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Holding Up and Holding Out

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HOLDING UP AND HOLDING OUT

Colleen V. Chien*

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ABSTRACT

Patent “hold-up” and patent “hold-out” present important, alternative theories for what ails the patent system. Patent “hold-up” occurs when a patent owner sues a company when it is most vulnerable—after it has implemented a technology—and is able wrest a settlement because it is too late for the company to change course. Patent “hold-out” is the practice of companies routinely ignoring patents and resisting patent owner demands because the odds of getting caught are small. Hold-up has arguably predicted the current patent crises, and the ex ante assertion of technology patents whether in the smartphone war, standards, or patent “troll” context. Hold-up theory has been embraced by thought leaders and fueled the current drive by Congress and President Obama to reform the patent system. This Article makes the counterintuitive case that hold-up theory is wrong—or at least incomplete—because it is missing is full consideration of the other side—the side of hold-out. When large companies systematically “hold out” on patentees, they have no choice but to work with efficient patent enforcers, or “trolls.” When small inventors are unfairly disadvantaged in the marketplace, jurors may give them relief in court. Considering hold-out and hold-up together provide a more complete picture than focusing on either theory alone. This perspective reveals surprising pathways to a better patent system, focused on the design, rather than the doctrine, of patent law. Instead of trying to eliminate all technology patents, or to enforce all of them, we should try to price them appropriately and reduce the distortions they produce. Instead of trying to make patent law

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perfect, we should make it cheaper, more streamlined, and more equitable. To do so, lawmakers should prioritize improving coordination across courts and agencies, reducing costs through early dispositive rulings and valuation, and promoting symmetry between parties and proportionality about the value of a patent through fee- and cost-shifting. Each of these steps would go a long way to curbing both hold-up and hold-out.

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INTRODUCTION

You have a brilliant idea for a product and use it to start the business of your dreams. You open your doors, work day and night, and turn that idea into a successful business. But then, out of nowhere, you get a letter from a patent troll, asking you to pay money for use of its patents. The timing could not be worse—your product has traction; you cannot change it now. Your choices: pay or endure an expensive lawsuit.

This story, adapted from a radio ad campaign profiled by NPR,¹ explains the idea of patent hold-up—the practice of patentholders demanding royalties from a defendant when it is most vulnerable—after it has implemented a technology. The patentholder “holds up” the seller, prompting a settlement driven by the timing of the demand, rather than its merits.²

Widely theorized and debated in academic and policy circles,³ the concept of patent hold-up has gained prominence by predicting the current patent “crisis,” including the smartphone wars between Apple, Samsung, and others,⁴ abuse of standards-essential patents, and the rise of patent trolls⁵—all through *ex post*⁶ assertions of technology patents. Hold-up has drawn intense attention to the patent system, and not the good kind. Nobel-prize winner Gary Becker has blamed a “defective patent system [that] creates opportunities for hold-ups and excessive litigation.”⁷ Federal Reserve economists Boldrin and Levine have called for the elimination of the patent sys-

1. Laura Sydell, *Taking the Battle Against Patent Trolls To The Public*, NPR (Aug. 30, 2013), <http://www.npr.org/blogs/alltechconsidered/2013/08/30/217272814/taking-the-battle-against-patent-trolls-to-the-public>.

2. See *infra* Part I.

3. See *infra* Part I.

4. For a description of these wars and an examination of the patents involved in them, see Stuart Graham & Saurabh Vishnubhakat, *Of Smart Phone Wars and Software Patents*, 27 J. ECON. PERSP. 67, 73–80 (2013).

5. A term that refers to entities that do not make products and are focused on the assertion of patents as their primary business model. Also more politely described as “patent assertion entities.” See Colleen V. Chien, *From Arms Race to Marketplace: The Complex Patent Ecosystem and Its Implications for the Patent System*, 62 HASTINGS L.J. 297, 300, 313 (2010).

6. In this context, meaning “after the product has been developed.”

7. Gary Becker, *On Reforming the Patent System*, THE BECKER-POSNER BLOG (July 21, 2013, 2:38 PM), <http://www.becker-posner-blog.com/2013/07/on-reforming-the-patent-system-becker.html>.

tem on the basis of “a gigantic hold-up problem.”⁸ President Obama has lamented what he sees as not just patent “hold-up,” but a version of “hold-em-up”: when patentholders “hijack somebody else’s idea and see if they can extort some money out of them.”⁹

But while embraced by policymakers, public thinkers, and academics,¹⁰ patent hold-up theory as it currently exists is wrong—or at least incomplete. The stakes associated with an incomplete view are high as policymakers are moving to curb hold-up abuses in a variety of contexts: the Federal Trade Commission (FTC) and Department of Justice (DOJ) are scrutinizing patent trolls¹¹ and others who engage in abuse using standards essential patents.¹² In June 2013, the White House issued five executive actions and seven legislative recommendations to curb the hold-up associated with “frivolous litigation,” pertaining to the quality of computer-implemented claims, fee-shifting, and the reach of so-called “functional” software claims; and in February 2014, issued additional actions to increase the patents quality.¹³ The U.S. House of Representatives passed the Innovation Act at the end of 2013, addressing many of these recommendations and the Senate held hearings and briefings but stopped short of completing the legislative process.¹⁴ In its

8. Michele Boldrin & David K. Levine, *The Case Against Patents* (Fed. Reserve Bank of St. Louis Research Div. Working Paper Series, Paper No. 2012-035A, 2012), available at <http://research.stlouisfed.org/wp/2012/2012-035.pdf>.

9. See EXEC. OFFICE OF THE PRESIDENT, PATENT ASSERTION & U.S. INNOVATION 2 (2013), available at http://www.whitehouse.gov/sites/default/files/docs/patent_report.pdf (quoting statements made by President Obama on February 14, 2013).

10. See discussion *infra* Part I.

11. See USDOJ: Antitrust Division Public Workshop—Patent Assertion Entity Activities, U.S. DEP’T OF JUSTICE, (Dec. 10, 2012), <http://www.justice.gov/atr/public/workshops/pae/> (detailing a joint workshop agenda held by the agencies on patent troll activities); *FTC Seeks to Examine Patent Assertion Entities and Their Impact on Innovation, Competition*, FED. TRADE COMM’N (Sept. 27, 2013), <http://www.ftc.gov/news-events/press-releases/2013/09/ftc-seeks-examine-patent-assertion-entities-their-impact> (announcing an FTC impact study of patent troll activities as authorized under Section 6(b) of the FTC Act).

12. See U.S. DEP’T OF JUSTICE & U.S. PATENT & TRADEMARK OFFICE, POLICY STATEMENT ON REMEDIES FOR STANDARDS-ESSENTIAL PATENTS SUBJECT TO VOLUNTARY FRAND COMMITMENTS (2013), available at http://www.uspto.gov/about/offices/ogc/Final_DOJ-PTO_Policy_Statement_on_FRAND_SEPs_1-8-13.pdf.

13. Press Release, White House, *FACT SHEET: White House Task Force on High-Tech Patent Issues* (June 4, 2013), <http://www.whitehouse.gov/the-press-office/2013/06/04/fact-sheet-white-house-task-force-high-tech-patent-issues> (recommending or taking steps to, e.g., give courts greater discretion to shift fees, mandate disclosure of a patent’s real party-in-interest, tighten functional claiming, and expand the transitional covered business method patent program); see also Press Release, White House, *FACT SHEET—Executive Actions: Answering the President’s Call to Strengthen Our Patent System and Foster Innovation*, (Feb. 20, 2014), <http://www.whitehouse.gov/the-press-office/2014/02/20/fact-sheet-executive-actions-answering-president-s-call-strengthen-our-p> (detailing three additional executive actions to improve the quality of issued patents by boosting crowdsourcing, patent examiner training, and educational resources for *pro se* applicants).

14. See, e.g., *Patent Progress’s Guide to Patent Reform Legislation*, PATENT PROGRESS, <http://www.patentprogress.org/patent-progress-legislation-guides/patent-progress-guide-pat>

2013–2014 term, the Supreme Court took a record number of patent cases,¹⁵ many addressing priorities articulated by the White House including the reach of software patents¹⁶ the availability of fee-shifting,¹⁷ and the clarity of patent claims.¹⁸

But as policymakers take action, they must take into account more than solely patent hold-up and include consideration of patent “hold-out”: the practice of companies routinely ignoring patents and resisting patent demands because the odds of getting caught are small.

Patent hold-out is widespread, for both legal and practical reasons. While the hold-up story is sympathetic to defendants, the hold-out story tells the plaintiffs’ side. Reconsider the story from before, but now put yourself in the patentee’s shoes. As an inventor, you had the idea first and wanted to start a business with it. You tried, without luck, to get the product commercialized successfully, though you did get a patent. You find the technology being deployed by a large company and approach it to sign a license. The company ignores you and refuses to engage or license the patent, no matter how strong it is or reasonable your offer.¹⁹ The large company is “holding-out” on your patent demand.

Both hold-up and hold-out theories find fault with the current patent system, but that is where their similarities end, according to conventional wisdom. Whereas hold-up theory blames the opportunism of patentholders for rent-seeking in the patent system, hold-out theory sees the unwillingness of patent-infringers to entertain legitimate claims as the problem. In addition, whereas the hold-out story implies that patent rights should be strengthened, hold-up proponents believe the opposite—that patent holders are often

ent-reform-legislation/ (last visited Sept. 18, 2014) (summarizing the fourteen anti-troll bills introduced in the 113th Congress).

15. *Alice Corp. v. CLS Bank Int’l*, 134 S. Ct. 2347 (2014); *Octane Fitness, LLC. v. ICON Health & Fitness, Inc.*, 134 S. Ct. 1749 (2014); *Highmark Inc. v. Allcare Health Mgmt. Sys., Inc.*, 134 S. Ct. 1744 (2014); *Nautilus, Inc. v. Biosig Instruments, Inc.*, 134 S. Ct. 2120 (2014); *Medtronic, Inc. v. Mirowski Family Ventures, LLC*, 134 S. Ct. 843 (2014); *Teva Pharm. USA, Inc. v. Sandoz, Inc.*, 723 F.3d 1363 (Fed. Cir. 2013), *cert. granted*, 134 S.Ct. 1761 (U.S. Mar. 31, 2014) (No. 13–854).

16. *Alice*, 134 S. Ct. 2347 (2014) (holding 9-0 that generic computer implementations of abstract ideas to be patent-ineligible); *see also Limelight Networks*, 134 S. Ct. 2111 (2014) (finding, based on a 9-0 decision, that induced infringement requires direct infringement by a single actor, a ruling with particularly important consequences for internet and network related claims where different actors may carry out a single process).

17. *See Octane Fitness*, 134 S. Ct. at 1756 (allowing courts to shift fees based on a totality of the circumstances, rather than a rigid test based on a 9-0 decision); *Highmark*, 134 S. Ct. at 1748 (holding, 9-0, that district court fee decisions are entitled to appellate deference).

18. *See Nautilus*, 134 S. Ct. at 2124 (ruling, 9-0, that patent claims must be reasonably clear to one of skill in the art in order to be valid).

19. *See Dennis Crouch, Chief Judge Rader: Improving Patent Litigation*, PATENTLY-O (Sept. 27, 2011), <http://www.patentlyo.com/patent/2011/09/rader-patent-litigation.html> (describing the related concept of the patent grasshopper that steals technology and “refuses to pay any license fee until his legs and claws are held to the proverbial litigation fire”).

overreaching in their accusations and lawsuits.²⁰ The division between these two camps has created deep schisms within the patent community, patent judiciary, and patent system at large.²¹

But considering patent hold-up and patent hold-out perspectives together, rather than either account alone, I argue, reveals a surprising insight—that the solution to hold-up and hold-out may largely be the same: to reduce the transaction costs, asymmetries, and uncertainty associated with patent enforcement. The notion that both sets of concerns can be addressed through a common set of reforms marks a radical departure from the conventional wisdom that hold-up and hold-out views are incompatible with each other. It is also one that is urgently needed as patent hold-up reforms have arguably led to more hold-out, by spurring inventors to turn to patent trolls.

For example, to reduce patent hold-up, advocates have recommended reforming patent remedies and reducing the number of problematic patents. Over the past years these recommendations have found favor with the Supreme Court, Federal Circuit,²² and Congress, which have made it harder to get injunctions and make unsubstantiated damages claims, and easier to invalidate bad patents.²³

But instead of getting better, however, the situation has arguably gotten worse. The smartphone wars have broken out,²⁴ resulting in certain models being banned from the United States.²⁵ Blockbuster damage awards have become more, not less, frequent, according to those who track them.²⁶ Per-

20. See discussion *infra* Parts I–II.

21. See discussion *infra* Parts I–II.

22. The Federal Circuit is the court of exclusive appellate jurisdiction over patent-law claims, but not over patent counterclaims. See *Holmes Group, Inc. v. Vornado Air Circulation Sys., Inc.*, 535 U.S. 826, 831 (2002).

23. See discussion *infra* Part I.

24. See discussion *infra* Part I.

25. Certain smartphone models have been banned as a result of ITC exclusion orders. See, e.g., Commission Decision, Certain Elec. Devices, Including Wireless Comm’n Devices, Portable Music and Data Processing Devices, and Tablet, Inv. No. 337-TA-794, USITC Pub. 34669 (June 10, 2013) (Final) (ordering the exclusion of Apple tablets (iPads) and smartphones (iPhones) from entry into the United States); Diane Bartz, *U.S. ITC Delays Word on Whether Samsung Infringes Apple’s Patents*, REUTERS (Aug. 1, 2013), <http://www.reuters.com/article/2013/08/01/us-apple-samsung-patent-idUSBRE9701CI20130801> (describing the models as the iPhone 4, iPhone 3GS, iPad 3G and iPad 2 3G). This ban was overturned on August 3, 2013 by the United States Trade Representative (USTR), to whom Presidential veto authority was delegated. See Letter from Michael B. G. Froman, U.S. Trade Rep., to Irving A. Williamson, Chairman of the Int’l Trade Comm’n (Aug. 3, 2013) http://www.ustr.gov/sites/default/files/08032013%20Letter_1.pdf.

26. See PRICEWATERHOUSECOOPERS LLP, 2013 PATENT LITIGATION STUDY 3 (2013), available at http://www.pwc.com/en_US/us/forensic-services/publications/assets/2013-patent-litigation-study.pdf (“Prior to 2012, only three patent infringement damages awards eclipsed the \$1 billion mark. But last year alone, three cases . . . resulted in awards of \$1 billion or greater.”); see also LEX MACHINA, PATENT LITIGATION DAMAGES REPORT i, 5–6 (2014) (reporting increases in total and median damages awards from 2000 to 2013, including from 2010

haps most worryingly, the share of patent suits filed by patent trolls has increased, by half of all patent litigation suits or more, according to estimates.²⁷ The most egregious troll suits have opportunistically been brought against small companies²⁸ and end users who are ill-equipped to play the expensive “sport of kings” of patent litigation.²⁹ The costs to the economy have been estimated to be in the tens of billions per year,³⁰ and companies small and large have reported significant operational impacts—delayed hiring or achievement of other milestones, shifts in business strategy, the closing of business lines (or the entire business), and/or lost valuation,³¹

to 2013 across damages categories). *But see* PRICEWATERHOUSECOOPERS LLP, 2014 PATENT LITIGATION STUDY, 6 Chart 2a (2014), available at http://www.pwc.com/en_US/us/forensic-services/publications/assets/2014-patent-litigation-study.pdf (showing a decline in average median damages awards between 2005–2009 and 2010–2013).

27. See EXEC. OFFICE OF THE PRESIDENT, *supra* note 9, at 3 (In 2012, “[Patent assertion entities] brought over 2,500 lawsuits—62% of all patent suits.”); Robin Feldman et al., *The AIA 500 Expanded: The Effects of Patent Monetization Entities*, UCLA J.L. & TECH., Fall 2013, at 1, 7 (finding that 58.7% of 2012 patent litigation cases were filed by patent monetizers); Steve Moore, *Probing 10 Patent Troll Myths – A Fractured Fairytale Part 2*, IPWATCHDOG (July 30, 2013, 11:35 AM), <http://www.ipwatchdog.com/2013/07/30/probing-10-patent-troll-myths-a-fractured-fairytale-part-2/id=43754/> (finding that 45% of cases between Sept. 17, 2011 and July 30, 2013 were filed by a non-practicing entity); RPX CORP., 2013 NPE LITIGATION REPORT 4–5 (finding the non-practicing entity (NPE) share of all patent litigation cases in 2013 to be 63% and, of these cases, 90% were patent assertion entities (PAEs)), available at <http://www.rpxcorp.com/wp-content/uploads/2014/01/RPX-2013-NPE-Litigation-Report.pdf>. *But see* General Accounting Office, *Intellectual Property: Assessing Factors that Affect Patent Infringement Litigation Could Help Improve Patent Quality* (August 2013), available at <http://www.gao.gov/assets/660/657103.pdf> (finding that NPEs were responsible for 20% of suits between 2007 and 2011); Christopher A. Cotropia, Jay P. Kesan & David L. Schwartz, *Unpacking Patent Assertion Entities (PAEs)*, 99 MINN. L. REV. (forthcoming 2014), available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2346381, at 7 and Fig. 1 (documenting the impact of changes to the law, and in particular the misjoinder rules, on the rise in suits from 2010 to 2012, and unpacking PAEs into different types, and finding that though, collectively, PAEs were “responsible for a majority of accused infringers in 2012,” only 38% were brought by patent holding companies).

28. Colleen V. Chien, *Startups and Patent Trolls*, 17 STAN. TECH. L. REV. 461, 464 (2014).

29. See, e.g., Colleen V. Chien & Ed Reines, *Why Technology Customers Are Being Sued En Masse for Patent Infringement and What Can Be Done*, 49 WAKE FOREST L. REV. 235, 235–36 (reporting that out of the top ten PAE campaigns, all involved allegations against technology end-users or implementers, often to the exclusion of the manufacturer).

30. James Bessen & Michael J. Meurer, *The Direct Costs from NPE Disputes*, 99 CORNELL LAW REV. 387, 387, 408 (estimating that firms lost \$29B in direct costs in 2011 due to patent lawsuits). *But see* Jay Kesan & David Schwartz, *Analyzing the Role of Non-Practicing Entities in the Patent System*, 99 CORNELL LAW REVIEW 425, 433 (2014) (arguing that these “costs” should be viewed as transfers rather than losses).

31. See Chien & Reines, *supra* note 29, at 235 (reporting on small company surveys); Colleen V. Chien et al., *Santa Clara Best Practices in Patent Litigation Survey*, 42 AIPLA Q.J. 137, 166 (2014) [hereinafter *Patent Litigation Survey*].

in addition to lost venture capital investment,³² and high acquisitions costs.³³

Hold-out theory explains why some of these developments have happened, in spite of—and arguably, in some cases, because of—the adoption of many of the cures that hold-up theory has advocated. That patentees have been “held-out” on explains, in part, why they are increasingly partnering with patent assertion entities (PAEs), or trolls.³⁴ Juror sympathy to patent-holders whose claims are ignored contributes to large damages awards, according to this view.³⁵

A combined view reveals the dangers of adopting either account wholesale and urges recognition of the patent system’s problems that give rise to both. The high costs of litigating patents leads to hold-up, as small company defendants cannot afford to pay the legal costs of fighting, as well as hold-out, as small company plaintiffs cannot afford to bring enforce their patents and turn instead to trolls. What is needed, instead, is a way to scale the transaction costs of enforcing patents in proportion to the economic value of the patent in order to prevent both rent-seeking by patent-holders and evasive behavior by patent-implementers.

Embracing hold-up and hold-out narratives together reveals surprising pathways to a better patent system—focused as much on the procedural, design, and institutional levers for changing the patent system as the doctrinal levers that are the focus of most academic scholarship. These design and procedural levers include 1) early dispositive rulings, 2) coordination across courts and agencies, 3) early valuation, and 4) fee- and cost-shifting. Rather than weakening all component patents, or strengthening all of them, as patent reformers and anti-reformers, respectively, are often accused of trying to do, these reforms would reduce the transaction costs and asymmetries that feed both hold-up and hold-out.

32. Catherine E. Tucker, *The Effect of Patent Litigation and Patent Assertion Entities on Entrepreneurial Activity* (Mass. Inst. of Tech. Sloan Sch., Working Paper No. 5095-14, 2014), available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2457611.

33. For one venture capitalist’s account, see Chien & Reines, *supra* note 29, at 247–48 (“Because acquisitions often trigger IP lawsuits . . . acquirers are now putting huge indemnifications in the deals, up to the size of the whole deal in several cases we have seen. That means that the full value of the deal paid to the shareholders of Company X may have to be paid back if [there is a suit]. . . . Those kinds of clauses will prevent deals from happening, and they also point to the level of risk that buyers are seeing, which presumably is slowing down the rate at which they are acquiring small, innovative companies.”). See also Tucker, *supra* note 32, at 1 (“[L]itigation by frequent patent litigators, a proxy for PAE litigation, is directly associated with decreased [venture capital] investment.”); Lauren Cohen et al., *Patent Trolls: Evidence from Targeted Firms* 22–24 (Harvard Bus. Sch., Working Paper No. 15-002, 2014), available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2464303 (finding that NPEs tend to target companies opportunistically, after the companies have had cash infusions, and documenting these NPE litigations’ negative impact on innovation for these targeted firms)

34. See discussion *infra* Parts I & II.

35. See discussion *infra* Parts II.

Part I reviews hold-up theory and how it has fared in practice. Part II develops hold-out theory and explains how it fills in the gaps that hold-up theory has left. Part III discusses critiques of each view and examines which of the two narratives is more compelling. Part IV discusses the implications and recommendations that follow from a combined view. Part V concludes with a proposed method of implementing the combined view.

I. PATENT HOLD-UP THEORY

What do patent trolls and the smartphone and standards wars have in common? All have captured national attention, and all have been blamed on patent hold-up. Hold-up occurs when a “gap between economic commitments and subsequent commercial negotiations enables one party to capture part of the fruits of another’s investment.”³⁶ In the patent context, when a patent is asserted after a product is made, the patentee has the upper hand, due not to the economic value of the technology, but instead to the high cost of changing the product to avoid the implicated technology. This hold-up is made worse when, because of the high cost of patent litigation, the defendant company enters a nuisance-fee based settlement.³⁷ In both situations, the high transactional costs, of patent litigation and product switching, rather than the merits of the claim, dictate the outcome of the case. The paragraphs that follow describe historical and modern contexts and examples of patent hold-up.

A. *The Contexts of Patent Hold-Up*

Although patent hold-up has been in the spotlight recently, complaints about hold-up type abuse are nothing new; a variety of industries, spanning railroad, automobile, farm equipment, and standardized equipment technologies, have previously confronted similar challenges. This section recounts several historical and modern episodes involving, for example “patent sharks,” “avaricious patent agents,” as well as standards and cost of litigation or “nuisance fee” based hold-up.

1. Historical Examples of Patent Hold-Up

Marginal patents were a major problem in the 19th Century.³⁸ One example, from 1835, involved a patent over using coal in a forge. The patent was issued without any examination, a byproduct of a registration-based pat-

36. Joseph Farrell et al., *Standard Setting, Patents, and Hold-up*, 74 ANTITRUST L.J. 603, 603–04 (2007). Patent hold-up is one type of hold-up. For a seminal discussion on hold-ups, see OLIVER E. WILLIAMSON, *THE ECONOMIC INSTITUTIONS OF CAPITALISM* 61–63 (1985) (describing how transacting firms can engage in hold-up when investments are made).

37. See, e.g., D. Rosenberg & S. Shavell, *A Model in Which Suits Are Brought for Their Nuisance Value*, 5 INT’L REV. L. & ECON. 3 (1985).

38. See Robert P. Merges, *The Trouble with Trolls: Innovation, Rent-seeking, and Patent Law Reform*, 24 BERKELEY TECH. L.J. 1583, 1592 (2009) (describing that many of the

ent system³⁹ blamed for generating many frivolous or useless patents.⁴⁰ As a patent “speculator,” the patentee did not practice the patent on his own but instead demanded payment from blacksmiths under the simple logic that: “it will be worthwhile for every blacksmith to give me a couple of dollars for a right rather than contest it with me.”⁴¹ The cost of defense, rather than the economic value of the patent, dictated the terms of settlement.

Around that time, Pennsylvanians signed a petition that protested the patent system as being “liable to great abuse, and in itself [being] unjust and oppressive.”⁴² Their main concern was a too-readily granted injunction, the fear of which drove defendants to pay for patent rights rather than “suffer the injury of stopping their means of livelihood.”⁴³

The common behavior complained about in both cases was the assertion of patents on a product after it had already been made, and leveraging the fear of an injunction or lawsuit, rather than the merits of the technology, to wrest a settlement: in other words, patent hold-up.

History is replete with other complaints about patentee hold-up. In the late 1800s, for example, patent “sharks” became infamous for using patents to demand payments from farmers for articles the farmers had purchased.⁴⁴ The sharks had been able to patent the products of others, but focused their campaigns on the users of these products.⁴⁵ In the words of one Congressman, “hundreds, if not thousands” of “unwary and unsuspecting farmers . . . will no doubt be compelled, by threats and intimidation, either to yield to the extortionate demands” of patent sharks or “be dragged one hundred and fifty miles away from their homes, at great inconvenience and expense.”⁴⁶ Congress held hearings and proposed legislation, and ultimately enacted statu-

problems were related to the registration-based, rather than examination-based, system in place at the time).

39. In accordance with the first Patent Act of 1793, patents were granted upon registration, rather than examination, of the application. See Edward C. Walterscheid, *Thomas Jefferson and the Patent Act of 1793*, 40 *ESSAYS IN HISTORY* (1998), available at <http://www.essaysinhistory.com/articles/2012/115>.

40. EDWARD C. WALTERSCHEID, *TO PROMOTE THE PROGRESS OF USEFUL ARTS: AMERICAN PATENT LAW AND ADMINISTRATION, 1787–1836* 322–31 (Fred B. Rothman ed., 1998).

41. *Id.* at 323 fn. 55 (describing the facts of *Delano v. Scott*, 1 Robb P. C. 700, 7 F. Cas. 378 (E.D. Pa. 1835)).

42. Steven Lubar, *The Transformation of Antebellum Patent Law*, 32 *TECH. & CULTURE* 932, 941 (1991).

43. *Id.*

44. Earl W. Hayter, *The Patent System and Agrarian Discontent, 1875–1888*, 34 *MISS. VALLEY HIST. REV.* 59, 65–66 (1947). If a manufacturer has not secured all patent rights to make the product, a user can be sued for their use of the product because patentholders have the exclusive right to not only make, sell, and import but also to use their invention, making it possible for customers to get caught in the cross-hairs of battles between patentholders and manufacturers. See 35 U.S.C. § 271(a) (2012).

45. Hayter, *supra* note 44. For a more complete exploration of the curious phenomenon of patent suits against customers, see Chien & Reines, *supra* note 29.

46. 8 *CONG. REC.* 1371 (1879).

tory changes to eliminate certain kinds of patents.⁴⁷ Other episodes of patent rent-seeking involve claims brought by “avaricious patent agents” who enforced patents against railroads in the late 1800s and claims involving automobile patents in the early 1900s.⁴⁸

2. Standards Hold-Up

Over a hundred years later, hold-up theory has been advanced primarily in the context of standards by prominent law and economics scholars and the Federal Trade Commission (FTC).⁴⁹ Under a typical standards agreement, to facilitate interoperability, industry participants agree upon a standardized protocol of deploying a technology, such as connecting to the internet. In return, holders of patents essential to the standard generally agree to make their patents available on free or “reasonable and non-discriminatory” (RAND) terms.⁵⁰

A kind of super hold-up occurs when a patentholder manages to get its patent into a standard without making a licensing commitment, or, despite its commitment, seeks an injunction.⁵¹ The late revelation that undisclosed patents are included in the standard can be deliberate or on the part of the patentholder, and enabled by unclear disclosure policies that facilitate sharp practices by patentholders.⁵² When the license sought by the holder of a

47. Colleen V. Chien, *Reforming Software Patents*, 50 HOUS. L. REV. 325, 346–50 (2012).

48. See Steven W. Usselman & Richard R. John, *Patent Politics: Intellectual Property, the Railroad Industry, and the Problem of Monopoly*, 18 J. POL’Y HIST. 96, 98–99 (2006) (“Both [farmers and railroads] felt besieged by lawsuits filed by avaricious patent agents—popularly known as ‘patent sharks’—who demanded, often successfully, sizable payments for the infringement of patents that patent agents controlled.”); Chien, *supra* note 47, at 345–46 (describing the railroad patent crisis); see also Merges, *supra* note 38, at 1592–96.

49. See, e.g., the references cited herein. For criticisms of hold-up theory, see, e.g., cites to Brooks, Geradin, Kieff, Spulber, and others *infra* Part II.

50. See, e.g., AM. NAT’L STANDARDS INST., GUIDELINES FOR IMPLEMENTATION OF THE ANSI PATENT POLICY 9–10 (2011), available at http://mcsac.fmcsa.dot.gov/Documents/Aug2011/DOCUMENT_5—

EOBR_Subcommittee_ANSI_Patent_Policy_from_Kraft_MCSAC_FMCSA.pdf (describing ANSI Essential Requirements § 3.1.1); EUROPEAN TELECOMMS. STANDARDS INST. RULES OF PROCEDURE, Annex 6: ETSI Intellectual Property Rights Policy (2014), available at <http://www.etsi.org/images/files/IPR/etsi-ipr-policy.pdf>; see also Benjamin Chiao, Josh Lerner & Jean Tirole, *The Rules of Standard-Setting Organizations: An Empirical Analysis*, 38 RAND J. ECON. 905 (2007).

51. See, e.g., Mark A. Lemley, *Intellectual Property Rights and Standard-Setting Organizations*, 90 CAL. L. REV. 1889 (2002).

52. See, e.g., M. Sean Royall et al., *Deterring “Patent Ambush” in Standard Setting: Lessons from Rambus and Qualcomm*, ANTITRUST, Summer 2009, at 36, available at <http://www.gibsondunn.com/publications/Documents/Royal-Tessar-DiVincenzo-DeterringPatentAmbush.pdf> (describing the alleged deception by patentholders Qualcomm and Rambus and their assertions that they had not violated “ambiguous” disclosure policies); Jorge L. Contreras, *A Market Reliance Theory for FRAND Commitments and Other Patent Pledges*, UTAH

patent that is truly “essential” to practicing the standard⁵³ far exceeds an implementer’s expectations, implementing the standard can become prohibitively expensive.⁵⁴ The particular practice of patentholders emerging with their demands after the standard has been promulgated has been called “patent ambush.”⁵⁵ The number of patents implicated by standards can easily number in the thousands,⁵⁶ multiplying the risk.

3. Cost and Risk of Defense-Related Hold-Up⁵⁷

Outside of the standards context, the term “hold-up” has been applied generally to the leverage that comes, not only from the high cost of changing a product once it has been made, but also from the high costs and stakes associated with patent litigation. Losing a patent suit—even over a patent that the infringer had no knowledge of, and pertaining to a product that it did not copy from the patentholder, as is the case in most patent suits⁵⁸—can mean having to stop selling a product, or paying a sizeable damages award. But “winning” can be just as financially devastating as losing. Taking a patent case to trial where \$25 million or more is at stake costs a median of \$5.5

L. REV. (forthcoming 2015) (manuscript at 28–31), available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2309023.

53. Many are not essential. See, e.g., JORGE L. CONTRERAS, NAT’L INST. STANDARDS & TECH., AN EMPIRICAL STUDY OF THE EFFECTS OF EX ANTE LICENSING DISCLOSURE POLICIES ON THE DEVELOPMENT OF VOLUNTARY TECHNICAL STANDARDS (2011), available at http://gsi.nist.gov/global/docs/pubs/NISTGCR_11_934.pdf (describing studies that document the high rates of patents that are non-essential or invalid). See also Jorge L. Contreras, *Fixing FRAND: A Pseudo-Pool Approach to Standards-Based Patent Licensing*, 79 ANTITRUST L. J. 47, 61 (2013) (“[R]ecent studies have found that only 27% and 28% of patent families declared ‘essential’ to ETSI’s GSM and WCDMA standards, respectfully, were actually essential to implementation of those standards.”).

54. See, e.g., Jorge L. Contreras, *Technical Standards and Ex Ante Disclosure: Results and Analysis of an Empirical Study*, 53 JURIMETRICS J. 163, 173 (2013) (citing the experiences of standard setting organization VITA with patentholders that disclosed their patents late and demanded “significantly higher than expected” royalties, in one instance, resulting in a VITA standard becoming “rendered commercially infeasible”).

55. Gil Ohana et al., *Disclosure and Negotiation of Licensing Terms Prior to Adoption of Industry Standards: Preventing Another Patent Ambush?*, 24 EUR. COMPETITION L. REV. 644, 645 (2003); Thomas A. Hemphill, *Technology Standards Development, Patent Ambush, and U.S. Antitrust Policy*, 27 TECH. IN SOC’Y 55, 57 (2005) (quoting Robert A. Skitol, Remarks Before San Francisco Economic Roundtable: What Should We Call The New Antitrust? (May 29, 2002), available at <http://www.antitrustinstitute.org/node/10545>).

56. See Mark A. Lemley & Carl Shapiro, *Patent Holdup And Royalty Stacking*, 85 TEX. L. REV. 1991, 1992 (2007) (“As a striking example, literally thousands of patents have been identified as essential to the proposed new standards for 3G cellular telephone systems.”).

57. See Chien, *supra* note 47, at 342–44 (describing “patent nuisance fee economics”); Colleen V. Chien, Presentation to the DOJ/FTC Hearing on PAEs: Patent Assertion Entities (Dec. 10, 2012) [hereinafter *DOJ/FTC Presentation*], available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2187314.

58. Christopher A. Cotropia & Mark A. Lemley, *Copying in Patent Law*, 87 N.C. L. REV. 1421, 1443 (2009) (finding that copying is not alleged in the vast majority of patent suits).

million per side in legal fees,⁵⁹ and even on a lean budget, fighting a patent claim costs close to \$1 million on average.⁶⁰ Even before a lawsuit, it is expensive to determine whether or not a patent is infringed. When the patentee has a large number of patents, the task of determining which ones might be infringed, by what products, can be an expensive and impossible task.⁶¹

Historically, the costs and risks of litigation have been symmetrical, or at least, shared by both plaintiffs and defendants. However, specialized PAEs have been able to drive down the risks and costs of bringing patent cases, in part by asserting broadly worded claims of questionable validity⁶² against as many as hundreds of defendants at a time.⁶³ When they engage in little pre-suit investigation and at times even less in the case of customer suits, if any, defendant-specific diligence,⁶⁴ “low-end” trolls can cut the cost of bringing a case. Similar reductions have not been achieved with respect to the cost of defense. The resulting gap between the cost of defense and cost of assertion has created compelling patent nuisance fee economics.⁶⁵

59. DAVID A. DIVINE & RICHARD W. GOLDSTEIN, AM. INTELLECTUAL PROP. LAW ASS'N, REPORT OF THE ECONOMIC SURVEY 2013 34 (2013).

60. See Chien, *supra* note 28, at 472.

61. See, e.g., Chien, *supra* note 5, at 308 (describing the analogous challenges companies face accounting for what their patent portfolios contain).

62. Colleen V. Chien, *Turning the Table on Patent Trolls*, FORBES, Aug. 9, 2011, <http://www.forbes.com/sites/ciocentral/2011/08/09/turn-the-tables-on-patent-trolls/> (describing cost and risk reductions that been achieved by using the same patents to sue large numbers of defendants, contingency fee schedules, and special purpose assertion entities that reduce the risk of countersuits); see also, Rebecca S. Eisenberg, *Patent Costs and Unlicensed Use of Patented Inventions*, 78 U. CHI. L. REV. 53, 57–59 (2009) (describing the various user costs of patent enforcement).

63. See Chien & Reines, *supra* note 29, at 236 Table 1 (listing high impact patent campaigns that named hundreds of defendants). For example, PAEs reduce risk by using the same patents to sue large numbers of defendants in order to achieve economies of scale, contingent fee lawyers to spread risk, and special purpose assertion entities that are immune to countersuit. Chien, *supra* note 62; see also Eisenberg, *supra* note 62. Section 19(d) of the America Invents Act limits this practice by requiring joined defendants to have in common the “same accused product or process.” 35 U.S.C. § 299 (2012). By one count, the number of average defendants per NPE case has dropped since then, from an average high of 5.5 in 2010 to 1.4 in 2013. RPX CORP., *supra* note 27, at Chart 4. Although a growth in the number of cases has offset this effect, it remains possible to bring cases against large numbers of users of the same industry product, such as Google Maps.

64. See Chien, *supra* note 47, at 342–45 (describing “patent nuisance fee economics”). Courts have admonished these low-cost tactics in fee-shifting contexts. See, e.g., *Findthebest.com v. Lumen View Tech., LLC*, No. 13 Civ. 6521 (DLC) (S.D.N.Y. May 19, 2014); *Medtrica Solutions LTD. v. Cygnus Med. LLC*, No. C12-538RSL (W.D. Wash. July 10, 2014) (reversing a motion denying attorney’s fees, citing “the absence of evidence supporting theories of infringement”).

65. Chien, *supra* note 47, at 340–42.

Although frequently asserted troll patents overwhelmingly lose at trial,⁶⁶ most cases never get there. Rather than face the costs of litigation, uncertain damages or an injunction, or, the potentially unpredictable verdict of a jury, parties to patent cases regardless of type, generally settle before a merits resolution.⁶⁷ However, there is evidence that those who do not practice their patents are even more likely to resolve prior to an adjudicated judgment.⁶⁸

B. *What is Wrong with the Patent System, According to Patent Hold-Up Theory*

Across these contexts, three ingredients of patent hold-up consistently have been identified: opportunistic *ex post* assertion, “bad” patents, and remedies that create opportunities for rent-seeking. As discussed in this section, each has been the target of patent reform efforts.

1. *Ex Post* Assertions

According to hold-up theory, whether in the form of patent “ambush,” or patent trolling, the problem with patent hold-up is the timing of the assertion. By pursuing a patent license *ex post*, after a product has been created, rather than *ex ante*, at the time the product is being designed, the patent owner can leverage not only the economic value of the invention, but also the cost of changing the product.⁶⁹

The cost of changing the product can vary substantially—a software upgrade that disables an infringing functionality of minor importance, for example, may be considerably less expensive to implement than a change that for example, requires real estate on a circuit board to be reallocated or changes to a product’s supply chain. Regardless, in the *ex post* period, impacts to operational, customer, and partner commitments not present in the

66. John R. Allison et al., *Patent Quality and Settlement Among Repeat Patent Litigants*, 99 GEO. L.J. 677, 708 (2011) (reporting a win rate of 9.2% among frequently asserted non-practicing entity patents).

67. See John R. Allison et al., *Understanding the Realities of Modern Patent Litigation*, 92 TEX. L. REV. 1769, 1780 (2014) (finding that less than ten percent of suits filed in 2008 and 2009 resulted in a merits decision).

68. CHRIS BARRY ET AL., PRICEWATERHOUSECOOPERS LLP, 2014 PATENT LITIGATION STUDY 2 (2014), available at http://www.pwc.com/en_US/us/forensic-services/publications/assets/2014-patent-litigation-study.pdf (citing the disproportionately small percentage of court decisions in 2013 involving non-practicing entity (NPE) plaintiffs—20%, compared to a higher filing rate, “reflecting the higher tendency for NPE-filed cases to settle or be dismissed”). “Non-practicing entity” is a term that is widely understood to include not only PAEs, those entities whose primary business is to assert patents, but also universities, independent inventors, and others who do not practice their patents but do not derive a majority of their revenue from patent assertion.

69. See FTC, THE EVOLVING IP MARKETPLACE: ALIGNING PATENT NOTICE AND REMEDIES WITH COMPETITION 8, 50 (2011), available at <http://www.ftc.gov/sites/default/files/documents/reports/evolving-ip-marketplace-aligning-patent-notice-and-remedies-competition-report-federal-trade/110307patentreport.pdf>.

design phase will often need to be taken into account. Thus, the incentive to settle is driven by the desire to avoid switching costs, rather than the inherent value of the technology. Accordingly, patentholders have rich incentives to wait to bring their claims after a product has been developed and successfully marketed.

2. Bad Patents

According to its detractors, hold-up is also made possible by “bad patents”—patents that are marginal, overbroad, or over-asserted. If a product or standard incorporates thousands of patents, there exists a greater chance each single patent represents only a marginal technological advance.⁷⁰ According to the economics of patent assertion entities described above, the best patents for economic exploitation are the ones that appear to be practiced by the largest number of defendants, and are therefore more likely to be broad, or otherwise “functionally claimed.”⁷¹ In some cases, the problem is not overbreadth but over assertion: when patent plaintiffs “distort a patent claim far beyond its plain meaning and precedent for the apparent purpose of raising the legal costs of the defense.”⁷²

Complaints from the technical community deeming software patents, in particular, to be “junk,” are rife.⁷³ Calls for reforming marginal patents range

70. See, e.g., Mark A. Lemley, *Ten Things to Do About Patent Holdup of Standards (and One Not to)*, 48 B.C. L. REV. 149, 150 (2007) (“[I]n the IT industries, there are usually multiple patents—sometimes hundreds or even thousands—on each new product.”).

71. See Mark A. Lemley, *Software Patents and the Return of Functional Claiming*, 2013 WIS. L. REV. 905, 908 (2013).

72. Randall R. Rader, Colleen V. Chien & David Hricik, Op-Ed., *Make Patent Trolls Pay in Court*, N.Y. TIMES, June 4, 2013, <http://www.nytimes.com/2013/06/05/opinion/make-patent-trolls-pay-in-court.html>.

73. See, e.g., Brad Burnham, *Software Patents are the Problem Not the Answer*, UNION SQUARE VENTURES (Feb. 19, 2010), <http://www.usv.com/2010/02/software-patents-are-the-problem-not-the-answer.php>; Robert Purvy, *Software Obviousness: The Disconnect Between Engineers and the Patent System 1* (Feb. 17, 2014), http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2399580 (“Software engineers overwhelmingly dislike software patents and consider nearly all of them obvious.”). In 1994, at hearings held by the Patent and Trademark Office (PTO), most programmers who testified about software patents testified against them. *Public Hearing on Use of the Patent System to Protect Software-Related Inventions*, U.S. PATENT & TRADEMARK OFFICE (Feb. 10–11, 1994), <http://www.uspto.gov/web/offices/com/hearings/software/arlington/vahrng.pdf>. See also the related testimony of USPTO Commissioner Bruce Lehmann: “There is no question about it that the lawyers *Seem* to [be] very much in favor of patent protection. Companies tend to be somewhat split, and programmers who’ve testified, though not all, a majority of them have testified against it.” *Public Hearing on Use of the Patent System to Protect Software-Related Inventions*, U.S. PATENT & TRADEMARK OFFICE 91 (Jan. 26–27, 1994), <http://www.uspto.gov/web/offices/com/hearings/software/sanjose/sjhrng.pdf>.

from the polite to the adamant: 1) make them better,⁷⁴ 2) invalidate them,⁷⁵ 3) abolish them,⁷⁶ and 4) abolish the patent system.⁷⁷ As the reach of patent assertions has extended beyond the industries most traditionally invested in the patent system (i.e. tech and pharma), encompassing “Main Street” entities like retailers, the auto industry, the lodging industry, small businesses, and startups,⁷⁸ mainstream scrutiny of the patent system and its impacts, even by late night comedians and celebrities, has also intensified.⁷⁹

3. Disproportionate Remedies

Another source of hold-up, according to theories about it, is remedies that are out of proportion with the “crime” of component infringement.⁸⁰ Patents confer the right to exclude, but if a patent covers only a small part of a big product, should the entire product be enjoined? In that case,⁸¹ or when redesign would be really expensive, advocates say no.⁸² Outsized damages—those that award a percentage of revenue based on one of perhaps hundreds of thousands of patents—are also to blame. When multiple royalties are sought, the result can be a total royalty rate that exceeds the entire revenue associated with the product, a phenomenon known as royalty stacking.⁸³

74. Most often, by increasing examination resources. *See, e.g.*, Chien, *supra* note 47, at 353 (describing the extra scrutiny that have been applied to business method patent applications through the second pair of eyes review).

75. For example, once they have issued, through various post-grant review options, described *infra* note 206.

76. Vivek Wadhwa, *Why We Need To Abolish Software Patents*, TECHCRUNCH (Aug. 7, 2010), <http://techcrunch.com/2010/08/07/why-we-need-to-abolish-software-patents/>.

77. Boldrin & Levine, *supra* note 8.

78. Colleen V. Chien, *Patent Trolls By The Numbers*, PATENTLY-O (March 14, 2013), <http://www.patentlyo.com/patent/2013/03/chien-patent-trolls.html> (citing data indicating that more non-tech companies than tech companies were sued by patent trolls in 2012); *see also* Letter from the Auto. Mfrs., Am. Hotel & Lodging Ass’n, Nat’l Retail Fed’n Am., Ass’n of Adver. Agencies, Am. Bankers Ass’n, Am. Gaming Ass’n, Am. Hosp. Ass’n, Am. Hotel & Lodging Ass’n (July 17, 2013), *available at* <http://www.patentprogress.org/documents/big-tent-letter-to-congress/>.

79. *See, e.g.*, *The Colbert Report: Amazon’s Audacious Photography Patent* (Comedy Central television broadcast Mar. 14, 2014) [hereinafter *Colbert Report*], *available at* <http://thecolbertreport.cc.com/videos/4a4ahs/amazon-s-audacious-photography-patent>; Angelina Jolie, Op-Ed., *My Medical Choice*, N.Y. TIMES, Mar. 14, 2013, <http://www.nytimes.com/2013/05/14/opinion/my-medical-choice.html>; Sandra Park, Joan Reinhardt-Reiss & Judith Wallace, Letter to the Editor, *Angelina Jolie’s Decision: More Perspectives*, N.Y. TIMES (Mar. 15, 2013), <http://www.nytimes.com/2013/05/16/opinion/angelina-jolies-decision-more-perspectives.html> (letters to the editor in response to Angelina Jolie’s editorial in the New York Times, calling attention to the price of breast cancer screening tests, alleged to be enabled by the patents held by the company Myriad Genetics); *When Patents Attack!*, THIS AM. LIFE (July 22, 2011), *available at* <http://www.thisamericanlife.org/radio-archives/episode/441/> (an early report by the mainstream media on the patent system).

80. *See* Lemley, *supra* note 70, at 165–66.

81. *See, e.g.*, Lemley & Shapiro, *supra* note 56, at 2036.

82. *See* Lemley & Shapiro, *supra* note 56, at 2037–39.

83. *See* Lemley & Shapiro, *supra* note 56, at 2011–14.

C. The Uptake of Patent Hold-Up: Cautions and Cures

Concerns about patent hold-up have been influential among those making policy and legal decisions at the Supreme Court, the Federal Circuit, and Congress. When the Supreme Court decided its landmark *eBay v. MercExchange* decision, Justice Kennedy specifically cited in his concurrence “injunction[s] . . . employed as a bargaining tool to charge exorbitant fees,” by firms that use patents “not as a basis for producing and selling goods but, instead, primarily for obtaining licensing fees.”⁸⁴ The decision made it harder for those asserting exclusionary patent rights to get injunctions, reducing the odds of getting one from about 95% to about 75%, and much less, when requested by a patent assertion entity.⁸⁵ The Federal Circuit has further limited the availability of injunctive relief in certain component patent cases.⁸⁶ The district courts have also been reluctant to enjoin products based on the assertion of standards essential patents.⁸⁷

The Federal Circuit, under the leadership of then-Chief Judge Randall Rader, also changed damages laws to address hold-up concerns. One casualty has been the so-called “25% rule,” under which courts would assign damages based on the assumption that an infringed patent was worth 25% of the value of the product. Now, it is no longer appropriate for a court to apply this default to assign a single patent, which may represent just one of thousands of patents, to use the rule to assign a quarter of the value of the product to the patent without some scientifically justified basis for doing so.⁸⁸ When royalty rates are calculated based on looking at the royalty rates in like circumstances, they really must be like circumstances.⁸⁹ Awards must be tethered to “economic reality.”⁹⁰

Finally, policymakers have taken on the “bad patents” that, according to some, fuel hold-up. Over the years, the United States Patent and Trademark Office (USPTO) has put greater scrutiny on patent applications over certain types of inventions at the examination stage.⁹¹ Implementing a White House

84. *eBay, Inc. v. MercExchange, LLC*, 547 U.S. 388, 396 (2006) (Kennedy, J., concurring).

85. Colleen V. Chien & Mark A. Lemley, *Patent Holdup, The ITC, and the Public Interest*, 98 CORNELL L. REV. 1, 9–10, fig. 1 (2012).

86. *See, e.g., Apple Inc. v. Samsung Elecs. Co.*, 695 F.3d 1370, 1374 (Fed. Cir. 2012) (specifying that in component cases, patentees must prove that the infringement caused the alleged harm, or a so-called “causal nexus”).

87. *See, e.g.,* discussion *infra* Part II.

88. *See Uniloc USA, Inc. v. Microsoft Corp.*, 632 F.3d 1292, 1315 (Fed. Cir. 2011) (rejecting the 25% rule).

89. *See Lucent Techs., Inc. v. Gateway, Inc.*, 580 F.3d 1301, 1332 (Fed. Cir. 2009) (holding that the plaintiff cannot justify a jury’s lump sum award by providing evidence of other licenses that do not give lump sums).

90. *See Whitserve, LLC v. Computer Packages, Inc.*, 694 F.3d 10, 33 (Fed. Cir. 2012) (finding the district court’s royalty rate “out of line with economic reality”).

91. Through the “second pair of eyes” review process described, *e.g.,* in Michael J. Meurer, *Patent Examination Priorities*, 51 WM. & MARY L. REV. 675, 676 (2009).

executive action, the USPTO has issued new guidelines that increase scrutiny of functional claims.⁹² Congress has made it easier to challenge a patent's validity once it has issued from the Patent Office. The America Invents Act (AIA) created "*inter partes* review," which "allows patents to be challenged on several grounds of invalidity, without the deference to the patent that applies in courts."⁹³ Business method patents have also been subject to more searching review under the "Covered Business Method Patent" program.⁹⁴ In the first year, approximately 485 petitions for *inter partes* review were filed at the Patent Office,⁹⁵ as compared to 53 requests in the first five years of *inter partes* reexamination, the pre-AIA counterpart to *inter partes* review.⁹⁶

D. *Despite Attempts to Limit Patent Hold-Up, Hold-Up Has Apparently Worsened*

With all of these policy-shaping developments, one might think that patent hold-up is on the wane. But hold-up is arguably worse, not better. In the eight years since the Supreme Court's decision in *eBay*, an industry has developed around the types of companies about which Justice Kennedy expressed concern. Patent trolls, according to public perception, wait until the technology has been developed and commercialized in order to get the greatest royalties based on their assertions.⁹⁷ There are at least fifteen publicly traded companies whose business model is primarily the assertion of pat-

92. These new guidelines are posted on <http://www.uspto.gov/patents/law/exam/examguide.jsp>. See, e.g., USPTO, 35 USC 112 (f): *Identifying Limitations that Invoke 112(f)* (Aug. 2, 2013), http://www.uspto.gov/patents/law/exam/112f_identifying_limitations.pptx; USPTO, 35 USC 112, Sixth Paragraph, for Pre-AIA Applications Filed Before 9/16/12: *Identifying a Means-Plus-Function Limitation* (Aug. 2, 2013), http://www.uspto.gov/patents/law/exam/112f_identifying_limitations.pdf; USPTO, 35 USC § 112 (f): *Making the Record Clear* (Aug. 2, 2013), http://www.uspto.gov/patents/law/exam/112f_making_record_clear.pptx; USPTO, 35 USC 112, Sixth Paragraph for Pre-AIA Applications Filed Before 9/16/12: *Making the Record Clear for Means-Plus-Function Claims* (Aug. 2, 2013), http://www.uspto.gov/patents/law/exam/112f_making_record_clear.pdf.

93. See Joe Matal, *A Guide to the Legislative History Of The America Invents Act: Part II of II*, 21 FED. CIR. B.J. 539, 598–605 (2012) (summarizing the history and rationale behind *inter partes* review).

94. The Covered Business Method transitional program allows petitioners to challenge the validity of financial services data processing patents used in the practice, administration, or management of a financial product on all bases of patent validity. Leahy-Smith America Invents Act, Pub. L. 112–29, § 18, 125 Stat. 284, 284 (2011).

95. See 3 *Harnessing Patent Office Litigation*, HARNESSE, DICKEY & PIERCE, PLC (last visited Sept. 14, 2014), <http://ipr-pgr.com/wp-content/uploads/2013/09/IPR-PGR-Report-Vol-3.pdf>.

96. Matal, *supra* note 93, at 599 (citing H.R. REP. NO. 112-98, at 46, 48 (2011)).

97. See Brian J. Love, *An Empirical Study of Patent Litigation Timing: Could a Patent Term Reduction Decimate Trolls Without Harming Innovators?*, 161 U. PA. L. REV. 1309, 1317 (2013).

ents.⁹⁸ PAEs have brought an increasing number and share of patent suits. The White House, using data from patent defense company Rational Patent Corporation (RPX), estimated that PAEs were responsible for approximately 62% of all suits in 2012;⁹⁹ others have pegged the share of patent monetization suits at closer to 58%¹⁰⁰ or 45%.¹⁰¹

Likewise, despite the evolution of the damages case law, it is not yet clear what will happen to damages awards. Indeed, juries continue to make record awards.¹⁰² It may be that the evolution of damages law and operationalization of a higher standard of proof recently imposed by the Federal Circuit will take time for the market, and courts, to react to. But it may also be that, as described later in this Article,¹⁰³ policy discussions of patent hold-up and apportionment are falling on deaf (jury) ears.

Finally, the smartphone wars—between companies like Apple, Samsung, HTC, and many others—have further bloodied the waters. The number of smartphone suits has reportedly quadrupled, from 24 to 103, since *eBay* was decided.¹⁰⁴ Products deemed to be infringing have been banned as a result.¹⁰⁵

Thus, according to one account, hold-up theory has described and perhaps even predicted an important set of problems. But it has faltered in providing solutions to them. What is hold-up theory missing? The answer lies, in part, in the other side of the story: patent hold-out.

98. Chien, *supra* note 78.

99. EXEC. OFFICE OF THE PRESIDENT, *supra* note 9.

100. Feldman et al., *supra* note 27, at 7.

101. Based on an analysis of 425 cases chosen at random filed between Sept. 17, 2011 and July 30, 2013. Moore, *supra* note 27; *see also* Cotropia, Kesan, & Schwartz, *supra* note 27 (finding that large aggregators and patent holding companies brought 44% of cases in 2012; adding individuals brought the total to 52%). The GAO's study of patent litigation trends cited *supra* note 27 did not include data from 2012.

102. *See* PRICEWATERHOUSECOOPERS LLP, 2013 PATENT LITIGATION STUDY 3 (2013), available at http://www.pwc.com/en_US/us/forensic-services/publications/assets/2013-patent-litigation-study.pdf (reporting on the award of three \$1B+ jury verdicts in 2012, as many as had ever been awarded previously; all were subsequently reduced); *see also* LEX MACHINA, *supra* note 26, at Fig. 7 (showing increases in median damages awards from 2010–2013 but unevenness in year-to-year trends).

103. *See* discussion *infra* Part II.A.3.

104. *See, e.g.*, Chris O'Brien, *Apple, Samsung To Return To Court In High-Stakes Patent Case*, L.A. TIMES, Dec. 5, 2012, <http://articles.latimes.com/2012/dec/05/business/la-fi-smartphone-patent-war-20121206> (describing the quadrupling of smartphone-related patent suits from 2006, when *eBay* was decided, to 2011); *see also* David J. Kappos, *Investing In America's Future Through Innovation: How The Debate Over The Smart Phone Patent Wars (Re)Raises Issues At The Foundation Of Long-Term Incentive Systems*, 16 STAN. TECH. L. REV. 485 (2013) (comparing the smartphone wars to other historic patent battles).

105. *See, e.g.*, Certain Personal Data and Mobile Communications Devices and Related Software, Inv. No. 337-TA-710, USITC Pub. 4,331 (Dec. 19, 2011) (Final) (banning HTC smartphones from the U.S.); 337-TA-794, *supra* note 25 (banning iPhones from the U.S.). The later ban was subsequently vetoed by the President. Letter from Michael B. G. Froman to Irving A. Williamson, *supra* note 25.

II. PATENT HOLD-OUT THEORY

While policymakers and academics have embraced the concept of patent hold-up, the patent system is administered by judges and juries. There, litigants before them tell a different story:

“I could not commercialize my invention alone, but the financial institutions I needed to partner with largely ignored me when I approached them with my invention. They were able to adopt my invention without me, and ignore my protests, because they knew I lacked the resources to take them to court and stop them.”¹⁰⁶

This familiar story¹⁰⁷ describes what I call patent “hold-out”¹⁰⁸—the practice of companies ignoring patents and patent demands because the high costs of enforcing patents makes prosecution unlikely—or, in other words, because they can get away with it.

Each of these phenomena—the practice of companies ignoring high-tech patents, the high costs of detection and enforcement, in some cases, relative to the value of the invention, and the under-enforcement of patents—has been observed and documented but in isolation. As I describe below, together, they create a cohesive theory of patent hold-out that provides an alternative explanation for the dysfunctions of the patent system. In the paragraphs that follow, I describe examples and contexts of hold-out.

A. *The Contexts of Patent Hold-Out*

Although arguably undertheorized, the challenges associated with enforcing patents have generated policy concern intermittently, primarily due to the cost of litigation. Because patent defendants, like other defendants in our civil justice system, are “innocent until proven guilty,” which requires showing that the patent sought to be enforced is both valid and infringed, the status quo disfavors patent plaintiffs.

1. Early Concerns About Patent Hold-Out

Patent hold-out and the challenges associated with enforcing patents have generated policy concern for decades. When introducing his agenda for patent reform in the 1960s, President Lyndon B. Johnson cited the fact that,

106. Letter from Paul Ryan, Chairman and CEO of Acacia Research Corp., to Fed. Trade Comm’n (May 13, 2009) (on file with the Federal Trade Commission), *available at* <http://www.ftc.gov/policy/public-comments/comment-540872-00048>.

107. Change financial institution to automobile industry, for example, and you have the plotline for “Flash of Genius,” the only full-length movie centered on the patent system of which the author is aware. *See, e.g.*, Christopher A. Cotropia, *The Individual Inventor Motif in the Age of Patent Trolls*, 12 *YALE J.L. & TECH.* 52 (2009).

108. This term has also been used to refer, in the standards context, to patentees who do not submit their patents to standards body; *see* Douglas Lichtman, *Patent Holdouts and the Standard-Setting Process* (U. Chi. Law & Econ., Olin Working Paper No. 292, 2006), *available at* http://papers.ssrn.com/sol3/papers.cfm?abstract_id=902646.

“the inventor is often faced with time consuming, costly and unnecessary legal action to enforce his rights”¹⁰⁹ as a key motivation. In 1990, the ABA passed a resolution favoring the creation of low-cost, small claims patent and copyright enforcement proceedings.¹¹⁰ This move was motivated by the perception that increases in the cost of litigation “effectively shut out [claimants] from the federal courts,”¹¹¹ in particular inventors with limited damages claims.¹¹² Although the proposal did not get traction at the time, in 2012 the USPTO issued a request for comments on the need for a small claims court.¹¹³

2. Reverse Patent Hold-Up

Within the patent standards context, patentholders have also worried about receiving less than they deserve. While hold-up worries about patentholders wielding undue leverage, hold-out is concerned with the opposite—that *implementers* (most often manufacturers) wield undue leverage, allowing them to use standards-essential patents and not pay for them. For example a manufacturer may argue that they do not need a license to a patent because the patent is invalid or non-infringed, or because the patent does not actually read on the standard, as implemented by the manufacturer.¹¹⁴ The manufacturer may also use the technology without paying, “under the guise that the patent owner’s offers to license were not fair or reasonable.”¹¹⁵ The patent owner is therefore forced to defend her rights through expen-

109. Letter from Lyndon B. Johnson, President of the United States, to Hubert H. Humphrey, President of the Senate, and John W. McCormack, Speaker of the House, Transmitting a Proposal To Modernize the Patent System (Feb. 21, 1967) (on file with The American Presidency Project), available at <http://www.presidency.ucsb.edu/ws/?pid=28655> (listing patent quality, the time and expense of getting and enforcing patents, and the speed of disclosure as priorities).

110. A.B.A. Res. 401-4, 1990 A.B.A. SEC. PAT. TRADEMARK & COPYRIGHT L. COMM. REP. 194. See also Request for Comments on a Patent Small Claims Proceeding in the United States, 77 Fed. Reg. 74830-31 (Dec. 18, 2012), available at <https://www.federalregister.gov/articles/2012/12/18/2012-30483/request-for-comments-on-a-patent-small-claims-proceeding-in-the-united-states> (2012 USPTO request for comments as to whether the United States should develop a small claims proceeding for patent enforcement).

111. A.B.A. Res. 401-4, *supra* note 110, at 194–95.

112. Request for Comments on a Patent Small Claims Proceeding, *supra* note 110.

113. A.B.A. Res. 401-4, *supra* note 110, at 194–95.

114. See Damien Geradin, *Reverse Hold-Ups: The (Often Ignored) Risks Faced By Innovators In Standardized Areas*, in THE PROS AND CONS OF STANDARD SETTING 101, 102–04 (2010), available at http://www.kkv.se/upload/Filer/Trycksaker/Rapporter/Pros&Cons/rap_pros_and_Cons_standard_setting.pdf.

115. Certain Elec. Devices, Including Wireless Commc’n Devices, Portable Music & Data Processing Devices, & Tablet Computers, Inv. No. 337-TA-794, Commission Opinion, 63 (July 5, 2013), available at <http://www.groklaw.net/pdf4/SamsungvApple-ITC-Opinion.pdf>.

sive litigation.¹¹⁶ Manufacturers who behave this way are accused of engaging in reverse hold-up, a species of patent hold-out.¹¹⁷

3. Juror Sympathy and Patent Hold-Out

Juries are also perceived to be sympathetic towards patentees, and the road they must take to enforce their patents. Juries are more likely than judges to find for the patentee,¹¹⁸ less likely to overturn the patent office's decision to grant a patent,¹¹⁹ and more likely to award greater damages though the reasons why that is the case are unclear.¹²⁰ Among patentee groups, the fewer the inventors, the more likely a patentee is to win, suggesting that juries empathize most with the plight of the individual inventor.¹²¹

This apparent pro-plaintiff bias extends to concerns about patent hold-out. In mock experiments, jurors have been known to “fret that the patentee has had to wait years to recover its damages, and they often ratchet the damages award upward to compensate.”¹²² Mark Lemley has noted that courts do this too, in effect adding prohibited multipliers or “kickers” to

116. See, e.g., *id.*

117. *Id.* (“In reverse patent hold-up, an implementer utilizes declared-essential technology without compensation to the patent owner under the guise that the patent owner's offers to license were not fair or reasonable. The patent owner is therefore forced to defend its rights through expensive litigation. In the meantime, the patent owner is deprived of the exclusionary remedy that should normally flow when a party refuses to pay for the use of a patented invention.”)

118. Kimberly A. Moore, *Populism and Patents*, 82 N.Y.U. L. REV. 69, 107–08 (2007) (finding jury v. bench trial patentee success rates of ~65% vs. ~52%, based on an analysis of all federal district court patent trials between 1990 and 2003); see also PRICE-WATERHOUSECOOPERS LLP, 2010 PATENT LITIGATION STUDY: THE CONTINUED EVOLUTION OF PATENT DAMAGES LAW 15 (2010) (finding jury v. bench trial patentee success rates of ~80% vs. ~53%).

119. John R. Allison & Mark A. Lemley, *Empirical Evidence on the Validity of Litigated Patents*, 26 AIPLA Q.J. 185, 212–13 (1998) (finding a jury v. bench patent validity rate of 67.1% vs. 57.3%).

120. While a direct comparison is difficult, due to selection bias and the impact of outlier jury demands, several reports have documented differences in award amounts. Compare Kimberly A. Moore, *Judges, Juries, and Patent Cases—an Empirical Peek Inside the Black Box*, 99 MICH. L. REV. 365, 395 (2000) (“Judges make damage awards in excess of \$5 million in 17% of the cases, and juries award them in 21%.”) with Michael J. Mazzeo et al., *Explaining the “Unpredictable”: An Empirical Analysis of U.S. Patent Infringement Awards*, 35 INT'L REV. L & ECON. 58, 68 (2013) (finding the amount expected to be awarded by a jury trial to be 2.8 to 29.9 times that of an award by a judge, with an estimated effect of 9.2 times, but also concluding that “this does not prove that juries cause awards to be higher, all else equal”).

121. Moore, *supra* note 118, at 107–08 (based on a regression analysis of approximately two-thousand patent trials litigated between 1990 and 2003).

122. Martha K. Gooding & William C. Rooklidge, *The Real Problem with Patent Infringement Damages*, 91 J. PAT. & TRADEMARK OFF. SOC'Y 484, 487 (2009).

damages awards because of a sense of “perceived unfairness” in the law’s approach to calculating damages.¹²³

Despite instructions that tell jurors that they should award damages in order to compensate, not punish, jurors at times instinctively punish hold-out behavior. In the words of one mock juror: “[the defendant] had the option to license the patent and didn’t, so now we are in punitive damages . . . and they have to feel the wrath.”¹²⁴ Though the mock juror does not say the phrase “hold-out,” to the juror the consequences are clear: the manufacturer must now be punished for his refusal to license, or in other words, his “hold-out,” during the negotiation phase.

B. *What’s Wrong with the Patent System, According to Patent Hold-Out Theory*

At their root, these diverse accounts—of small entities shut out of the enforcement process, standards implementers refusing to pay for their use of patents, and the natural sympathy of juries to inventors who are held-out on—are based on the same core set of problems with the patent system. These include shirking by infringers, the risks that patentees have to endure to enforce their patents, and the cost of enforcement. As described below, invoking patent hold-out to explain each ailment of the patent system provides an alternative explanation and rebuttal to patent hold-up models: it is the *ex ante* shirking, not *ex post* assertions, of patentholders; risky, not bad patents; and disproportionate enforcement costs, not remedies, that are to blame.

1. *Ex Ante* Shirking (Not *Ex Post* Assertions)

The problem with hold-up assertions, according to patent hold-up theory, is that they take place *ex post*, after the product has already been commercialized and irreversible investments made. Indeed, that is the typical troll story: a patentholder lies in wait, launching a surprise attack when a company tries to implement a patent. But patent hold-out theory explains the timing of these demands—that patentholders must resort to *ex post* assertions because manufacturers ignore *ex ante* demands. In many cases, manufacturers fail to take steps to clear products prior to their release even though they are arguably in the best position to determine whether any patents read on their plans.¹²⁵ The troll is not lying in wait, but rather helping an inventor who is languishing, having repeatedly asked for a licensing agreement, and having repeatedly been rebuffed.

123. Mark A. Lemley, *Distinguishing Lost Profits and Reasonable Royalties*, 51 WM. & MARY L. REV. 655, 662, 666 (2009).

124. Gooding & Rooklidge, *supra* note 122, at 486.

125. I am thankful to Michael Risch for making this point to me.

The phenomenon of companies ignoring high-tech patents is well documented.¹²⁶ From a potential defendant's perspective, the concerns are practical—reading the patents of others results in a manufacturer knowing about a patent, and knowledge of a patent makes it easier for a court to enhance a damages award based on a defendant's knowing infringement.¹²⁷ Companies are often counseled not to respond to or accept unsolicited offers to license or buy patents,¹²⁸ knowing that engaging with the patentholder can often result in legal or settlement costs.¹²⁹ Since only 1–2% of all enforceable patents are actually litigated,¹³⁰ it may be better for a potential infringer to take his chances.

From the patentee's perspective, though, when companies resist patent demands, they shirk their responsibilities as willing participants in the patent economy. In accordance with one inventor's account: “[The cost of pursuing a patent case] makes such litigation almost impossible for the inventor and small businessperson. . . . [Large companies] recognized that inventors and small companies could not afford to bring suit to enforce their patents, and so they did not respect their patents.”¹³¹ From this perspective, the relative size of the infringer as compared to the patentee, not the merits of the claim, dictate the outcome—that companies, especially big companies, hold-out, and resist legitimate claims for compensation.

2. Risky (Not Bad) Patents

Hold-out theory also finds fault, not with patents themselves, but with the risks that are required to enforce them. When a patent is asserted, there is a risk it will be challenged and ultimately invalidated. A court can knock out a patent on a variety of statutory bases—that the invention does not claim protectable subject matter,¹³² the patent is not enabled by the specification,¹³³

126. See, e.g., FTC, *supra* note 69, at 9–10 (documenting, through scores of testimony, that patent problems in the information technology (IT) sector have often “[led] firms to abandon patent ‘clearance’ efforts”); see also Colleen V. Chien, *Predicting Patent Litigation*, 90 TEX. L. REV. 283, 289–92 (2011); Mark Lemley, *Ignoring Patents*, in THE FUTURE OF THE PATENT SYSTEM 79, 80 (Ryo Shimanami ed. 2012).

127. 35 U.S.C. § 284 (2014); *In re Seagate Tech. LLC*, 497 F.3d 1360 (Fed. Cir. 2007) (holding that to establish willful infringement, a patentee must show that the infringer acted despite an objectively high likelihood that its actions constituted infringement of a valid patent and that this objectively-defined risk was either known or so obvious that it should have been known).

128. *Technology Development Companies and Individual Inventors*, IPNAV, <http://www.ipnav.com/client-categories/inventors/> (last visited Sept. 21, 2014).

129. Colleen V. Chien & Stefani E. Shanberg, *10 Ways Startups Can Deal with Patent Troll Demands*, TECHCRUNCH (Oct. 7, 2012), <http://techcrunch.com/2012/10/07/10-ways-startups-can-deal-with-patent-troll-demands/>.

130. Chien, *supra* note 126, at 283.

131. *Testimonials*, ACACIA RESEARCH GROUP LLC, <http://acaciatechnologies.com/testimonials.htm> (last visited Aug. 4, 2013).

132. 35 U.S.C. § 101 (2012).

133. *Id.* § 112.

or that the patent disclosure fails to adequately describe the invention,¹³⁴ for example.¹³⁵ Even if the patent is valid, the patent may not be infringed—if the terms are not interpreted “just so,” the contested behavior will not be covered.¹³⁶

The patentee can survive the battle and still lose the war. A patentee may spend millions of dollars enforcing a patent, only to have it invalidated by a challenge at the USPTO, such as *inter partes* review, which ironically is provoked by the litigation.¹³⁷ Large jury verdicts are often reduced,¹³⁸ and claims are re-interpreted on appeal against the plaintiff about a third of the time, and even more often with respect to high-tech patents.¹³⁹ Even after a license agreement is secured, the licensee can challenge the patents.¹⁴⁰

It is for all of these reasons, some argue, that patentees need big wins: to make up for the failures.¹⁴¹ Indeed, patents are perceived as risky assets,¹⁴² heavily discounted in debt transactions.¹⁴³

3. Disproportionate Litigation Costs (Not Disproportionate Remedies)

According to patent hold-up theory, what fuels patent abuses are outsized remedies. But patent hold-out finds fault in the high costs of litigation, relative to the value of the case—that is, it costs more to bring a suit than the suit is worth. The problem is, in other words, disproportionate litigation costs, not disproportionate remedies.

Disproportionate costs are particularly problematic for low-value disputes. According to the 2013 AIPLA Annual Economic Survey, summarized

134. *Id.*

135. *See, e.g.*, Mark A. Lemley, *The Fractioning of Patent Law*, in *INTELLECTUAL PROPERTY AND THE COMMON LAW* 504, 507–09 (Shyamkrishna Balganesh ed., 2013).

136. Claim terms are interpreted through a process called “claim construction.” *See id.* at 507–08.

137. *See, e.g.*, *Financing Patent Monetization*, IPNAV (Nov. 2012), <http://www.ipnav.com/resource-center/ideas-and-insights/financing-patent-monetization/>. The majority of *inter partes* reviews have been filed on patents that are also in litigation. *See, e.g.*, RPX CORP., *supra* note 27, at 41 (reporting data showing that 70–97% of patents subject to an IPR were also the subject of district court litigation).

138. *See, e.g.*, PRICEWATERHOUSECOOPERS, *supra* note 102, at 3 (reporting on the reduction of several high-dollar jury awards in 2012).

139. Christopher A. Cotropia, *Is Patent Claim Interpretation Review Deference or Correction Driven?*, 2014 BYU L. REV. (forthcoming 2014), available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2265962 (reporting that these findings, for the patentee, are overturned more often than findings for the defendant).

140. *MedImmune, Inc. v. Genentech, Inc.*, 549 U.S. 118, 135–37 (2007).

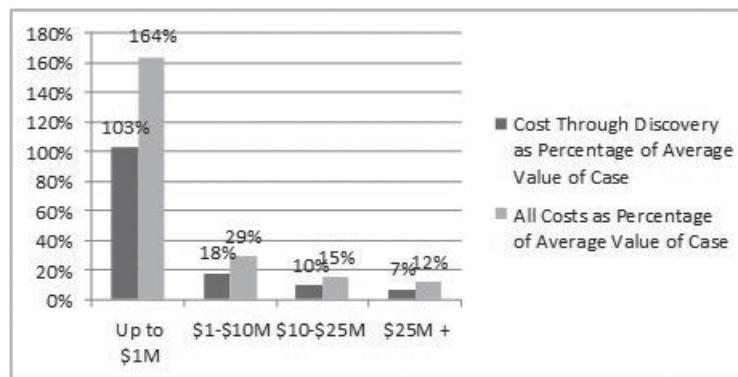
141. I am thankful to Michael Risch for making this point to me.

142. Joseph W. Jennings, *IP Debt—The New Monetisation Option*, *INTELL. ASSET MGMT. MAG.*, May–June 2014, at 41, 46, available at <http://www.ipnav.com/linkservid/C341533B-5056-9000-0331C4401FA78344/>.

143. *Id.* at 41.

in Figure 1, below,¹⁴⁴ when less than \$1 million is at risk, it costs \$916,000, on average, per side, to litigate a matter through trial.¹⁴⁵ This means that many cases cost more to litigate than they are worth. Litigation becomes even more unaffordable when both sides' costs are factored in. As the value of the case goes up, the proportion of costs decreases. For example, when more than \$25 million is at risk, the average cost of \$6 million per party is a fraction of the reward,¹⁴⁶ making the problem of disproportionate costs fall, well, disproportionately, on smaller disputes.

FIGURE 1. COST TO LITIGATE A PATENT CASE, AS PERCENTAGE OF AMOUNT AT STAKE



III. WHICH THEORY—PATENT HOLD-UP OR PATENT HOLD-OUT—IS RIGHT?

So, in sum, if the hold-up account of the world is to be believed, the problem is this: patent holders waiting to opportunistically sue, on the basis of patents of questionable validity, after irreversible investments have been

144. Colleen V. Chien & Michael J. Guo, *Does the US Patent Need a Patent Small Claims Proceeding?* 2 fig.2 (Santa Clara Univ. Legal Studies Research Paper No. 10-13, 2013), available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2249896, updated with the 2013 figures described *id.* Calculations are based on mean costs and average case values, e.g., \$500,000 for the up to \$1 million range, \$12.5 million for the \$1–\$25 million range, and \$50 million for the greater than \$25 million range. These cost estimates are for one party in a one-patent lawsuit, assuming non-contingent representation.

145. AM. INTELL. PROP. LAW ASS'N, LAW PRACTICE MGMT. COMM., REPORT OF THE ECONOMIC SURVEY I-129–I-132 (2013). The 2013 AIPLA Report of the Economic Survey shows that the average cost of a patent infringement suit where less than \$1 million are at risk is \$530,000 through the end of discovery and \$968,000 inclusive of all costs. Where \$1–\$10 million are at risk, the average patent infringement suit costs \$1.2 million through the end of discovery and \$2.1 million inclusive of all costs. Where \$11–\$25 million are at risk, the average patent infringement suit costs \$2.2 million through the end of discovery and \$3.6 million inclusive of all costs. Where more than \$25 million are at risk, a patent infringement suit costs \$3.6 million through the end of discovery and \$5.9 million inclusive of all costs.

146. *Id.*

made, wielding the threat of a lengthy and expensive lawsuit or the prospect of having to change their product. The hold-out version of the truth, in contrast, looks almost like the opposite: patent infringers ignoring and waiting out even the most reasonable offers to engage in licensing discussions, leaving patent holders with no choice but to risk everything and file suit and spend exorbitant sums just for the privilege to vindicate their statutory rights. Which account is right?

As with most things, the truth lies somewhere in between these two accounts. In this Part, I explore the counterarguments and available evidence behind each theory to determine when each narrative is most useful in considering patent policy.

A. Critiquing Patent Hold-Out

Despite its instinctive appeal, accounts of patent hold-out are susceptible to at least two critiques. First, hold-out does not fully account for all the costs involved in the patent transaction, and under-enforcement may be good for the overall economy. Second, even if patent hold-out is a real problem, PAEs are not the best way to address the issue.

1. Patent Non-Enforcement Rewards Independent Invention and is Good for Consumers and Competition

Although the hold-out story is compelling on a personal level, the social calculus must also include transaction and information costs. According to some, the under-enforcement of patents in certain sectors is actually a good thing, because it “shelters” follow-on innovation from the costs of licensing and risks of liability.¹⁴⁷ Although this view may seem shortsighted, sustained innovation in information technology, despite the norm of patent acquisition and non-enforcement,¹⁴⁸ seems to belie such a characterization. Making the converse point, in technology sectors, patent enforcement has been accused of undercutting the “permissionless innovation”¹⁴⁹ credited with fueling internet-based economic growth.¹⁵⁰

Additionally, the hold-out story assumes that inventors should get the full benefit of their inventions—a reasonable conclusion to draw from the

147. Eisenberg, *supra* note 62, at 59 (“The costs of the patent system provide shelter for infringing behavior that might otherwise lead to either licensing or liability, perhaps mitigating excesses in the patent system while retaining strong rights that motivated owners may enforce.”).

148. However, some of this non-enforcement may be due to tacit (through forbearance from enforcement due to the target’s possession of patents that the patentee also may be infringing, or patent *détente*) or explicit (through cross-licensing) technology sharing facilitated by patents. *See* Chien, *supra* note 5, at 321.

149. Burnham, *supra* note 73.

150. Vinton Cerf, Op-Ed., *Keep the Internet Open*, N.Y. TIMES, May 24, 2012, <http://www.nytimes.com/2012/05/25/opinion/keep-the-internet-open.html> (discussing “permissionless innovation”).

statutory right to exclude.¹⁵¹ But such a result would be a social disaster. Consumers and other producers should, and do, share in the benefits—according to one estimate, innovators capture, on average, only 2.2% of the total value of their innovations, other producers and consumers enjoy the rest.¹⁵² One critique of patent hold-out, thus, may be that while some patent protection and return to inventors are good things, more protection—for example, that result in a 100% return to patentees—is not necessarily better. Instead of maximizing patentee returns, the focus should be on maximizing total social returns.¹⁵³

In addition, non-enforcement of patents rewards independent invention—as Mark Lemley and Chris Cotropia have found, copying is rarely alleged in software patents cases.¹⁵⁴ Applying this lens, “holding out” is not refusing to pay for something taken, but refusing to pay when, after you yourself have created something, someone claims that it was theirs to begin with.

Still, it is hard to know how to strike the right balance. The hold-out story is broadly consistent with aspects of other theories used to calibrate innovation incentives. For example, as David Teece has famously theorized, a lack of complimentary assets makes it harder for innovators to appropriate the value of their technologies.¹⁵⁵ The Schumpeterian view that perfect competition provides inadequate incentives to innovate, argues in favor of government inventions like intellectual property.¹⁵⁶ The ability of patents to offset some of the advantages of incumbents and increase the odds of success for entrants is evidenced by the large share of venture capitalists that believe patents are important for innovation.¹⁵⁷ However, given how incremental and even, perhaps, obvious¹⁵⁸ advances are in high-tech, it is also likely that many patented innovations would have happened anyway.¹⁵⁹

151. 35 U.S.C. § 271 (2012).

152. William D. Nordhaus, *Schumpeterian Profits in the American Economy: Theory and Measurement* 22 (Nat'l Bureau of Econ. Research, Working Paper No. 10433, 2004), available at <http://www.nber.org/papers/w10433>.

153. This argument is advanced, for example, in Mark A. Lemley, *Property, Intellectual Property, and Free Riding*, 83 TEX. L. REV. 1031, 1046–69 (2005).

154. Cotropia & Lemley, *supra* note 58, at 1445–46 (2009) (finding that only 3% of software cases are filed with allegations of copying).

155. David J. Teece, *Profiting From Technological Innovation: Implications For Integration, Collaboration, Licensing and Public Policy*, 15 RES. POL'Y 285, 288–90 (1986).

156. See JOSEPH A. SCHUMPETER, *CAPITALISM, SOCIALISM AND DEMOCRACY* 131–34 (4th ed. 1954).

157. See COLLEEN V. CHIEN, *NEW AM. FOUND., PATENT ASSERTION AND STARTUP INNOVATION* 19 fig. 4 (2013), available at http://newamerica.net/sites/newamerica.net/files/policydocs/Patent%20Assertion%20and%20Startup%20Innovation_updated.pdf (reporting that 70% of 42 surveyed venture capitalists agreed with the statement that patents “agreed” or “strongly agreed” with the assertion that “patents are vital to innovation in my industry”).

158. As alleged by many in the software community, see Purvy, *supra* note 73, at 1.

159. See Mark Lemley, *The Myth of the Sole Inventor*, 110 MICH. L. REV. 709, 711 (2012); accord Love, *supra* note 97, at 1347–48.

2. If Patent Hold-Out is the Problem, Patent Assertion Entities Are Not the Solution

In light of current policy debates, then, the relevant question is not, should we be worried about hold-out, but, does the current model of patent assertion do a good job of rewarding and incenting innovation? On this score the available empirical evidence is not encouraging. The transaction costs associated with PAE assertions appear, in some cases, to dwarf the return to the inventors.¹⁶⁰ Many PAE assertions focus on the “wrong” target—small companies¹⁶¹ and end users or sellers—because the true party in interest—the manufacturer—is a harder target. The manufacturer is more likely to be more patent sophisticated, have better access to defensive prior art, and more invested in establishing a reputation for toughness lest they be targeted by other patent asserters.¹⁶² As a result, the party that can most efficiently resolve the dispute, the supplier, often is left off the case.¹⁶³ The returns generated from such campaigns are more likely to reflect the avoidance of legal costs, rather than the true economic value of the patent.

In addition, the economics of patent assertion create their own distortions. The economies of scale that make patent assertion worthwhile require patent assertion entities to be very selective, choosing carefully a few patents to assert over and over.¹⁶⁴ This approach, while practical, necessarily shuts out many patents and patentees. That might be a good thing, filtering out many low-value patents, but it fails to provide a complete solution to hold-out—as PAEs cannot vindicate the rights of every deserving patentholder. In addition, the patents that are the most valuable from an assertion perspective—old and therefore less vulnerable to prior art challenges,¹⁶⁵ broadly

160. See James E. Bessen, Michael J. Meurer & Jennifer L. Ford, *The Private and Social Costs of Patent Trolls*, 34 REG. 26, available at <http://object.cato.org/sites/cato.org/files/serials/files/regulation/2012/5/v34n4-1.pdf>; James Bessen & Michael Meurer, *Patent Trolls in Public*, PATENTLY-O (March 19, 2013), <http://patentlyo.com/patent/2013/03/patent-trolls-in-public.html> (estimating that only 26% of licensing revenues, on average, go to inventors); DOJ/FTC Presentation, *supra* note 57 (citing an RPX survey covering 900 litigations, in the majority of them legal costs exceeded settlement costs). *But see* Chien, *supra* note 157, at 18 (documenting a wide variety of deal points among innovators and the PAEs that monetize their patents (lump sum or “ranging from 10% to 67%, sometimes in combination with an upfront payment”).

161. A high percentage of unique defendants to PAE cases make \$10M or less. See Chien, *supra* note 28, at 471.

162. Chien & Reines, *supra* note 29, at 242–44.

163. *Id.* at 243.

164. Chien, *supra* note 62 (describing the PAE business model as one that is based on economies of scale and relies on using the same patents, in the same venues, using the same contingent fee lawyers); accord Michael Risch, *Patent Troll Myths*, 42 SETON HALL L. REV. 457, 472 (2012).

165. See, e.g., Love, *supra* note 97, at 1331 (finding that NPEs disproportionately assert patents at the end of their term).

worded, detectably infringed, and understandable by a jury—are not necessarily the ones that have contributed the most to the field.

For patent assertion to better address the problem of patent hold-out, it should cost less, return more to inventors, focus on the right targets, and reward true *technical* contribution—for example where there is high patent quality or industry recognition, or where the behavior is the most egregious, as in the case of copying—rather than *patent* contribution.

B. Critiquing Patent Hold-Up

Nor does patent hold-up theory get everything right. One common criticism is that hold-up tends to lump very different patentholders and situations together, painting all acts of patent enforcement with far too broad a brush. Another criticism asserts that, despite the barrage of solutions that have been attempted to solve the hold-up problem, hold-up appears to continue.

1. All Patent Hold-Up is Not Created Equal

One major criticism of hold-up theory is that, by casting the mere legal act of patent enforcement in pejorative terms, hold-up causes suppliers to dig in, refuse to pay, and spend money resisting meritorious assertions. To the extent that hold-up theory encourages a misimpression that all patent enforcement actions are based on low quality patents, or that all patent enforcement has the same (limited) social value,¹⁶⁶ it feeds the inefficiencies that flow from company refusals to pay.

Indeed, the operating companies that are the most likely to criticize trolling have also been accused of engaging in it. The practice of privateering, or using proxies or shell companies to wage patent wars against one's rivals,¹⁶⁷ has been described—though no one knows to what extent it is taking place. The concern that companies will sell their patents to trolls has become so prevalent that several companies have made public commitments to prevent it from happening. Twitter's Inventor's Patent License limits the company's ability to use its patents in offensive ways.¹⁶⁸ By signing on to the License on Transfer (LOT) agreement, Google, Cannon, SAP, and several other companies have agreed to grant each other licenses in the event that

166. Cotropia, Kesan, & Schwartz, *supra* note 27, at 8–10 (describing subcategories of patent assertion entities and their relative social value as measured for example, by the returns of the assertion to the inventor.)

167. For a discussion on patent privateers, see Tom Ewing, *Introducing the Patent Privateers*, INTELL. ASSET MGMT. MAG., Jan.–Feb. 2011, at 31, 31–32. See also Chien, *supra* note 5, at 320–32 (describing several examples of patents being transferred from an operating company to a patent troll that companies were exposed to).

168. Adam Messinger, *Introducing the Innovator's Patent Agreement*, TWITTER BLOG (Apr. 17, 2012), available at <https://blog.twitter.com/2012/introducing-innovators-patent-agreement> (describing Twitter's Innovator's Patent Agreement (IPA), “a commitment from Twitter to our employees that the patents they assign can only be used for defensive purposes”).

they eventually sell their patents. Cisco and Yahoo have made public, unilateral promises not to sell their patents to trolls.¹⁶⁹

Another criticism of patent hold-up, according to critics, is that it does not really exist because the reputational costs and repeat player nature of interactions between patentees and infringers encourage patentees to “play nice.”¹⁷⁰ They prefer private ordering arrangements, like standards rules and patent pools,¹⁷¹ to government solutions.

These criticisms have their greatest force when applied to conflicts between repeat players who have symmetric stakes and participate in private ordering activities, for example, standards-setting.¹⁷² Indeed, those who have looked for evidence that hold-up has actually occurred in this context have found a lack of empirical evidence.¹⁷³

But these reassurances are much less persuasive when applied to certain, though not all, types of patent trolls. A special-purpose entity formed solely to assert a single patent portfolio¹⁷⁴ is, by definition, not a repeat player.¹⁷⁵ Because it does not make anything, it cannot be countersued, has no need for patent cross-licenses, and it cannot sign agreements to be part of a standard when it only acquires the patents long after the standard has been formed. Importantly, special purpose entities also do not have a market reputation to defend. Certain enterprises behind lawsuits have been known to studiously avoid reputational consequences by incorporating large numbers of LLCs so that related demands cannot be identified.¹⁷⁶ The measurable harm to innovation—in the form of delayed hiring, business pivots, and the killing of

169. *Non-SDO Patent Statements and Commitments*, PROGRAM ON INFO. JUSTICE & INTELLECTUAL PROP., <http://www.pijip.org/non-sdo-patent-commitments/> (last updated June 21, 2014).

170. *See, e.g.*, Richard A. Epstein et al., *The FTC, IP, and SSOs: Government Hold-Up Replacing Private Coordination*, 8 J. COMPETITION L. & ECON. 1, 20 (2012) (finding that reputational costs and repeat interactions are a solution to patent hold-up).

171. *Id.* at 5; *see also* Robert Merges, *Institutions for Intellectual Property Transactions: The Case of Patent Pools*, in EXPANDING THE BOUNDARIES OF INTELLECTUAL PROPERTY 123, 133 (Rochelle Cooper Dreyfuss et al. eds., 2001).

172. *See, e.g.*, Roger G. Brooks, *Patent “Hold-Up,” Standards-Setting Organizations And The FTC’s Campaign Against Innovators*, 39 AIPLA Q.J. 435, 475 (2011) (“[T]here is no systemic patent hold-up problem damaging the interests of consumers or discouraging technological innovation and implementation—either in the context of standardized technologies or more generally.”).

173. *Id.* at 446–48 (citing comments from standards setting bodies, companies, and one professor to support its position).

174. Tom Ewing & Robin Feldman, *The Giants Among Us*, 2012 STAN. TECH. L. REV. 1 (2012) (describing the practice of PAE Intellectual Ventures setting up a shell company for each patent acquisition).

175. Though, if owned by a larger and well-known patent assertion entity, it may be.

176. Joe Mullin, *Patent Trolls Want \$1,000—for Using Scanners*, ARS TECHNICA (Jan. 2, 2013, 9:30 AM), <http://arstechnica.com/tech-policy/2013/01/patent-trolls-want-1000-for-using-scanners/> (describing the “alphabet soup” tactics of the “scanner patent troll” patent assertion entity that sent demand letters through entities named AccNum, AllLed, AdzPro, CalNeb, ChaPac, FanPar, FasLan, FulNer, GosNel, and HunLos).

products and product lines—by troll campaigns has also been documented.¹⁷⁷

History also belies the assertion that private ordering can provide a complete solution to patent trolling. Two other eras of patent trolling bear a striking resemblance to the present. One, noted previously, involved the patent “sharks” that asserted design patents *en masse* against farmers, about which then-Senator Isaac Christiancy said in 1879, “procure[d] an assignment of . . . [a] useless patent, and at once proceed to levy blackmail . . . upon any man who has ever manufactured or sold, or even used, the later and valuable invention; hundreds, at least, among the innocent users, choose to compromise rather than run the risk of ruin from lawsuits; . . . millions are thus filched and extorted from the people every year.”¹⁷⁸ Another involved the railroad industry of the 1880s, which found itself under attack by lawsuits brought by “avaricious patent agents”¹⁷⁹ who bought and asserted patents. During these two eras, Congressional, PTO, and court leadership were key to curbing the perceived excesses of patent assertion and restoring patent equilibrium.¹⁸⁰

In addition, the filing of patent cases at the International Trade Commission (ITC) in order to access remedies that a district court would likely withhold has presented particular hold-up concerns.¹⁸¹ This is because the ITC, can only award injunctions, not monetary damages, and is more likely than a court to do so.¹⁸² Patent holders have filed a sizeable number of cases at the ITC on the basis of standard essential patents,¹⁸³ including when the patent holder has previously made a commitment to license the patent on reasonable and non-discriminatory terms. This development has proven so troubling that the DOJ, FTC, and President have weighed in to stop it.¹⁸⁴

177. See Chien, *supra* note 28, at 2, 15.

178. See Chien, *supra* note 47, at 327 (2012) (citing 8 CONG. REC. 307-08 (1879) (statement of Sen. Christiancy)).

179. Chien, *supra* note 47, at 333 (citing Steven W. Usselman & Richard R. John, *Patent Politics: Intellectual Property, the Railroad Industry, and the Problem of Monopoly*, 18 J. POL’Y HIST. 96, 98–99 (2006)).

180. Chien, *supra* note 47, at 331–32; see also EXEC. OFFICE OF THE PRESIDENT, *supra* note 9.

181. Described, for example, in Chien & Lemley, *supra* note 85, at 1.

182. *Id.* at 10 fig. 1, 16 fig. 3 (documenting variable injunction rates in district court ranging from 7–100% in district court, as compared to an essentially automatic exclusion order grant rate in the ITC).

183. See, e.g., *SEP or Related Litigations*, THE ESSENTIAL PATENT BLOG (last visited Aug. 4, 2013), <http://essentialpatentblog.com/list-of-litigations-involving-seps/> (listing the large numbers of ITC cases involving SEPS).

184. Letter from Michael B. G. Froman to Irving A. Williamson, *supra* note 25 (regarding Inv. No. 337-TA-794).

2. Changing Remedies Has Not Yet Solved The Hold-Up Problem; Hold-Out Explains Why

Another flaw of hold-up theory is that it cannot explain why, despite apparent progress with respect to remedies, patent hold-up has become more, not less, frequent. Proponents of hold-up theory have recommended reforming patent remedies due to the leverage posed by the threat of an injunction, unsustainable royalty demands, and outsized damage awards.¹⁸⁵ As described earlier, the courts have largely answered their call.¹⁸⁶

However, by focusing exclusively on reducing the leverage associated with patent remedies, hold-up theory has largely ignored the additional, and in some cases more urgent, leverage that the high cost of defense creates, particularly for small defendants.¹⁸⁷ When it costs close to a million dollars to defend a case,¹⁸⁸ even if there is no threat of injunction or damages above a certain amount, it will always be cheaper to settle.

Another reason that changes to damages law have not necessarily yet had their desired effect is that they do not necessarily appeal to decision-makers' sense of fairness. Jurors' "willingness to disregard the boundaries of law and evidence"¹⁸⁹ to arrive at a just outcome, suggests that changing the law alone will not be the answer to reducing hold-up. The answer may be, in part, to better educate jurors on the role of the patent system within the broader social context and about the impacts of litigation and remedies on defendants, in particular small defendants, as well as to better police the evidence jurors are allowed to see. The increasing attention being given to the patent system by non-experts¹⁹⁰ and awareness of patent trolling created by President Obama publicly likening patent trolling to "extortion,"¹⁹¹ Congressional engagement and educational videos,¹⁹² is also likely to have an impact. The availability of injunctions for component inventions should be clarified and communicated in jury instructions, so that courts have appropriate guidance when given the "nuclear option" of an injunction.

185. Described *supra* at Section I.B.3.

186. Described *supra* at Section I.C.

187. DOJ/FTC Presentation, *supra* note 57, at 12–19.

188. See generally Patent Litigation Survey, *supra* note 31, at 3.

189. Gooding & Rooklidge, *supra* note 122, at 485.

190. See, e.g., Colbert Report, *supra* note 79; Jolie, *supra* note 79.

191. Catherine Clifford, *Obama Takes Aim at 'Patent Trolls'*, ENTREPRENEUR (Feb. 15, 2013), <http://www.entrepreneur.com/article/225842>.

192. See, e.g., USHouseJudiciaryGOP, *Henry Ford, Patent Trolling, & the Innovation Act: A Patent Reform Primer*, YouTube (Dec. 2, 2013), <https://www.youtube.com/watch?v=uSEH7nYTRh4>.

IV. IMPROVING THE PATENT SYSTEM BY USING A COMBINED PERSPECTIVE

Combining “hold-out” and “hold-up” perspectives reveals surprising pathways to a better patent system, focused as much on the design as on the doctrine of patent law. Rather than trying to eliminate all technology patents, or to enforce all of them, courts and policymakers should develop ways for parties, early on, to determine the value of a patent, or at least a range of values, and for courts to hear and decide dispositive issues. Instead of trying to make patent law perfect, the patent process should be made cheaper, more streamlined, and more equitable.

This part considers four promising ways of doing so: 1) reducing duplication and forum shopping by improving coordination between the venues; 2) early adjudication of dispositive issues, including patent validity and copying; 3) early damages disclosure and non-expert damages methodologies; and 4) promoting symmetry between economically dissimilar parties and proportionality between the economic value of a patent and the cost of fighting about it, through fee- and cost-shifting. Many of these suggestions could be implemented in a variety of ways: through jury instructions and case management, including across districts, through the Patent Pilot Program,¹⁹³ case law development, and legislative change.

A. *Reducing Duplication and Forum Shopping, Improving Coordination*¹⁹⁴

Hold-up and hold-out are supported in part by differences in the venues in which the same patent issues can be simultaneously adjudicated. These differences support divergent expectations about case outcomes and often translate into the greater complexity and cost associated with managing the same case in several venues. Patentees who are held-out on may feel that they have no choice but to pursue their claims in the most advantageous jurisdictions, while defendants that believe that they are being held-up feel outrage that they are being dragged into venues to which they have little connection.

To enforce a patent, a court must find the patent to be valid and infringed, and award an appropriate remedy. But each of these issues can be

193. A program started in 2011 for concentrating expertise with patent cases within patent “Pilot” districts in which designated judges who want patent cases can accept them from non-designated judges that decline them. Described in *Pilot Program to Enhance Expertise in Patent Cases*, U.S. Cts., (Feb. 2011), http://www.uscourts.gov/news/TheThirdBranch/11-02-01/Pilot_Program_to_Enhance_Expertise_in_Patent_Cases.aspx.

194. See overview in *Abusive Patent Litigation: The Issues Impacting American Competitiveness and Job Creation at the International Trade Commission and Beyond: Hearing Before the Subcomm. on Courts, Intellectual Prop., & the Internet of the H. Comm. on the Judiciary*, 113th Cong. 42-48 (2013) [hereinafter *2013 Chien Testimony*] (prepared statement of Prof. Colleen V. Chien).

adjudicated in multiple venues simultaneously. A patent's validity, for example, can be challenged in the PTO, the district court, and the International Trade Commission, also known as the "unholy trifecta" of patent law.¹⁹⁵ The ITC and district court apply different standards for making this determination than does the PTO (which has, within the agency, multiple ways of doing so),¹⁹⁶ and all three venues offer different procedures.

The procedures and remedies used in each venue vary as well. A patent can be enforced in both the district court and the ITC, but the remedies and procedures available to the parties are different, and the standards for granting injunctive relief are also different, as previously described. While district court decisions bind the ITC, the inverse is not true, even though the ITC decides cases more quickly than the district courts.¹⁹⁷ Within the district court, multiple cases on the same patent can be filed within different district courts, and often are, for forum shopping and jurisdictional reasons; and the differences between district courts mean that forum-shopping is a known fact of patent litigation life.¹⁹⁸

These complexities create incentives for litigants to litigate the same issues in multiple venues, and to choose venues for the strategic advantages they provide. The majority of *inter partes* reviews have been filed on patents that are also in litigation.¹⁹⁹ Over 90% of ITC patent cases in 2012 had a district court counterpart.²⁰⁰ PAEs may file cases against a customer to secure a favorable venue, while the manufacturer may later seek to file a declaratory judgment action to litigate the same issue in *their* preferred venue.²⁰¹ The different standards in each district potentially invite waste by defendants and plaintiffs and encourage forum-shopping. It also encourages each side to "take its chances"—hoping for a decisive win in one venue even while their odds are lower in another one.

One way to decrease the incentive for cross-venue forum shopping is by tightening the interfaces between fora so that parallel filings do not result in duplicative proceedings. There is statutory support for coordinating between the venues—according to 28 USC § 1659 a district court should, upon re-

195. *Id.* at 43.

196. As of September 2012: (1) Post-Grant Review (PGR); (2) Modified *Inter Partes* Review (IPR); (3) Transitional Post-Grant Review for business method patents; (4) *Ex parte* reexamination. Summarized in Paul R. Steadman et al., *Post-Issuance Patent Review*, INTELL. PROP. MAG., Nov. 2011, at 99, 99.

197. Colleen V. Chien, *Patently Protectionist? An Empirical Analysis of Patent Cases at the International Trade Commission*, 50 WM. & MARY L. REV. 63, 64 (2008).

198. See, e.g., Mark A. Lemley, *Where to File Your Patent Case*, 38 AIPLA Q. J. 401, 402 (2010) ("Forum shopping is alive and well in patent law. . . . [It] shows no signs of disappearing.").

199. See, e.g., RPX Corp., *supra* note 27, at 41 (reporting data showing that 70–97% of patents subject to an IPR were also the subject of district court litigation).

200. 2013 *Chien Testimony*, *supra* note 194, at 43.

201. Chien & Reines, *supra* note 29, at 21 (arguing for the need for a stay of the customer case when the manufacturer case is pending).

quest of either party, stay its action when a parallel case is pending at the ITC. The district court may also stay its case when the patent is challenged at the USPTO.

To increase a district court's confidence that a stay will not merely delay but will actually result in resolution of issues, the ITC and USPTO should provide clear notice of the timeline of adjudication and procedures by the non-court, and to the extent possible, the disposition of all the issues faced by the court.²⁰² The ITC's record of announcing and sticking to a timeline has created a record of predictability in this regard.²⁰³ The USPTO's work building confidence in its post-AIA proceedings—including by facilitating communications between the district courts and the USPTO—has also been well-received, and the rate of stay is estimated to be 53–67% according to recent statistics.²⁰⁴

The substantive standards should also be harmonized. When the ITC hears a case, it should apply the same standard as does the district court to the decision of whether or not to grant an injunction—but right now, the ITC's habit of always granting injunctive relief to a prevailing complainant contrasts starkly with the district court's record in the several years of awarding injunctions in only 75% of cases.²⁰⁵ Right now, the USPTO can only review the majority of issued patent cases on a few of the bases that a district court can.²⁰⁶ Expanding the bases for review so that the USPTO can hear the full suite of patent-eligibility challenges, including claim definiteness, and clarity, would avoid the need for a court to revisit validity after the USPTO has just done so.

Another source of duplication arises when hundreds of adopters of a technology, rather than the single supplier of the technology, are pursued for patent infringement. Though there are sometimes practical reasons for these

202. For example, by reviewing all, rather than just a portion, of the challenged claims. See Timothy K. Wilson & John S. Sieman, *Guest Post: PTAB Partial Institution of IPR and CBM Review Violates the AIA—But there is a Simple Fix*, PATENTLY-O (May 29, 2014), <http://patentlyo.com/patent/ptab> (arguing that the USPTO's partial institution of IPR may result in duplication or inconsistency when the non-reviewed claims are reviewed by the district court).

203. Chien, *supra* note 197, at 101.

204. Robert Arcamona & David Cavanaugh, *Stays to Litigation Pending IPR and CBM Review: Statistics, Trends, and Key Issues*, INTELL. PROP. TODAY (Mar. 2014), available at http://www.wilmerhale.com/uploadedFiles/Shared_Content/Editorial/Publications/Documents/IP-today-stays-to-litigation-pending.pdf.

205. Chien & Lemley, *supra* note 85, at 16 fig. 3.

206. See Changes to Implement Inter Partes Review Proceedings, Post-Grant Review Proceedings, and Transitional Program for Covered Business Method Patents, 77 Fed. Reg. 48,680 (Aug. 14, 2012), available at http://www.uspto.gov/aia_implementation/fr_specific_trial.pdf. The covered business method transitional program, described *supra* note 94, allows the USPTO to review issued patents according to all grounds of patentability, but is limited to qualifying financial services data processing patents. In contrast, in *inter partes* review, which is available for all issued patents, the USPTO may reconsider the validity patents in light only of patents or printed publications. See 35 U.S.C. § 311(b) (2012).

suits, they are happening with increasing frequency.²⁰⁷ Absent compelling reasons, obstacles to manufacturers standing behind their products—for example, when a court fails to find declaratory judgment jurisdiction, denies the manufacturer the right to intervene, or allows discovery to proceed against customers even when a manufacturer is involved, should be removed.²⁰⁸

B. Prioritize Early Disposition

Hold-up and hold-out happen because the parties disagree about whether the target needs a license. Among the various assessments that need to be made in order for a court to rule, some are dispositive and in some cases, do not require intensive discovery. These could include the availability of defenses like contract-based exhaustion and certain grounds of patent invalidity (such as patentable subject matter), as well as the meaning of a key claim term. Early determination of dispositive issues, coupled with higher quality complaints, could reduce the risks and costs for both plaintiffs and defendants.

In the spring and fall of 2013, I and others surveyed over five hundred in-house, plaintiffs', and general patent attorneys about their perspectives on over twenty patent reforms and practices, including recent judicial and legislative reforms (misjoinder, post-grant review, the Federal Circuit's e-Discovery Model order, damages reform, and the patent pilot program) and a host of case management practices covering claim construction, summary judgment, and the staging or timing of patent litigation. The practice among all of them that had the strongest overall rating among these communities was the value of judges making timely decisions on summary judgment motions—with an overall effectiveness rating of 86% (out of 100%).²⁰⁹ In a follow-up discussion of these results, judges said that they would be more inclined to decide summary judgment motions early if the parties agreed to have all of their motions heard at once, rather than bringing them serially.²¹⁰

207. See, e.g., Chien & Reines, *supra* note 29, at 235–36.

208. See, e.g., Chien & Reines, *supra* note 29, at 238–40 (advocating bolstering of declaratory judgment jurisdiction and intervention rights for suppliers, prioritization of dispositive issues, stay of customer discovery, and interventions that would make end users less attractive litigation targets).

209. *Patent Litigation Survey*, *supra* note 31, at 175. The “overall effectiveness” rating was calculated by the authors by “ask[ing] survey takers to rate each practice, proposal, or development on the basis of its effectiveness in increasing the efficiency of patent litigation.” *Id.* at 146. The scores were then converted “into numerical representations of ‘overall effectiveness,’ from 0% (least effective) to 100% (most effective).” *Id.* Among inside counsel, this intervention received an 85% effectiveness rating (N=93), and among outside counsel (N=313), it received an 86% effectiveness rating. *Id.* at 175. Of the outside counsel, 54% equally represented plaintiffs and defendants, 34% primarily represented defendants and 12% primarily represented plaintiffs. *Id.* at 201.

210. Discussions at the Federal Circuit Bar Association's 2013 Advanced Complex Litigation Series at the Santa Clara University School of Law (May 3, 2013).

The ITC has taken the lead in early disposition by announcing a pilot program that provides for an early determination within the first 100 days of a case.²¹¹ The program has been praised for its potential to reduce costs and narrow the scope of the hearing, and includes features like staying discovery on all issues other than case-dispositive issues.²¹² If it succeeds in doing so, district courts could follow suit, through legislative means or judicial prioritization of cases.

C. Early Patent Valuation

Hold-up and hold-out also occur because the parties disagree on the value of a patent. One reason for this is that they have very different reference frames for calculating this value—defendants, for example, are often loath to provide sensitive financial information about sales, profits or past licenses, for example, until they have to. Another is the important role played by non-specialist juries and a flexible legal standard for calculating damages that enables damages experts to come to diametrically opposing opinions about the value of a patent, driving even further apart parties' expectations. Steps could be taken to reduce each of these drivers to the gap in expectations between the parties and facilitate earlier dispute resolution.

Patentholders and their targets should know ahead of time the range of a patent's worth, instead of relying on courts to make the determination. One way to do so would be to allow parties to give up damages precision in favor of speed: as one prominent alternative solutions provider relayed to me, lawmakers should “[f]ocus on speed—business and commerce need certainty and speed—not *Georgia Pacific* factors after 36 months.”²¹³ Mechanisms that favor expediency over precision include rate tables,²¹⁴

211. First implemented in *Certain Products Having Laminated Packaging, Laminated Packaging, and Components Thereof*, Inv. No. 337-TA-874, USITC 8 Fed. Reg. 19,007 (Mar. 22, 2013) (notice of institution of investigation), followed by *Pilot Program Will Test Early Disposition of Certain Section 337 Investigations*, U.S. INT'L TRADE COMM'N, http://www.usitc.gov/press_room/documents/featured_news/337pilot_article.htm (last visited Sept. 21, 2014).

212. Robert Rogers, *Benefits of ITC's New Early Disposition Pilot Program*, LAW360 (July 16, 2013, 4:42 PM), <http://www.law360.com/articles/457675/benefits-of-itc-s-new-early-disposition-pilot-program>. However, since being instituted, it does not appear that the early disposition program has been used except in the single case that started the program, *Products Having Laminated Packaging, Laminated Packaging, and Components Thereof*, Inv. No. 337-TA-874.

213. Email from Confidential Source to Author (Aug. 23, 2013) (on file with the Michigan Telecommunications & Technology Law Review).

214. Comments from Intellectual Prop. Creators Assoc. to U.S. Patent & Trademark Office (Apr. 29, 2013) (on file with United States Patent and Trademark Office), *available at* http://www.uspto.gov/ip/global/patents/comments/patent_small_claims_court_rev_3.pdf (proposing “royalty rates for various classes of inventions and industries be [established by a ‘royalty rate commissioner]”).

mediation,²¹⁵ or employing a simplistic formula for reducing the information and transaction costs associated with patent valuation should be explored (for example, based on lines of code or total patents on the feature based on a keyword search). Although some may balk at the thought of million dollar price-tags to patents being assigned based on such “rules of thumb,” in reality estimation techniques have frequently been used to determine the value of *ex ante* licenses.²¹⁶ If a patent is only one of a thousand that a product reads on, and is worth less than a cent per unit at best, as has been determined in the case of Microsoft Windows’ products practicing certain standards essential patents,²¹⁷ and the parties both know that ahead of time, perhaps paying that rate will be a better option than arguing about its enforceability.

D. Promote Proportionality and Symmetry

Finally, the patent system should provide incentives and ways for cases to be resolved at costs that are proportional to their value. The legal costs of case should not outstrip the value of the case, as it currently true of low-value cases.²¹⁸ The incentive of each party to drive up the costs of the other—via holding up or holding-out—should also be reduced.

To proportionally right-size patent proceedings, options like excluding attorneys,²¹⁹ tele-conference based trials, eliminating unnecessary discovery and witnesses,²²⁰ eliminating juries, and capping damages, based on, for example, revenue or cost of component parts,²²¹ have been suggested by those on both sides of the issue²²² and could be offered to litigants as options for pursuing low-cost and efficient relief. The value of the case should be deter-

215. See, e.g., Mark A. Lemley & Carl A. Shapiro, *A Simple Approach to Setting Reasonable Royalties for Standard-Essential Patents*, 28 BERKELEY TECH. L.J. 1135 (2013).

216. Chien, *supra* note 5, at 308 (describing the “ruler” and keyword-based methodologies for determining cross-licensing royalties).

217. See *Microsoft Corp. v. Motorola, Inc.*, 696 F.3d 872, 884 (9th Cir. 2012); *Microsoft Corp. v. Motorola, Inc.*, No. 2:10-cv-01823-JLR (W.D. Wash. Apr. 25, 2013) (setting a royalty of 0.55 to 16.39 cents per unit for Windows and Xbox products for access to Motorola’s H.264 SEP patent portfolio).

218. See *supra* Fig. 1.

219. Comments from Intellectual Prop. Creators Assoc. to U.S. Patent & Trademark Office, *supra* note 214.

220. Comments from Matthew Tanielian and Alex V. Chachkes to U.S. Patent & Trademark Office (Apr. 30, 2013) (on file with United States Patent and Trademark Office), *available at* http://www.uspto.gov/ip/global/patents/comments/753609930-1_cpf_-_letter_to_uspto.pdf.

221. Comments from Michael Risch to U.S. Patent & Trademark Office (Mar. 9, 2013) (on file with United States Patent and Trademark Office), *available at* http://www.uspto.gov/ip/global/patents/comments/comments_to_us_pto_re_patent_small_claims.pdf.

222. Cf. *id.* (supporting creation of a small claims court); Comments from Intellectual Prop. Creators Assoc. to U.S. Patent & Trademark Office, *supra* note 214 (supporting creation of a small claims court); Comments from Tanielian & Chachkes to U.S. Patent & Trademark Office, *supra* note 220 (opposing creation of a small claims court).

mined based on using defendant's product revenue as a cap. Many litigants in this situation, in search of a stable business environment, may give up due process for certainty and low transaction costs.

There are also several ways to encourage parties to keep needless costs down, primarily by sanctioning them. By making two-way fee-shifting the norm, the parties will think twice about driving up the costs of the other side, given the risk that they may have to ultimately pay these costs.²²³ Given the burden that discovery costs represent, in addition, "fishing expeditions" that account for a large amount of the cost but often lead to miniscule amounts of admitted evidence²²⁴ should be discouraged. This could be accomplished by requiring parties to pay for the discovery they request beyond the exchange of "core" evidence. More specifically, "in any patent lawsuit . . . normal rules of discovery would apply with respect to [] core documents—that is, the person producing the documents pays the cost of production . . . [A]dditional discovery is permissible . . . The difference is that the party requesting such other discovery bears the cost of paying for that discovery."²²⁵ The rejection of reasonable offers may in some cases also deserve financial sanction, using tools like Federal Rule of Civil Procedure No. 68.²²⁶

A major critique of reducing the unnecessary costs of litigation is that it will lead to greater assertion, removing the benefits of non-assertion that have previously been discussed.²²⁷ This is a real concern. However, there will also be costs associated with bringing a patent case, including potential loss of the patent and the costs of developing the initial claim, which will likely rise due to the Federal Judicial Conference's recent decision to elimi-

223. See Thomas D. Rowe, Jr., *The Legal Theory of Attorney Fee Shifting: A Critical Overview*, 1982 DUKE L.J. 651 (1982). As Thomas Rowe has stated, generally speaking, fee-shifting is intended to discourage "undesirable behavior in the bringing and conduct of litigation"; in addition to impacting the decision whether to sue, it can influence "whether to resist [suit], choices whether to use various tactics, and decisions about the amount and timing of settlement." *Id.* at 652–53. See also *Octane Fitness, LLC v. ICON Health & Fitness, Inc.*, 134 S. Ct. 1749 (2014) (providing more discretion to courts to shift fees in patent cases); *Highmark Inc. v. Allcare Health Mgmt. Sys., Inc.*, 134 S. Ct. 1744 (2014) (providing more discretion to courts to shift fees in patent cases); Rader et al., *supra* note 72 (calling on district courts to use their discretion to shift fees).

224. See, e.g., *Abusive Patent Litigation: The Impact on American Innovation & Jobs, and Potential Solutions: Hearing Before the Subcomm. on Courts, Intellectual Prop., & the Internet of the H. Comm. on the Judiciary*, 113th Cong. 44–48 (2013) (prepared statement of Philip Boswell, Senior Vice President and General Counsel of SAS) (reporting that, out of 10 million documents collected in a SAS case, "only 1,873 documents, or .000183%, appeared on an evidence list as possibly being introduced at trial").

225. *Id.* at 108.

226. See FED. R. CIV. P. 68.

227. See discussion *supra* Part III.1.a.

nate barebones complaint forms.²²⁸ Fee-shifting also cuts both ways and will serve as a check on those making questionable assertions as well as those who refuse to engage and hold-out unreasonably.

CONCLUSION

There are two sides to every story, and patent enforcement is no exception. To those concerned about patent hold-up, the problem is patentholders making questionable assertions, after the product is already made, wielding the threat or pain of a lawsuit or uncertain remedies. To patentholders who complain about patent hold-out, the problem is large companies, who shirk their responsibilities and ignore reasonable licensing offers made early on, the multiple risks of invalidation that patentholders must face when they bring their suits, and the inordinate costs of litigation.

By focusing on the features of the patent system that are problematic according to both patent hold-up and patent hold-out—namely the high costs, uncertainty, and asymmetry of patent enforcement—both problems can be reduced. Scholars and others have focused for decades on doctrinal debates and substantive policy-making. But as these efforts on patent doctrine continue, more attention to the design of patent law and the resolution of patent disputes, deserve attention. This Article applied this lens to reveal fresh insights and stimulate further thinking and dialog about how to improve the patent system.

In particular, I propose reducing duplication and forum shopping by improving coordination between the venues; reducing costs by early adjudication of dispositive issues, including patent validity and copying, promoting certainty by engaging in early damages disclosure and non-expert damages methodologies; and promoting symmetry between economically dissimilar parties and proportionality between the economic value of a patent and the cost of fighting about it, through fee- and cost-shifting. As the patent system continues to experience momentous change, these adjustments are well worth considering and implementing.

228. Vin Gurreri, *Judges Vote to Nix Rule Creating Patent Complaint Forms*, LAW360 (Sept. 17, 2014), <http://www.law360.com/articles/578149/judges-vote-to-nix-rule-creating-patent-complaint-forms>.