily for Affected firms that faced a high probability of being sued by a troll and were incorporated in Delaware, rather than firms incorporated elsewhere.

In Table 6, we examine the cumulative abnormal returns for the full week surrounding *TC Heartland*. Naturally, these results are less informative because other confounding events might have occurred during the week to affect firms' returns. Nonetheless, the results are largely similar to those in Table 5. In Panel A, we observe a 2.143% increase in the stock price associated with troll litigation, although the result is only statistically significant at the 10% level.

More importantly, however, the results are again larger for Affected Delaware firms, as we can see in Panel B. Affected Delaware firms certain to face troll litigation experience an additional stock price increase of 3.271%. The result is smaller and not statistically significant for non-troll litigation.¹⁶³ These results again suggest that Delaware firms especially benefited from the rule change in *TC Heartland*.

TABLE 6: THE IMPACT OF *TC HEARTLAND* ON FIRM VALUE AND LITIGATION PROBABILITY — CUMULATIVE ABNORMAL RETURNS [0,+4]

Panel A			Panel B		
	(1) Non-Troll Probability	(2) Troll Probability		(1) Non-Troll Probability	(2) Troll Probability
Litigation Proxy (LP)	0.02841 (0.020)	0.01763 (0.011)	Litigation Proxy (LP)	0.02841 (0.019)	0.01763 (0.011)
Affected	-0.00067 (0.003)	-0.00176 (0.003)	Affected DE	-0.00427 (0.003)	-0.00499 (0.003)
Affected ×LP	-0.00229 (0.024)	0.02143* (0.013)	Affected DE × LP	0.02083 (0.024)	0.03271*** (0.013)
			Affected NODE	0.00525* (0.003)	0.00413 (0.003)
			Affected NODE × LP	-0.04722* (0.026)	-0.00832 (0.016)
Constant	-0.01100*** (0.002)	-0.01124*** (0.002)	Constant	-0.01100*** (0.003)	-0.01124*** (0.003)

$N = 1,548$. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Bootstrap standard errors, accounting for the use of generated regressors, are reported in parentheses.

Table 6 reports OLS regression results, where the dependent variable is firm cumulative abnormal returns from May 22, 2017, the day *TC Heartland* was decided, to May 26, 2017. Litigation Proxy (LP) is Non-Troll Probability in column (1), and Troll Probability in column (2). Affected × LP, Affected DE × LP, Affected NODE × LP are all interaction terms between Litigation Proxy and Affected, Affected DE or Affected NODE, respectively. All variables not defined here are defined in the Appendix.

¹⁶³ In column 1 of Panel B, we observe a large negative effect for Affected firms not incorporated in Delaware that are likely to face a high probability of non-troll litigation. There is no apparent good explanation for such a result, and in any case, it is not statistically significant at the 5% level.

Notably, *TC Heartland* likely had less impact on some Affected Delaware firms that still have a stable and established physical presence in other, more patentee-friendly venues (not including the Eastern District of Texas). We cannot disentangle this effect in our regressions, since we do not know all the venues in which these firms maintain such a presence. Hence, the coefficients we report would likely be even higher if these firms did not maintain a physical presence in these other patentee-friendly jurisdictions (or if they decided to close these offices post-*TC Heartland* and the market did not anticipate they would do this when the case was decided).¹⁶⁴

IV

TC HEARTLAND'S IMPACT ON THE MARKET FOR INCORPORATION

Prior to *TC Heartland*, where a firm decided to incorporate had little impact on where it could be sued for patent infringement. Now, state of incorporation might matter more, particularly for non-retail or online companies who are likely to be sued by patent trolls. As such, an unexpected consequence of *TC Heartland* might be that future firm incorporation decisions will be influenced not only by states' differing corporate law regimes, but also by how friendly a state's federal district courts are to troll litigation. Although this will not affect firms that are unlikely to be sued for infringement, state of incorporation will now matter more for firms who face multiple troll suits each year.

How might *TC Heartland* impact firm incorporation decisions? While it is still early to speculate, we believe two trends might emerge. First, some states might adopt local rules and procedures that are more favorable to patent defendants in order to cater to local firms, or perhaps even to encourage non-local firms to incorporate there. Second, this new competition will likely end in a familiar way: with Delaware maintaining or

¹⁶⁴ In an additional robustness test, rather than splitting firms into Delaware Affected firms and Affected firms incorporated elsewhere, we include firms incorporated or located in California within the Delaware group. The rationale is that, similar to the District of Delaware, the federal courts of California, primarily the Northern and Southern Districts, are believed to be less amenable to troll litigation than the Eastern District of Texas. Including the California firms in the Delaware group does not change our results, which remain qualitatively the same. This is partly because there are few California firms in the sample that are not also incorporated in Delaware, and therefore this specification is not materially different from those presented in Tables 5 and 6. Nonetheless, this result may provide some support for the argument that California-based firms might also benefit from the Supreme Court's decision.

even furthering its appeal as the dominant state of incorporation.

Regarding the first prediction, *TC Heartland* effectively shifted control over patent venue from plaintiffs to defendants, thereby raising the stakes of a firm's incorporation decision. In doing so, the decision created a new policy lever for states to encourage incorporations: shift one's local rules in favor of patent defendants rather than patentees and patent trolls. To the extent federal courts are influenced by local economic factors—something that appeared to happen in the Eastern District of Texas¹⁶⁵—they are more likely to adopt local rules or administrative procedures that favor patent defendants, to make the state they sit in a more attractive incorporation destination for firms.

To understand the benefits of this strategy, it is useful to briefly explain the dynamics within the market for incorporation, which is largely dominated by Delaware.¹⁶⁶ Firms may incorporate in any state irrespective where their headquarters is located. More than 60% of public firms incorporated in the United States are incorporated in Delaware. Nevada emerged as a potential competitor to Delaware for firm incorporation,

¹⁶⁵ See *supra* notes 56–59 and accompanying text.

¹⁶⁶ There is a voluminous scholarly literature that explores whether a market for incorporation generates efficient corporate laws that benefit shareholders or laws that favor managers over shareholders. Compare, e.g., FRANK H. EASTERBROOK & DANIEL R. FISCHER, *THE ECONOMIC STRUCTURE OF CORPORATE LAW* 38 (1991) (“[M]aximizing profits for equity investors assists the other ‘constituencies’ [e.g. managers] automatically.”); Eldar & Magnolfi, *supra* note 86, at 34 (finding that “Delaware faces competitive pressures to adopt corporate laws that are relatively shareholder-friendly.”); Romano, *supra* note 116, at 272–73 (“[R]eincorporating is associated, in some situations, with positive abnormal returns for the shareholders and, at worst, it is a zero net present value transaction.”); Ralph K. Winter, Jr., *State Law, Shareholder Protection, and the Theory of the Corporation*, 6 J. LEG. STUD. 251, 289 (1977) (concluding that competition between states for corporate charters does not work to the disadvantage of shareholders because “[c]orporations must attract capital from a vast range of competing opportunities and the state which ‘rigs’ its code to benefit management will drive debt and equity capital away.”), with, e.g., Lucian Arye Bebchuk & Alma Cohen, *Firms’ Decisions Where to Incorporate*, 46 J. L. & ECON. 383, 421 (2003) (finding that “amassing antitakeover statutes makes states more successful in the incorporation market—both in retaining in-state firms and in attracting out-of-state incorporations.”); Lucian A. Bebchuk & Allen Ferrell, *Federalism and Corporate Law: The Race to Protect Managers from Takeovers*, 99 COLUM. L. REV. 1168, 1171 (1999) (“States have developed a substantial body of rules, including both antitakeover statutes and judicial decisions permitting the use of defensive tactics” that are “quite likely to excessively protect managers.”); William L. Cary, *Federalism and Corporate Law: Reflections upon Delaware*, 83 YALE L.J. 663, 688 (1974) (suggesting that “the cases point to the conclusion that Delaware has a laissez-faire attitude toward the fiduciary role and responsibility of management to its shareholders.”).

but it only succeeded in attracting a segment of small firms,¹⁶⁷ and most large public firms remain incorporated in Delaware. Most other U.S. companies are incorporated in the state where their headquarters are located. Thus, other than Delaware, and to some extent, Nevada, states do not generally seek to attract incorporation of firms located in other states (“out-of-state incorporations”).¹⁶⁸

The current market for incorporation reflects the incentives of different states. Delaware is a state with a relatively small economy. Therefore, it seeks to attract incorporations, primarily of large firms who pay large annual fees, which can reach as high as \$200,000 per year.¹⁶⁹ Other states mainly cater to local interests, including the interests of corporations located and incorporated in those states, but aside from Nevada, they do not appear to compete aggressively for incorporation of firms located in other jurisdictions.¹⁷⁰

Will *TC Heartland* induce states to compete with Delaware for firm incorporations? A state like Nevada, which has actively competed with Delaware in the market for incorporation, might adopt pro-defendant local rules or policies to encourage firms to incorporate there.¹⁷¹ Other states are unlikely to compete with Delaware for out-of-state incorporations, but their federal

¹⁶⁷ In 2013, almost 30% of small public companies with less than \$100 million in assets were incorporated in Nevada. See Eldar & Magnolfi, *supra* note 86, at 43 (Figure 3).

¹⁶⁸ Delaware has 80% of the market of out-of-state incorporation. See *id.* at 42 (Figure 1). “Other than Delaware, no state is engaged in significant efforts to attract incorporations of public companies,” and Nevada “is the only state other than Delaware that openly endeavors to attract incorporations” Marcel Kahan & Ehud Kamar, *The Myth of State Competition in Corporate Law*, 55 *STAN. L. REV.* 679, 684, 716 (2002).

¹⁶⁹ Scott Goss, *Projection: \$64 Million More in Revenue for Delaware Next Year*, DELAWARE ONLINE (Sept. 18, 2017, 5:32 PM), <https://www.delawareonline.com/story/news/politics/2017/09/18/early-projections-show-improving-delaware-budget-picture/676592001/> [<https://perma.cc/6QX8-42PG>]. Many large firms calculate their Delaware franchise taxes using the Assumed Par Value method, which roughly calculates assumed par value capital by dividing total gross assets over issued shares. Firms must pay \$400 in franchise tax for every \$1 million in assumed par capital. Firms may also use the Authorized Shares Method, which charges \$85 for every 10,000 shares above 10,000. See Del. Div. of Corps., *How to Calculate Franchise Taxes*, DELAWARE.GOV, <https://corp.delaware.gov/frtaxcalc.shtml> [<https://perma.cc/T8AJ-M6DC>].

¹⁷⁰ Kahan & Kamar, *supra* note 168, at 684, 716.

¹⁷¹ This is in fact quite likely since Nevada’s main strategy in competing for firm incorporations has been to provide corporate laws that reduce the likelihood of lawsuits. See generally Michal Barzuza, *Market Segmentation: The Rise of Nevada as a Liability-Free Jurisdiction*, 98 *VA. L. REV.* 935 (2012); Ofer Eldar, *Can Lax Corporate Law Increase Shareholder Value? Evidence from Nevada* (working paper, on file with the author); Bruce H. Kobayashi & Larry E. Ribstein, *Nevada and the Market for Corporate Law*, 35 *SEATTLE U.L. REV.* 1165 (2012).

courts may adopt a similar strategy of being relatively pro-defendant. Consider California, where many high-tech companies and likely targets of patent trolls are located. Its federal courts, primarily the Northern and Southern districts, have already been less patentee-friendly than the Eastern District of Texas,¹⁷² presumably because of the state's well-known association with the high-tech industry. Thus, post-*TC Heartland*, some firms may prefer to incorporate in their home state, if their local federal district courts have adopted a favorable stance on patent-troll litigation.

What about Delaware? In particular, if Delaware adopted very patentee-friendly policies, might that induce some firms to leave the state? Certainly this is possible—companies like Amazon and Facebook, which are located in California and incorporated in Delaware, face dozens of patent-infringement lawsuits every year. If Delaware became friendly to trolls, the opportunity to incorporate in another state, presumably California, where the rules might be more favorable to defendants, could be attractive. To be sure, most firms may nonetheless remain in Delaware. After all, the main benefit of incorporation in Delaware is its corporate law and its expert judiciary.¹⁷³ But for some firms the expected costs of patent-troll litigation can be very high, and for these firms the opportunity to ensure a friendly venue for litigation could be more valuable.

This very possibility, however, leads us to believe that Delaware is unlikely to adopt rules or procedures that unduly benefit patent trolls.¹⁷⁴ Instead, Delaware's dependence on incorporation fees¹⁷⁵ suggests it will take steps to maintain its status as the most popular state of incorporation, and prevent a scenario in which likely targets of trolls are tempted to flee the state. Put differently, Delaware's current dominance in

¹⁷² J. Jason Williams, Mark V. Campagna & Olivia E. Marbutt, *Strategies for Combating Patent Trolls*, 17 J. INTELL. PROP. L. 367, 369 n.5 (2010).

¹⁷³ In addition, firms may prefer to remain incorporated in Delaware because of the network externalities associated with being incorporated in the state where most other firms are incorporated. See Kahan & Kamar, *supra* note 170, at 742–43; Michael Klausner, *Corporations, Corporate Law, and Networks of Contracts*, 81 VA. L. REV. 757, 843–47 (1995). In addition, firms may be sluggish in reincorporating into other states because of inertia; Eldar & Magnolfi, *supra* note 86, at 3. However, despite network externalities and inertia, Eldar & Magnolfi show empirically that firms do respond to legal changes over time, and suggest in counterfactual analysis that if Delaware adopted laws that were adverse to the interests of institutional shareholding it could lose over 10% of its market share. *Id.* at 34–35.

¹⁷⁴ See *infra* subpart V.A.

¹⁷⁵ And as we show below, Delaware's current rules are not particularly friendly to patent trolls. See *id.*

corporate law is corporate defendants' strongest assurance that Delaware courts will not veer sharply in favor of new troll litigation.

More likely, Delaware district court judges will build on Delaware's reputation for judicial excellence in corporate and bankruptcy cases, and its growing reputation in patent law. The Eastern District of Texas staked its identity as a leader in patent law; Delaware courts view themselves the same way in the corporate and bankruptcy realms.¹⁷⁶ It seems unlikely that Delaware judges would want to risk Delaware's reputation in business law simply to encourage more patentees to file suit in their jurisdiction.

If anything, *TC Heartland* might make Delaware a more attractive state for incorporations, luring some new and existing firms away from their home states. Our event study suggests the new benefits of Delaware incorporation post-*TC Heartland* are not merely speculative. As we showed above, the companies whose valuations increased the most post-*TC Heartland* were Delaware companies that were likely to be sued by patent trolls.¹⁷⁷ This effect may stem not only from Delaware's policies toward patent trolls, but from the belief that Delaware will further bolster its expertise in patent litigation, and that these efforts will result in more predictable outcomes, as they have in corporate and bankruptcy cases.

More concretely, we can use our event-study results to perform rough calculations that show why some non-Delaware firms—particularly those likely to be sued by patent trolls—might consider reincorporating in Delaware. To illustrate, our one-day abnormal returns (see Table 5) estimate the return to Delaware incorporation at 1.131%. For a firm with an average market value (\$9.2 billion) and facing an average annual probability of troll litigation (8.1%), Delaware incorporation would be worth \$8.43 million per year. The numbers are much

¹⁷⁶ Delaware's pride in its role as a leader in corporate law is evident even from a casual visit to the Delaware Court of Chancery's website. See DELAWARE COURT OF CHANCERY, <https://courts.delaware.gov/chancery/> [<https://perma.cc/PJ7D-QHMH>] ("The Delaware Court of Chancery is widely recognized as the nation's preeminent forum for the determination of disputes involving the internal affairs of the thousands upon thousands of Delaware corporations and other business entities through which a vast amount of the world's commercial affairs is conducted. Its unique competence in and exposure to issues of business law are unmatched."). As discussed, it is likely that the District of Delaware shares at least some of this sentiment.

¹⁷⁷ Specifically, these are Delaware companies that are likely to be sued by patent trolls and do not have a Texas presence. See *supra* notes 156–59 and accompanying text.

smaller if we look instead at the median firm (\$1.3 billion in market value and 2.8% probability of being sued by a troll in a given year), but the net savings are still large (\$411,684 per year). And regardless, these values exceed the maximum annual Delaware incorporation fee of \$200,000.

Which kinds of firms might take a fresh look at Delaware after *TC Heartland*? At first glance, one might think large, non-Delaware technology firms such as California-based Apple and Cisco, and Washington-based Microsoft, all of which have minimal physical presence in the Eastern District of Texas, would consider reincorporating in Delaware.¹⁷⁸ Patent trolls have sued these companies many times in recent years, and it is highly likely trolls will target them in the future.

Still, there are good reasons to be skeptical whether the benefits of being a Delaware corporation would be large enough to induce such firms to reincorporate there. For one, many non-Delaware technology firms are incorporated in California, a state that is perceived to be friendly to patent defendants. Hence, the benefit of moving to Delaware would likely be minimal or non-existent for these firms. Moreover, to the extent firms maintain physical operations in more-patentee friendly states than Delaware, they would still be subject to suit in those venues, and Delaware incorporation would provide minimal value. Finally, these firms had some reasons to incorporate elsewhere in the first place; these reasons might still outweigh whatever financial benefits the firm would gain by moving to Delaware post-*TC Heartland*.

Perhaps more realistically (though still unlikely), *TC Heartland* might induce some non-U.S. companies that face large numbers of patent suits, such as Sony and Canon, to reincorporate or create new subsidiaries that are incorporated in Delaware. At present, even after *TC Heartland*, these foreign companies can be sued for patent infringement in any venue, including the Eastern District of Texas.¹⁷⁹ Again, the benefits

¹⁷⁸ Apple and Cisco are incorporated in California. Apple Inc., Annual Report (Form 10-K) (Nov. 3, 2017); Cisco Systems, Inc., Annual Report (Form 10-K) (Sept. 7, 2017). Microsoft is incorporated in Washington. Microsoft Corp., Annual Report (Form 10-K) (Aug. 2, 2017). Apple has two stores in the Eastern District of Texas (in Plano and Frisco, both northern Dallas suburbs); Microsoft has one store (in Frisco). Store List, APPLE, <https://www.apple.com/retail/storelist/> [<https://perma.cc/7AN7-FKLT>]; All Locations, MICROSOFT, <https://www.microsoft.com/en-us/store/locations/all-locations> [<https://perma.cc/G6BR-2DNN>]. It remains to be seen if these companies would consider closing these stores or moving them outside the district to avoid suit in the Eastern District of Texas.

¹⁷⁹ With, of course, the caveat that the defendant must be subject to personal jurisdiction in the particular jurisdiction in which they are sued. See J. McIntyre

of reincorporating in Delaware would likely have to be substantial for foreign companies to consider moving there—presumably these firms have tax and other reasons (such as home bias) that caused them to incorporate abroad. Nonetheless, as these companies have been subject to dozens of costly patent-infringement lawsuits in the Eastern District of Texas in recent years, the opportunity to incorporate in Delaware could be of substantial value to them.¹⁸⁰

V

THE FUTURE OF PATENT TROLLS AFTER *TC HEARTLAND*

The exodus of patent cases from Texas to Delaware has already begun,¹⁸¹ and the Federal Circuit's recent decisions after *TC Heartland* should only accelerate this dramatic shift.¹⁸² We now explain why this transfer is likely to diminish the impact of patent trolls and lead to more balanced adjudication than in the pre-*TC Heartland* world.

A. Will Delaware Curb Patent Trolls?

To begin, there are some reasons to be skeptical that the move to Delaware will rein in patent-troll litigation. After all, Delaware was the second-most popular forum for patentees (and patent trolls) before *TC Heartland*.¹⁸³ For example, in 2013, about 79.9% of Delaware's patent lawsuits were brought by trolls, as compared to about 82.5% in the Eastern District of

Machinery v. Nicastro, 564 U.S. 873, 880–82 (2011) (no personal jurisdiction when defendant did not purposefully avail itself of doing business in the jurisdiction and did not place goods in stream of commerce expecting they would be purchased in the jurisdiction).

¹⁸⁰ Eric Talley has in fact suggested *TC Heartland* may go as far as reversing the trend toward corporate inversions, as foreign incorporated firms now can still be sued in the Eastern District of Texas while U.S. incorporated firms might be able to avoid the venue. See Eric Talley, *SCOTUS Just Invented Unlikely Sentry Against Corporate Tax Inversions: Patent Trolls*, THE CLS BLUE SKY BLOG (May 24, 2017), <http://clsbluesky.law.columbia.edu/2017/05/24/the-scotus-just-invented-an-unlikely-sentry-against-corporate-tax-inversions-the-patent-troll/> [<https://perma.cc/B6SU-GMQ6>]. See also Eric L. Talley, *Corporate Inversions and the Unbundling of Regulatory Competition*, 101 VA. L. REV. 1649, 1698–1700 (2015) (discussing the pre-*TC Heartland* costs of inversion).

¹⁸¹ See *supra* note 78 and accompanying text.

¹⁸² See *supra* subpart I.D.

¹⁸³ Cohen et al., *supra* note 19; see also Lemley, *supra* note 42, at 405–06 (listing the District of Delaware as having the sixth-highest number of patent cases litigated between 2000–2010).

Texas.¹⁸⁴ Moreover, Delaware did not dismiss non-practicing entity cases at an exceptionally high rate.¹⁸⁵

A deeper look at Delaware, however, reveals a different story. Despite its popularity as a forum, the state was never perceived as particularly friendly to patentees and patent trolls; if anything, the opposite was true.¹⁸⁶ Unlike other jurisdictions that promulgated local patent rules as a signal to patentees to file suit there, the District of Delaware never did so.¹⁸⁷ In fact, Delaware was a jurisdiction of choice for declaratory judgment actions—these are suits that potential *patent defendants* file seeking declaratory relief that their products do not infringe a patent and that the patent is invalid.¹⁸⁸ One would hardly expect these defendants to pick Delaware if it were especially patentee-friendly.¹⁸⁹

Also, the way Delaware managed its cases contributed to the perception that it was not excessively patentee-friendly. For example, cases in Delaware generally took longer than the me-

¹⁸⁴ This is based on the cases coded thus far for 2013 (97.2% of all cases). If we instead look at the random sample, the values are largely the same—80.5% in E.D. Texas and 76.2% in the District of Delaware. See *supra* note 155 for more on the Stanford NPE Litigation dataset.

¹⁸⁵ See *id.* (noting that 8% of NPE suits in the District of Delaware end with a dismissal or loss, as compared to 4% in the Eastern District of Texas). Of course, selection bias makes it difficult to compare such statistics, since the cases that NPEs brought in Delaware might have been of higher quality, and hence less likely to be dismissed, than the cases they brought in Texas.

¹⁸⁶ See, e.g., Letter to Congress from 28 Law Professors & Economists Urging Caution on the VENUE Act (Aug. 1, 2016), at 2 (noting the proposed VENUE Act would concentrate infringement actions in the District of Delaware, a venue “where it is considered much more difficult to enforce patent rights”), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2816062 [<https://perma.cc/72ZC-DAG4>].

¹⁸⁷ See Anderson, *supra* note 1, at 655.

¹⁸⁸ See 28 U.S.C. § 2202 (Declaratory Judgment Act); see also Lemley, *supra* note 42, at 410, 413 (noting “accused infringers often choose the District of Delaware, filing declaratory judgment actions there” but also suggesting this behavior might be “foolish[.]” because a “higher percentage [of patent cases] make it to trial in the District of Delaware” and plaintiff win rates are relatively high there).

¹⁸⁹ Moreover, it is somewhat difficult to extrapolate from Delaware’s actions in a pre-*TC Heartland* world because much of its patent docket previously dealt with pharmaceutical cases under the Hatch-Waxman Act (formally known as the Drug Price Competition and Patent Term Restoration Act of 1984, P.L. 98-417). Katherine Rhoades, *Do Not Pass Go, Do Not Stop for Summary Judgment: The U.S. District Court for the District of Delaware’s Seemingly Disjunctive Yet Efficient Procedures in Hatch-Waxman Litigation* 14 NW. J. TECH. & INTELL. PROP. 81, 83 (2016). These cases generally go to a bench trial, not a jury trial. *Id.* at 88. By contrast, most cases involving patent trolls are destined for a jury (if they are not dismissed or settle first), see Iancu & Chung, *supra* note 50, at 301; hence, these cases have a fundamentally different dynamic. These differences further motivate the value of our event study, which measures how investors perceive the decision will affect Delaware firms going forward.

dian jurisdiction to get to trial; the opposite was true for cases in the Eastern District of Texas, even as that district's patent caseload ramped up over the years.¹⁹⁰ Since getting to trial as quickly as possible generally favors patentees,¹⁹¹ Delaware's relatively slow pace made it less attractive to patent trolls than the Eastern District of Texas.¹⁹²

Differences in discovery rules also played a crucial role. For example, a recent study compared the discovery and pre-trial deadlines for the two judges with the most patent cases in their respective districts: Judge Rodney Gilstrap of the Eastern District of Texas and Chief Judge Leonard Stark of the District of Delaware. The study found that "discovery both begins and ends earlier in cases litigated before Judge Gilstrap" by about 50 to 100 days.¹⁹³ And since Eastern District judges are less likely to extend discovery and pretrial deadlines (and less likely to grant or quickly decide motions to transfer¹⁹⁴), Eastern District defendants are less able to avoid discovery expenses than their Delaware counterparts, making litigation in Texas predictably more expensive.¹⁹⁵ Hence, unlike Delaware, the dynamics of litigation in the Eastern District of Texas helped patent trolls, since defendants would settle cases early on sim-

¹⁹⁰ See Love & Yoon, *supra* note 39, at 13–15.

¹⁹¹ See Lemley, *supra* note 42, at 403 ("[P]atent plaintiffs generally want speed. Because a patent usually expires after twenty years, it is a wasting asset; every year waiting to enforce the right in court is a year that a patentee does not have exclusivity in the market."); see also *id.* (noting while delay is less problematic for patentees seeking only damages, "time spent waiting for a court resolution is time that cannot be spent using the proceeds of the first suit to sue others. Further, while plaintiffs wait for a court resolution, defendants can design around the patentee's invention, and delay may also bring market changes that render the patented invention less valuable.").

¹⁹² And as the understaffed Delaware district becomes inundated with new cases, we can expect this pace to slow even further, thereby further discouraging troll litigation. See *infra* note 199 and accompanying text (discussing open seats in the District of Delaware).

¹⁹³ See Love & Yoon, *supra* note 39, at 21–22.

¹⁹⁴ *Id.* at 16.

¹⁹⁵ See *id.* at 21–23.

ply to avoid litigation costs¹⁹⁶ they probably could not recover later on.¹⁹⁷

But even putting aside Delaware's past conduct, there are compelling reasons to believe Delaware will not be biased toward patent trolls in the future. As we discussed above, more than any other state, *TC Heartland* raised the stakes for Delaware, as it now has a lot more to lose if it encourages troll litigation.¹⁹⁸ It would make little sense for Delaware to risk losing the incorporation fees it depends on by becoming a new troll haven, particularly since there are likely to be diminishing marginal returns from attracting even more patent cases to the state.

Delaware's disfavor of additional patent litigation is already being borne out in new cases brought since *TC Heartland*. The district currently has only four full-time judges, two of whom were recently confirmed¹⁹⁹—fewer than the five full-time judges and two senior judges in the Eastern District of Texas.²⁰⁰ The court has begun citing congestion as a basis for transferring cases to other courts.²⁰¹ Contrast this with the

¹⁹⁶ Love and Yoon estimate that many Texas defendants settle cases for around \$30,000 to \$100,000—values consistent with nuisance litigation. See *id.* at 24–25; see also FTC STUDY, *supra* note 67, at 9–11 (“77% of Litigation PAEs’ settlements fell below a de facto benchmark for the nuisance cost of litigation. This suggests that discovery costs, and not the technological value of the patent, may set the benchmark for settlement value in litigation cases.”). But see Spitzer, *supra* note 67, at 2–3 (arguing that the FTC Report “incorrectly claims that a low settlement amount implies that the suit was a [nuisance] suit”).

¹⁹⁷ Scholars have explored how loser pays and other reform processes could be imported into patent litigation to reduce the gains from asserting weak patents, which are believed by some to be disproportionately used by patent trolls. See, e.g., Anup Malani & Jonathan S. Masur, *Raising the Stakes in Patent Cases*, 101 GEO. L.J. 637, 661 (2013) (suggesting enhanced rewards and penalties); see generally Sukhatme, *supra* note 63, at 166 (investigating how loser pays could be used to deter weak patents in ex parte patent prosecution).

¹⁹⁸ See *supra* notes 174–75 and accompanying text.

¹⁹⁹ *Judges’ Info*, DISTRICT OF DELAWARE, UNITED STATES COURTS, <http://www.ded.uscourts.gov/judges-info> [<https://perma.cc/726A-BNB9>]. The two recently confirmed judges both have deep experience in intellectual property law and have strong connections to the Delaware bar. McParland, *supra* note 20. The Chief Judge in the district has also recruited the help of numerous visiting district judges to help with the rising tide of patent-infringement actions. See *id.*

²⁰⁰ *Eastern District Judges*, EASTERN DISTRICT OF TEXAS, UNITED STATES COURTS, <http://www.txed.uscourts.gov/?q=eastern-district-judges> [<https://perma.cc/7N7Q-M2MB>].

²⁰¹ Malathi Nayak, *Swelling Docket Pushing Delaware Judges to Transfer Patent Cases*, INTELL. PROP. ON BLOOMBERG L. (Sept. 20, 2017), <https://www.bna.com/swelling-docket-pushing-n57982088314/> [<https://perma.cc/EQ8G-74WC>].

Eastern District of Texas, where judges were loath to grant transfer motions even as their patent caseload soared.²⁰²

None of this is to say that additional legislation to rein in patent trolls is unwarranted. If the optimal level of troll litigation is zero—a point disputed by some scholars²⁰³—then *TC Heartland* will not accomplish that goal. But a careful look at the incentives of Delaware courts and the combined knowledge of investors suggests Delaware will indeed be different from the Eastern District of Texas in addressing patent-troll litigation. As such, while *TC Heartland* will not end troll litigation, the move to Delaware will strike a decisive blow against such cases.

B. Will Delaware Forum Sell to Corporate Defendants?

So Delaware seems unlikely to become a new version of the Eastern District of Texas. But should we have the opposite concern: that Delaware might become too friendly to corporate patent defendants? In other words, might *TC Heartland* shift us into a new era, where patentees with genuine claims of patent infringement are routinely deterred from filing meritorious suits?

While such an outcome is possible, it seems unlikely for a few reasons. First, even before *TC Heartland*, Delaware was a popular venue for patentees to bring infringement actions.²⁰⁴ These suits were brought in part by a robust and knowledgeable local patent bar.²⁰⁵ If the District of Delaware were to become too defendant-friendly—that is, if their decisions were to become too skewed in favor of patent defendants—the court would face a backlash from this well-organized constituency. The court seems unlikely to steer such an extreme course, especially since all of its full-time federal judges are connected

²⁰² Even before *TC Heartland*, the District of Delaware did not exhibit behavior like other jurisdictions that actively sought to encourage patent litigation. For example, Delaware never promulgated patent local rules. See Anderson, *supra* note 1, at 655.

²⁰³ See, e.g., David S. Abrams, Ufuk Akcigit & Gokhan Oz, *Patent Trolls: Belligerent Middleman or Stick-up Artist?* 36 (Working Paper, 2017) (finding that NPEs create value for small firms that do not have resources to defend their patents and act as middlemen in the patent market, which suffers from informational asymmetry, by “allocat[ing] patents to better users.”). But see Cohen et al., *supra* note 147, at 3–4 (providing evidence that NPEs are opportunistic in litigation and measuring real negative impact of NPE litigation on those firms).

²⁰⁴ See Cohen et al., *supra* note 19.

²⁰⁵ See John E. Kidd & Keeto H. Sabharwal, *The District of Delaware: An Ideal Venue for Patent Litigators*, 18 DEL. L. 16, 17 (Win. 2000/2001) (“In some jurisdictions, local counsel is nothing more than a ‘drop box’ for pleadings. Not so in Delaware. The local practitioners understand the substantive and procedural aspects of patent law.”).

to the Delaware bar and are likely in tune with Delaware state institutions.²⁰⁶

Our belief on this point is also informed by how the District of Delaware's sister state court, the Delaware Court of Chancery, has treated corporate litigation in recent years. Similar to patent-infringement litigation in the Eastern District of Texas, corporate defendants have faced a flood of shareholder litigation in the Court of Chancery. While the court made efforts to stem these cases, it did not extinguish them; rather, it opted to take a more moderate approach that permitted a significant number of these cases to proceed.²⁰⁷ Delaware's main attractions in the business-law realm are its expertise and predictable law, which could not develop without a steady flow of cases. The same is likely true in patent litigation.²⁰⁸ We therefore expect the District of Delaware to follow a similarly measured approach in discouraging nuisance litigation while promoting productive patent-infringement cases.

Relatedly, some of the same benefits that Delaware provides to patent defendants also accrue to patentees as well. The District of Delaware's extensive experience and developed expertise in patent cases should be appealing to both patentees and defendants alike. To be sure, expertise was a benefit that also accrued to defendants who were sued in the Eastern District of Texas. But that court's other patentee-friendly procedures arguably negated this benefit, tilting the playing field

²⁰⁶ Prior to sitting on the bench, Chief Judge Leonard Stark clerked for Judge Walter Stapleton on the Third Circuit (seated in Wilmington, Delaware), practiced law in Wilmington, was an adjunct professor at the University of Delaware, and was an Assistant U.S. Attorney in Delaware. *The Honorable Leonard P. Stark*, DISTRICT OF DELAWARE, UNITED STATES COURTS, http://www.ded.uscourts.gov/judge_24 [<https://perma.cc/4ZSF-5HQX>]. Judge Gregory Sleet was previously Deputy Attorney General of Delaware and U.S. Attorney for the District of Delaware. *The Honorable Gregory M. Sleet*, DISTRICT OF DELAWARE, UNITED STATES COURTS, http://www.ded.uscourts.gov/judge_22 [<https://perma.cc/UM25-KA7B>]. Judge Richard G. Andrews was also a former Delaware Assistant U.S. Attorney as well as a state prosecutor in the Delaware Department of Justice. *The Honorable Richard G. Andrews*, DISTRICT OF DELAWARE, UNITED STATES COURTS, http://www.ded.uscourts.gov/judge_25 [<https://perma.cc/QJ2F-SSTV>]. The two judges recently confirmed to the court also have strong connections to the Delaware bar, particularly its intellectual property community. See McParland, *supra* note 20.

²⁰⁷ See Armour, Black & Cheffins, *Delaware's Balancing Act*, *supra* note 94, at 1366.

²⁰⁸ Indeed, the court has had a reputation for expertise in patent law for decades. See Kidd & Sabharwal, *supra* note 205, at 16 ("[T]he Delaware District Court is one of the nation's premier trial courts for the resolution of major patent disputes. Its jurists are among the most knowledgeable and experienced in patent matters. Best of all, they appear to enjoy adjudicating these cases.").

against defendants in a way that is unlikely to occur in Delaware.

Finally, and perhaps most importantly, while *TC Heartland* limits where patentees can file suit, it still permits them to sue a defendant where its principal place of business is located, or in any district in which it has a “regular and established place of business,” if the allegedly infringing goods or services are sold there (as they most likely will be).²⁰⁹ Most Delaware firms have, at a minimum, corporate headquarters located in another state. Under the second prong of 28 U.S.C. § 1400(b), these firms could still be sued in those other jurisdictions. Hence, if the District of Delaware became excessively friendly to corporate defendants, patentees could simply take their chances and sue defendants in these other jurisdictions, even if judges there do not commonly see patent-infringement cases. So the District of Delaware will still have some competition for patent litigation that should deter them from adopting an extreme pro-defendant stance.²¹⁰

VI

CHOICE OF VENUE BY CORPORATE DEFENDANTS: TWO-STEP SELECTION

Beyond the context of patent litigation, what might be the impact of giving defendants more control over venue? While we do not draw any sweeping conclusions, *TC Heartland* illustrates a few basic themes that might have broader applicability outside of patent law.

First, as many scholars have shown, when plaintiffs have a wide array of possible venues, they have incentives to forum shop.²¹¹ This, in turn, encourages some courts to forum sell:

²⁰⁹ See *supra* note 27.

²¹⁰ Of course, defendants could get around this hurdle by moving their headquarters and business operations to districts that are defendant-friendly. Unlike reincorporation, however, which is relatively inexpensive and straightforward, moving a company’s operations is undoubtedly a much more difficult operation whose costs are likely to outweigh the benefits of diminished patent liability.

²¹¹ See, e.g., Kevin M. Clermont & Theodore Eisenberg, *Exorcising the Evil of Forum-Shopping*, 80 CORNELL L. REV. 1507, 1508 (1995) (describing forum selection’s impact on outcome); William H.J. Hubbard, *An Empirical Study of the Effect of Shady Grove v. Allstate on Forum Shopping in the New York Courts*, 10 J.L. ECON. & POL’Y 151, 171–72 (2013) (showing shifts in vertical forum shopping after *Shady Grove v. Allstate*); Paul H. Rubin, Christopher Curran & John F. Curran, *Litigation Versus Legislation: Forum Shopping by Rent Seekers*, 107 PUB. CHOICE, 295, 297–98 (2001) (describing interest group forum shopping between legislation and litigation); Neel U. Sukhatme, *A Theoretical and Empirical Study of Forum Shopping in Diversity Cases* 20–21 (Working Paper, 2014) (finding that diversity jurisdiction creates the potential for forum shopping across federal venues);

to adopt local procedures or administrative rules that are substantively or procedurally biased in favor of plaintiffs to incentivize them to file suit there.²¹² To be sure, many courts will have no inclination to forum sell—this might include, for example, larger jurisdictions that are already prominent litigation venues with crowded dockets.²¹³ But it sometimes takes only a few or even just one venue engaging in forum selling to impact where cases are filed, as the Eastern District of Texas demonstrated.²¹⁴ And to the extent we believe forum selling is socially suboptimal, then a system in which plaintiffs are given *carte blanche* over where to file suit is problematic.

By contrast, if defendants have some control over where a lawsuit against them is filed—as many potential patent defendants will have post-*TC Heartland*—there are two potentially balancing factors at play. On the one hand, many courts still have incentives to adopt policies that encourage plaintiffs to file suit there, since such suits generate benefits for the local bar and the local economy.²¹⁵ These incentives are also likely to be strongest in smaller jurisdictions, perhaps outside of major urban centers, for which the influx of cases is likely to have a greater economic impact or generate more prestige. The Eastern District of Texas is a prime example of such a jurisdiction. On the other hand, a state now has incentives to encourage defendants to choose its forum, since no lawsuits will occur in its courts unless defendants take whatever affirmative action (e.g., filing articles of incorporation or setting up a principal place of business or “regular and established place of business”) is required before a plaintiff can sue them there.

Michelle J. White, *Asbestos Litigation: Procedural Innovations and Forum Shopping*, 35 J. LEG. STUD. 365, 395–97 (2006) (describing forum shopping in asbestos cases).

²¹² See, e.g., LYNN M. LOPUCKI, *COURTING FAILURE* (2005); Anderson, *supra* note 1, at 661–66 (discussing judicial incentives to compete); Klerman & Reilly, *supra* note 1, at 250–70 (arguing judges in the Eastern District of Texas have departed from mainstream procedure to attract patent cases); Daniel Klerman, *Personal Jurisdiction and Product Liability*, 85 S. CAL. L. REV. 1551, 1554 (2012) (positing potential forum selling in the product liability context); Daniel Klerman, *Rethinking Personal Jurisdiction*, 6 J. LEGAL ANALYSIS 245, 259–63 (2014) (describing how plaintiff choice of forum can lead to a pro-plaintiff bias).

²¹³ See Klerman & Reilly, *supra* note 1, at 300 (noting a common characteristic of many, but not all, venues that forum sell include an absence of major cities or industries).

²¹⁴ See *id.* at 243, 271 (referencing the Eastern District of Texas and noting “[w]hile only a few judges may be motivated to attract more cases, their actions can have large effects because their courts will attract a disproportionate share of cases.”).

²¹⁵ See *supra* notes 57–59 and accompanying text.

Accordingly, such forums have incentives not to become too biased in favor of either plaintiffs or defendants. If a forum became too plaintiff-friendly, then it would risk losing firms that are incorporated in that state—a consideration that would weigh heavily on a state like Delaware, as we discussed previously. Other states may care less about incorporations but more about encouraging firms to keep or maintain physical business operations in their state. Such operations may be important economic drivers for the state; one might expect this effect to be greatest for large companies that operate in small, non-urban jurisdictions.²¹⁶

Conversely, becoming too defendant-friendly is unlikely to pay off for a court, since plaintiffs often retain some choice over venue, as is true in patent cases post-*TC Heartland*. In particular, since many firms will incorporate in one state but maintain their principal place of business in another, plaintiffs will often have at least two possible forums in which they can sue. If one forum becomes excessively defendant-friendly, plaintiffs can still file suit in the other forum. Put differently, the presence of at least one other competing venue tempers courts' incentives to forum sell too heavily to defendants.

Importantly, a putative defendant will likely pick this alternate venue for reasons that have little to do with potential liability concerns. Rather, where a firm situates its principal place of business or its physical facilities will depend primarily on business factors such as location of customers, location of materials, labor, and other manufacturing inputs, and home bias.

We can thus see that post-*TC Heartland*, venue selection in patent cases is now a two-step process, with both plaintiffs and defendants having input. First, defendants pick where they are willing to be sued, based on where they decide to incorporate and build their physical facilities. Second, patentees select, from among these forums, the one that gives them the highest expected return. If a forum is excessively patentee-friendly, defendants might avoid incorporating in that jurisdiction or situating their business there, though such a decision might be costly to the firm. If a forum is excessively defendant-friendly, then plaintiffs can avoid that forum by filing suit in the one or

²¹⁶ For example, one might expect Apple to close its two stores in the Eastern District of Texas (currently in two northern Dallas suburbs) to avoid subjecting itself to venue in infringement actions there. This is especially true since they could simply relocate the stores to Dallas itself or to other nearby suburbs, all of which are in the Northern District of Texas. See *supra* note 178.

more other forums likely available to them. While there is no guarantee this mechanism is optimal or removes all forum-specific bias, giving both defendants and plaintiffs some control over venue should mitigate concerns about forum selling to either party.

This kind of two-step forum-selection process might also exist outside of patent law. Several recent Supreme Court decisions—*Goodyear Dunlop Tires Operations, S.A. v. Brown*,²¹⁷ *Daimler AG v. Bauman*,²¹⁸ *BNSF Railway Co. v. Tyrrell*,²¹⁹ and *Bristol-Myers Squibb Co. v. Superior Court of California, San Francisco County*²²⁰—emphasized that state courts typically cannot exercise personal jurisdiction over a defendant corporation if the underlying claims have little or no connection to the forum state, and if the defendant corporation is both incorporated outside the forum state and has its principal place of business elsewhere. Unlike *TC Heartland*, these cases are moored in the constitutional mandates of due process. But nonetheless, each case increases the chances that a corporation will be sued in its state of incorporation or its home state as compared to a “random” venue, such as the Eastern District of Texas in the patent context. As such, these cases give defendants more control over where suits against them can be filed.²²¹

So if shared control over venue mitigates a court’s incentives to forum sell by slanting its procedural or substantive law

²¹⁷ 564 U.S. 915, 918–20 (2011) (foreign subsidiary of Ohio parent corporation not subject to general personal jurisdiction in North Carolina state court).

²¹⁸ 571 U.S. 117, 138–39 (2014) (foreign national cannot sue foreign parent corporation in California using general personal jurisdiction despite U.S. subsidiary’s forum contacts).

²¹⁹ 137 S. Ct. 1549, 1558 (2017) (defendant corporation subject to general personal jurisdiction outside of state of incorporation or principal place of business only in “exceptional case” (quoting *Daimler AG*, 571 U.S. at 139 n.19)).

²²⁰ 137 S. Ct. 1773, 1781 (2017) (non-California residents cannot sue non-California corporation in California that does not have principal place of business there).

²²¹ Arguably, these cases give defendants less control over venue selection than *TC Heartland*. First, unlike the patent troll context, in which many firms clearly anticipate they will be patent defendants more often than patent plaintiffs, the issue may be less clear in other forms of litigation. Second, in many tort suits, venue may exist in locales that the defendant arguably did not “choose.” For example, consider an Illinois plaintiff who is injured in a car accident with a company’s truck while driving in Indiana; the company is headquartered in New Jersey and incorporated in Delaware. In addition to potentially filing suit in Delaware or New Jersey, the plaintiff could also sue the defendant in Indiana (under specific personal jurisdiction), even if the company does not have any physical offices in that state. Moreover, complete diversity also exists between the parties, so if the amount in controversy between the parties exceeds \$75,000, the plaintiff could also file suit in federal court.

to favor one side, how else might that court entice litigants? Rather than focusing on rules that favor defendants or plaintiffs, states might instead develop substantive expertise and predictable case law that benefits both sides. Put differently, knowledgeable judges and stable, coherent case law arguably inure to the benefit of both plaintiffs and defendants. Instead of forum selling to one party or another, when defendants have some control over where suits might be filed, courts have an incentive to take a balanced approach to litigation, where they compete for new cases based on judicial expertise and unbiased, high quality case law. As we discussed above, this is arguably the path that Delaware took in corporate and bankruptcy matters, and this is the path we expect the District of Delaware to take when deciding patent cases post-*TC Heartland*.

CONCLUSION

After *TC Heartland*, patent-infringement litigation is shifting en masse from Texas to Delaware. As we have shown, investors—particularly those invested in Delaware firms—are optimistic that indeed, Delaware will be different. The rise of patent trolls, and the resulting economic costs, have concerned scholars and policymakers of varied political stripes. Despite some commentary to the contrary, we believe *TC Heartland* will stem the tide of troll litigation, making such lawsuits less common and less profitable.

But more importantly, we believe *TC Heartland* will change court behavior and corporate practice in ways not widely recognized. By making a company's state of incorporation the linchpin for determining venue in many patent infringement suits, *TC Heartland* gives defendants more control over where they can be sued. The decision may counterbalance certain courts' tendency to adopt plaintiff-friendly procedural rules, and it arguably promotes a more balanced system in which neither plaintiff nor defendant interests are privileged. In particular, we expect Delaware to compete for litigation by enhancing its judicial expertise and issuing predictable case law, similar to how it acquired a leading status in corporate litigation and bankruptcy proceedings.

If choice of venue by defendants helps curb excessive litigation in the patent context, this advantage may also translate to other fields of law. Thus, *TC Heartland's* greatest long-term legacy could extend far beyond the parochial boundaries of patent litigation.

APPENDIX

Variable Descriptions		
Variable	Description	Source
Affected	A dummy variable equal to 1 if a firm is incorporated in the US, and (1) it is not incorporated in Texas, (2) its headquarters are not located in the Eastern District of Texas, and (3) it does not have a store in the Eastern District of Texas.	Compustat, hand-coding
Affected DE	A dummy variable equal to 1 if Affected equals 1 and the firm is incorporated in Delaware.	
Affected NO DE	A dummy variable equal to 1 if Affected equals 1 and the firm is not incorporated in Delaware.	
Assets	Total firm assets in \$ millions as of the end of the previous fiscal year.	Compustat
Book/Market	Ratio of firm book-value of equity to market value as of the end of the previous fiscal year. (Book value of equity is the sum of stockholders equity (SEQ), Deferred Tax (TXDB), and Investment Tax Credit (ITCB), minus Preferred Stock (PREF). Depending on data availability, we use redemption (item PSTKRV), liquidation (item PSTKL), or par value (item PSTK) to represent the book value of preferred stock.	Compustat
Cash Level	The firm's level of cash in \$ millions at the end of the previous fiscal year.	Compustat
Cash Shock	A dummy variable that equals 1 if a change in cash in the past fiscal year is among the top 5% of cash changes in its industry based on two digit SIC codes.	Compustat
Lawsuit Probability	Predicted probability that a firm is sued for patent infringement in a given year based on the regression estimates reported in column 1 of Table 3.	
Lawsuits by Trolls	The number of patent-infringement lawsuits in any given year by a patent-assertion entity.	Stanford NPE Dataset
Market Value	Market value in \$ millions as of the end of the previous fiscal year.	Compustat
Missing R&D	A dummy variable equal to 1 if data on R&D expense in a given fiscal year is missing.	
Missing Patents	A dummy variable equal to 1 if a data on Patents in a given fiscal year is missing.	
Non-Troll Probability	Predicted probability that a firm is sued for patent infringement in a given year, where the plaintiff is <i>not</i> a patent-assertion entity, based on the regression estimates reported in column 3 of Table 3.	
Past Returns	Stock market return to equity corresponding to the fiscal year.	Compustat
Patents	Number of patents issued to the firm in the past five years.	Kogan et al. (2017)
Patent Lawsuits	The number of patent infringement lawsuits in any given year by any plaintiff.	Stanford NPE Dataset

Variable Descriptions		
Variable	Description	Source
Troll Probability	Predicted probability that a firm is sued for patent infringement in a given year, where the plaintiff is a patent assertion entity, based on the regression estimates reported in column 2 of Table 3.	
R&D Expense	R&D expenditures in \$ millions as of the end of the previous fiscal year.	Compustat