EXPANDING THE PATENT OFFICE’S REGULATORY FOOTPRINT: A PROPOSAL FOR REIMBURSING INVALIDITY CHALLENGES

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ABSTRACT

The patent system’s apparent resilience to changes in the law, and the persistent complaints about abusive patent assertions, might reflect the futility of patent reform efforts over the past several decades. But there may be another factor contributing to the patent system’s resistance to change: The regulatory coverage provided by the two primary regulatory entities in the patent system—the federal courts and the U.S. Patent and Trademark Office (PTO)—may be inadequate. Because the regulatory footprint of the federal courts is limited by Article III considerations, the possibilities for expanding the PTO’s regulatory footprint warrant greater attention. Given its limited mandate of examining applications and granting patents, the PTO has taken a hands-off approach to patents once they are issued. The PTO’s post-issuance passivity has left the job of policing abusive assertions—and by extension, patent quality—predominantly to accused infringers, for whom the high cost of validity challenges often encourages the payment of nuisance fees, which makes abusive assertions profitable and promotes the further procurement and assertion of patents in problematic ways.

To enable and induce the PTO to take a more active role in policing abusive assertions, this Article draws from the lessons of the auto insurance industry to propose that Congress should require the PTO to collect an annual, individualized fee on each patent-in-force—which would be set according to the risk of invalidation of that patent—to fund a program to reimburse the expenses incurred by accused infringers who prevail in challenging a patent at the PTO’s administrative tribunal, the Patent Trial and Appeal Board. This arrangement would help create a regulatory feedback loop that could expand the PTO’s regulatory footprint in the patent system, with several potential benefits: (1) it may further

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encourage challenges to weak patents as an alternative to paying nuisance fees to avoid or settle litigation; (2) it may allow the PTO to indirectly regulate or influence the behavior of patentees with respect to post-issuance activities such as assertion; (3) it may provide a mechanism for the PTO to incentivize patentees to adopt quality-enhancing prosecution habits; and (4) it may create a source of fiscal pressure for the PTO that may prompt it to make operational changes to improve patent quality in the face of possible opposition from its patentee “customers.”

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INTRODUCTION

Despite changes to substantive patent law and related procedural rules over the past several decades, the fundamental dynamics within the patent system have remained largely the same. The rates at which patents are applied for and granted have continued their steady upward trend.1

1. Mark A. Lemley, The Surprising Resilience of the Patent System, 95 TEX. L. REV. 1, 2 (2016) [hereinafter Lemley, Resilience] (observing that “the number of patent applications filed, the number of patents issued, the number of lawsuits filed, the patentee win rate in those lawsuits, [and] the market for patent licenses . . . show very little evidence that patent owners and challengers are behaving differently because of changes in the law”).

Complaints about “patent trolls” and abusive litigation have not abated, but instead have gained greater notoriety among the general public as shown by their prominent coverage on a satirical late-night news show hosted by comedian John Oliver. According to Mark Lemley, such “resilience” to change in the patent system may be an indication that “the substantive and procedural changes we have seen in the last forty years simply don’t matter much to the ordinary operation of patent law.” The patent system’s stubborn resistance to change may have multiple contributing factors, some of which may be revealed upon evaluating the patent system through different analytical models. To this end, this Article explores one possible contributing factor that may benefit from greater scholarly attention: the limited regulatory footprint of the U.S. Patent and Trademark Office (PTO).

Once a patent issues, the PTO’s involvement is minimal for the duration of that patent’s term. The agency’s post-issuance passivity aggravates the regulatory weaknesses in the patent system—such as poor patent quality, weak regulation of out-of-court assertions, the high cost of defense, and the evolving tactics of problematic actors—that make it difficult to control abusive patent assertions. The unfortunate reality is that the patents selected for assertion have a high likelihood of being invalidated if challenged on the merits. As a result, the job of policing abusive assertions—and by extension, patent quality—is left predominantly to accused infringers, for whom the high cost of validity challenges often induces the payment of nuisance fees to avoid or settle litigation, thereby making abusive assertions profitable and further fueling the procurement and assertion of patents in problematic ways.

To enable and induce the PTO to take a more active role in policing the patent system, this Article suggests one possible option: Congress should require the PTO to set up an “Invalidity Challenge Reimbursement Program” (ICR program) to reimburse the petition fees, attorney fees, and related expenses incurred by accused infringers who have successfully challenged a patent in a revocation proceeding at the PTO’s administrative tribunal, the Patent Trial and Appeal Board (PTAB). And to fund the ICR program, Congress should require the PTO to charge periodic, periodic, periodic,

4. Lemley, Resilience, supra note 1, at 49.
5. See infra Section I.A.
7. The party (usually an accused infringer) seeking to invalidate a patent files a petition at the Patent Trial and Appeal Board (PTAB). See 35 U.S.C. §§ 311–12 (2018) (specifying requirements for inter partes review petitions). After the PTAB reviews the petition, it may decide to “institute” (i.e., authorize) a proceeding to take place. See id. § 314 (setting forth procedures governing institution).
individualized “ICR fees” on each patent-in-force based on its risk of invalidation (i.e., the likelihood that the patent would incur a payout).

The ICR program would help insert the PTO in a regulatory feedback loop involving both patentees and accused infringers, which would allow the agency to expand its regulatory footprint beyond patent examination. In doing so, the proposal is expected to provide several benefits. First, it may further encourage PTAB challenges to weak patents, especially as an alternative to paying nuisance fees. Second, the risk-adjusted ICR fees may allow the PTO to indirectly regulate or influence the behavior of patentees with respect to assertion and other post-issuance activities. Third, the risk-adjusted ICR fees may also provide a mechanism for the PTO to incentivize patentees to adopt quality-enhancing prosecution habits. Finally, the need to keep the ICR program solvent could act as a source of fiscal pressure for the PTO that might induce it to make changes to its examination operations to improve patent quality in the face of possible opposition from patentees—whom the agency views as its “customers.” In light of the fiscal dynamics created by the ICR program, the PTAB will need to be split off from the PTO or otherwise insulated from the PTO’s management in order to make this proposal work. 

The regulatory dynamics of the ICR program are modeled after the quasi-regulatory influence that the auto insurance industry exerts over both car manufacturers and drivers. Given that the PTO is depicted in the literature as an enfeebled agency bereft of certain basic regulatory tools, such as substantive rulemaking authority and enforcement powers, perhaps greater attention should be paid to how effective regulation can be achieved without such tools. For this reason, this Article draws on lessons from the insurance industry, whose members have managed to act as de

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9. The PTO uses the term “customer” to refer to those who use its services; in the context of patents, the customers would typically be patent applicants, patentees, and their attorneys. See, e.g., Getting Started—New Users, U.S. PAT. & TRADEMARK OFF. (July 4, 2009, 6:34 PM), https://www.uspto.gov/patents-application-process/applying-online/getting-started-new-users. Some scholars perceive the PTO’s usage of the term “customer” as indicative of the agency’s narrow focus on the needs of patentees while giving insufficient consideration to the public interest. See, e.g., Jay P. Kesan & Andres A. Gallo, The Political Economy of the Patent System, 87 N.C. L. REV. 1341, 1355 (2009) (“[T]he Patent Office’s main objective is to design an efficient system to fulfill customers’ demands. However, the definition of ‘customer’ is limited to industries and inventors, even though the patent system has an impact on consumers and citizens as well.” (footnote omitted)).

10. See infra notes 147–154 and accompanying text.

11. See infra Section II.A.

facto regulators in specific sectors of the economy, despite lacking the powers of a modern administrative agency. Perhaps a weak agency that struggles to regulate effectively can learn from a non-agency that manages to do so.

Indeed, the calculation of the ICR fee for a given patent can resemble the risk-adjusted calculation of auto insurance premiums, whereby the “premium” (that is, the ICR fee) for each patent would be assessed based on a set of risk factors affecting the likelihood of a PTAB challenge and a subsequent invalidation. A non-exhaustive list of risk factors may include: size/type of patentee; technology; ownership changes; number of patent claims; number of related applications; patent term remaining; number of assertions (via notice letter or litigation); number of accused infringers targeted or sued; and prosecution habits.\textsuperscript{13} For calculating the risk-adjusted ICR fees, the data needed are of the type that the PTO presently has ready access to or even generates itself. Specifically, the PTO’s Office of the Chief Economist\textsuperscript{14} could expand on its existing datasets\textsuperscript{15} by collecting and synthesizing the PTO’s data on patent prosecution and PTAB activity, and then cross-referencing that data with publicly available litigation records to determine which attributes of a patent render it likely to attract a PTAB challenge and be invalidated. The PTO can further refine its selection and weighing of risk factors by incorporating the latest insights from the relevant economics literature and legal scholarship. Indeed, the set of risk factors used to calculate the ICR fees can evolve when problematic actors change their tactics.

Overall, the ICR program may help shift the focus of the PTO—a self-funded agency reliant on user fees whose collected amounts increase with the number of patents granted and in force\textsuperscript{16}—from a passive, patentee-centric orientation to one that is more balanced with the public interest and more active in regulating a greater share of the patent system.

This Article proceeds in three Parts. Part I provides an overview of the problem of abusive patent assertions and the regulatory deficiencies that make patent reform difficult. Part I also explores how the PTO has a limited regulatory footprint within the patent system. Part II proposes one possible option for mitigating the patent system’s regulatory deficiencies: the establishment of an Invalidity Challenge Reimbursement Program, which would help expand the PTO’s regulatory footprint to allow it to

\begin{footnotes}
\textsuperscript{13} See infra Section II.D.
\textsuperscript{16} See infra note 46.
\end{footnotes}
better counteract abusive assertions. Part III addresses alternatives and fairness concerns and is followed by a brief Conclusion.

I. BACKGROUND

A. Complaints and Existing Proposals

The complaints about the patent system are frequently directed to the assertion of nuisance claims17 by “patent assertion entities” (PAEs) or, more pejoratively, “patent trolls.”18 The Federal Trade Commission defines a PAE as “a firm that primarily acquires patents and seeks to generate revenue by asserting them against accused infringers.”19 In recent years, over 60% of patent infringement cases filed in federal court may be attributable to PAEs.20 A major supplier of the patents that PAEs assert are operating companies that sell patents to monetize their patent portfolios.21 Although PAEs have grabbed the headlines regarding abusive patent assertions, some operating companies also wield their portfolios in highly problematic ways, including partnering with PAEs22 or bullying competitors.23

What makes the complained-of patent assertions particularly problematic is that the asserted patent claims are often invalid: in federal court, patent claims are invalidated almost half of the time.24 At the PTAB,


18. A search on Westlaw on March 8, 2018 reveals that over seventy articles with “patent troll” in the title were published in the past ten years. Recently, the Federal Trade Commission undertook a detailed investigation of PAEs. FED. TRADE COMM’N, PATENT ASSERTION ENTITY ACTIVITY: AN FTC STUDY (2016), https://www.ftc.gov/system/files/documents/reports/patent-assertion-entity-activity-fct-study/p131203_paten asserts_entity_activity_an_ftc_study_0.pdf. In the literature, the term “non-practicing entity” (NPE) is sometimes used interchangeably with PAE, although some NPEs (e.g., universities) are not PAEs.

19. Id. at 15.


patent claims that were instituted\textsuperscript{25} for Inter Partes Review (IPR)\textsuperscript{26} (currently the most popular post-issuance administrative proceeding for challenging patents)\textsuperscript{27} were held unpatentable in 69% of final written decisions in PTO fiscal year 2016.\textsuperscript{28} Notably, a recent study by Michael Frakes and Melissa Wasserman analyzing patent examiner granting patterns suggests that patents of questionable validity are five to eighteen times more likely to be involved in litigation than patents with stronger underlying validity characteristics.\textsuperscript{29} Despite a high likelihood of invalidation, patents that are asserted often go unchallenged (or challenges are dropped) because obtaining a formal adjudication of patent validity is very costly.\textsuperscript{30} Indeed, when approached by a patentee pre-suit or shortly after suit is filed, accused infringers will often agree to pay a nuisance fee or some amount below the cost of undertaking a formal defense, thereby rewarding the opportunistic assertion of weak patents.\textsuperscript{31}

Although PTAB post-issuance validity challenges were introduced several years ago by Congress\textsuperscript{32} as a less expensive alternative to district court litigation, they are still costly: the median cost of an IPR proceeding through petition filing is $100,000;\textsuperscript{33} by the time the proceeding reaches a hearing (after which a final decision will issue),\textsuperscript{34} the patent challenger may have spent $250,000.\textsuperscript{35} If there is an appeal to the U.S. Court of

\textsuperscript{25} See supra note 7. Prior to 2018, the PTAB often instituted review on only a subset of the claims listed in the petition. This “partial institution” practice was discontinued by the PTAB after the United States Supreme Court’s decision in \textit{SAS Inst. Inc. v. Iancu}, 138 S. Ct. 1348 (2018), which held that “[t]he agency cannot curate the claims at issue but must decide them all.” Id. at 1353.


\textsuperscript{27} Other post-issuance adversarial proceedings for challenging patents at the PTAB include Post-Grant Review (PGR), id. § 321, and the Transitional Program for Covered Business Method Patents (CBM), 37 C.F.R. §§ 42.300–304 (2018). As between IPR, PGR, and CBM petitions, IPRs constitute 91% of the total. U.S. PATENT & TRADEMARK OFFICE, PATENT TRIAL AND APPEAL BOARD STATISTICS 2 (2016) [hereinafter PTAB FY 2016 STATISTICS], https://www.uspto.gov/sites/default/files/documents/aia_statistics_september2016A.pdf. The statistics ending fiscal year 2016 were used because the statistics provided by the PTO for fiscal year 2017 and afterwards were not as detailed (or as complete) when this Article was being written.

\textsuperscript{28} See PTAB FY 2016 STATISTICS, supra note 27, at 10.

\textsuperscript{29} Michael Frakes & Melissa F. Wasserman, \textit{Do Patent Law Suits Target Invalid Patents?}, in \textit{SELECTION AND DECISION IN THE JUDICIAL PROCESS AROUND THE WORLD: EMPIRICAL INQUIRIES} (Yun-chien Chang ed., forthcoming) (manuscript at 19), https://ssrn.com/abstract=3129735 (reporting findings suggesting that “invalid patents are a staggering 5–18 times more likely to be asserted than valid patents, depending on the construction of the examiner leniency measure,” and observing that “this finding suggests a strong degree of targeting of litigation on invalid patents”).

\textsuperscript{30} In 2017, the median cost of a patent infringement suit in federal court with less than $1 million at risk was $500,000 (for all varieties, inclusive of pre- and post-trial and appeal); for a case with more than $25 million at risk, it was $3 million. AM. INTELLECTUAL PROP. LAW ASS’N, 2017 REPORT OF THE ECONOMIC SURVEY 41 (2017) [hereinafter AIPLA 2017 SURVEY].

\textsuperscript{31} See Chien, Reforming, supra note 17, at 342–44.

\textsuperscript{32} The post-issuance proceedings to challenge patents at the PTAB were established in 2011 by the Leahy-Smith America Invents Act, Pub. L. No. 112-29, 125 Stat. 284 (2011) (codified as amended in scattered sections of 35 U.S.C.).

\textsuperscript{33} AIPLA 2017 SURVEY, supra note 30, at 43.


\textsuperscript{35} AIPLA 2017 SURVEY, supra note 30, at 43.
Appeals for the Federal Circuit, the median cost rises to $350,000. For resource-constrained entities like startups, challenging a patent at the PTAB may still be unaffordable. By comparison, PAEs often seek five-figure settlement amounts, knowing that it is well below the cost of defense.

Given the prominent role of invalid patents in the dynamics of problematic patent enforcement, one way to mitigate the problem of abusive assertions would be to improve patent quality. To this end, scholars have suggested several ways in which the PTO could improve its processes to decrease the likelihood that an invalid patent will be granted, such as: allocating adequate time for examination; providing better prior art to examiners; restricting continuation applications; increasing filing or other pre-grant fees; and imposing bonding requirements on patent applicants.

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37. AIPLA 2017 SURVEY, supra note 30, at 43.
39. See Patent Risk Digest, RPX CORP. (May 2016), https://www.rpxcorp.com/intelligence/patent-risk-digest/may-2016 (“Between 2002 and early 2015, Shipping & Transit [LLC] . . . [brought] some 400 cases . . . [having] all the hallmarks of a ‘nuisance’ campaign, with . . . a strategy that focuses on a high volume of five-figure settlements from defendants—who pay just to avoid the costs associated with ongoing litigation.”); see also Joe Mullin, Supreme Court Will Weigh in on Troll-Killing Patent-Review Process, ARS TECHNICA (June 13, 2017, 7:10 AM), https://arstechnica.com/tech-policy/2017/06/supreme-court-will-weigh-in-on-troll-killing-patent-review-process (“IPRs have not, and likely cannot, solve the problem of patent trolls that thrive by seeking nuisance settlements from small businesses for five-figure sums. But for companies with some resources, the IPR process has dramatically lowered the cost of standing up and fighting back.”).
40. Chien, Startups, supra note 38, at 484.
42. See, e.g., John R. Thomas, Collusion and Collective Action in the Patent System: A Proposal for Patent Bounties, 2001 U. ILL. L. REV. 305, 342 (proposing that the PTO “establish a system of cash prizes, or bounties, to encourage private citizens to provide it with . . . prior art that contributes to the rejection of a patent application,” whereby the bounty may be “funded via applicant fines”).
43. A continuation application is an additional, later-filed application whose filing date relates back to an earlier application. 35 U.S.C. § 120 (2018). Because continuation applications are prone to abuse and have been blamed for aggravating the backlog at the PTO, several commentators have called for restricting this practice. See, e.g., Mark A. Lemley & Kimberly A. Moore, Ending Abuse of Patent Continuations, 84 B.U. L. REV. 63, 64–65 (2004); Cecil D. Quillen, Jr. & Ogden H. Webster, Continuing Patent Applications and Performance of the U.S. Patent and Trademark Office—One More Time, 18 FED. CIR. B.J. 379, 402 (2009).
44. See, e.g., Michael D. Frakes & Melissa F. Wasserman, Does the U.S. Patent and Trademark Office Grant Too Many Bad Patents?: Evidence from a Quasi-Experiment, 67 STAN. L. REV. 613, 673 (2015) (observing that the “PTO’s discretionary granting tendencies could be substantially diminished” by “decrease[ing] the PTO’s reliance upon postallowance fees to fund patent examinations”); Mark Schankerman & Florian Schuett, Screening for Patent Quality: Examination, Fees, and the Courts I (Mar. 2017) (unpublished manuscript), https://www.uspto.gov/sites/default/files/documents/Schankerman_patent_screening_final.pdf (reporting simulation results showing that “examination and pre-grant fees are complementary, and that pre-grant fees screen more effectively than post-grant fees”).
applicants to discourage the filing of weak applications.45 However, because the PTO is a user-fee funded agency,46 it is unclear whether it presently has the institutional will to implement changes that could materially alter its examination operations, especially if such changes might upset its “customers” (i.e., patentees and applicants)47 by prolonging examination or making it more expensive to obtain a patent.

In addition, because only a tiny fraction of patents are asserted, an argument can be made that any attempt to increase the quality of all patents during examination may be inefficient.48 Accordingly, the literature also contains a variety of proposals for dampening the mechanics of abusive litigation, such as: increasing maintenance fees to shrink the universe of patents that may be asserted by problematic actors;49 restricting venue;50 expanding the customer suit exception;51 limiting damages;52 and requiring administrative sanity-checks for all patent suits.53 While much of the literature has focused on curtailing problematic litigation, the bulk


47. See supra note 9.

48. See Mark A. Lemley, Rational Ignorance at the Patent Office, 95 NW. U. L. REV. 1495, 1497 (2001) [hereinafter Lemley, Rational Ignorance] (“Because so few patents are ever asserted against a competitor, it is much cheaper for society to make detailed validity determinations in those few cases than to invest additional resources examining patents that will never be heard from again.”).


of the assertion activity (approximately 70% according to one study)\textsuperscript{54} occurs out-of-court without a lawsuit being filed, whereby patentees approach prospective licensees and put accused infringers on notice of potential liability through demand letters. In such circumstances, some accused infringers may find it financially expedient to pay a nuisance-value license fee instead of mounting a formal defense.\textsuperscript{55} The problem of demand letters has been the subject of multiple patent reform bills at the federal\textsuperscript{56} and state\textsuperscript{57} levels in recent years. There is no federal law yet, but approximately thirty states have enacted legislation outlawing bad faith patent assertions.\textsuperscript{58} As of now, the scope of protection accorded by such legislation is unclear, given the varying state laws and the possibility of preemption by future federal legislation.\textsuperscript{59}

The fact that most patent assertions either do not involve litigation or, if they do, are settled before a ruling on the merits,\textsuperscript{60} reflects, in large part, the high cost of defense. To lighten the financial burden of undertaking a formal defense, the literature presents several alternatives to the fee-shifting provision under the Patent Act that requires the showing of an “exceptional case.”\textsuperscript{61} For example, bounties,\textsuperscript{62} one-way fee-shifting,\textsuperscript{63} and fee-shifting at the PTAB\textsuperscript{64} have been proposed to reward invalidations and discourage frivolous assertions.\textsuperscript{65} However, proposals that require patentees to compensate accused infringers may be of limited...


\textsuperscript{57} See Qian Huang, Grace King & Tim Rawson, Navigating the Landscape of Anti-trolling Legislation, INTELL. PROP. MAG., June 2016, at 54, 54, https://www.pillsburylaw.com/images/content/1/0/v2/104295/054-056IPM-June-2016Feat.pdf.

\textsuperscript{58} Id.


\textsuperscript{60} See Allison et al., Modern Patent Litigation, supra note 24, at 1780 (“[L]ess than 10% of the patent lawsuits filed in 2008 and 2009 (462 of 5,029) resulted in any merits decision.”).

\textsuperscript{61} 35 U.S.C. § 285 (2018) (“The court in exceptional cases may award reasonable attorney fees to the prevailing party.”).


\textsuperscript{63} See Jay P. Kesan, Carrots and Sticks to Create a Better Patent System, 17 BERKELEY TECH. L.J. 763, 795 (2002) (proposing “one-way, pro-defendant, fee-shifting” when “patent claim(s) are invalidated or revoked in a litigation or opposition proceeding based on prior art that should have been discovered by [the patentee] through a reasonable prior art search”).

\textsuperscript{64} See Megan M. La Belle, Fee Shifting for PTAB Proceedings, 24 TEX. INTELL. PROP. L.J. 367, 399 (2016) [hereinafter La Belle, Fee Shifting] (“Patent litigants who employ PTAB proceedings in a way that advances the AIA’s objectives ought to recover their attorney’s fees.”).

\textsuperscript{65} See infra Sections III.A.1–2.
effectiveness if the patentee is a shell company or a small entity with no assets and is therefore judgment-proof.\(^{66}\) As mentioned previously, over 60\% of patent infringement cases filed in federal court are attributable to PAEs,\(^{67}\) many of which act through shell companies that have no assets beyond the patent itself.\(^{68}\) In addition, caution is warranted when adopting fee-shifting proposals as they might discourage legitimate assertions by patentees of limited means, such as startups.\(^{69}\)

Further complicating attempts to combat abusive assertions is the evolution of tactics by problematic actors in response to changes in the law. For example, when Congress modified the joinder standard in patent cases so that a patentee could no longer freely join multiple, unrelated defendants in a single suit for allegedly infringing the same patent,\(^{70}\) patentees began filing multiple suits naming individual defendants and later obtaining consolidation of those suits for pre-trial purposes.\(^{71}\) Similarly, when the Supreme Court lowered the hurdle for satisfying declaratory judgment jurisdiction by accused infringers,\(^{72}\) some patentees began suing first without sending a demand letter in order to preempt accused infringers from filing declaratory judgment actions in jurisdictions less favorable to patentees.\(^{73}\) Such attempts by patentees to circumvent or otherwise mitigate the impact of changes in the law oftentimes proceed largely unimpeded because any responses from the courts and Congress are usually delayed—sometimes indefinitely—due to the inefficiencies in the process of revising decisional and statutory law.

Because an environment that sustains abusive patent assertions may have multiple contributing factors—such as poor patent quality, weak regulation of out-of-court assertions, settlements before merits determinations, the high cost of defense, and the evolving tactics of problematic actors—material improvements to the patent system may be difficult to achieve unless its regulatory components provide adequate regulatory coverage that spans both litigation and out-of-court activities to discourage the assertion of questionable patents, and can readily adapt

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66. See infra note 253 and accompanying text.
67. See RPX CORP., supra note 20, at 7.
68. See infra note 252 and accompanying text.
69. See infra note 251 and accompanying text.
when problematic behaviors evolve. Unfortunately, the coverage provided by the current regulatory framework of the patent system contains large gaps in this regard.

As of now, the patent system’s primary regulatory components are the federal courts and the PTO. The courts’ ability to regulate the patent system is largely limited to what happens in litigation, which substantially restricts their regulatory footprint because much of the assertion activity does not mature into a lawsuit, and most lawsuits settle before a merits decision. As for the PTO, its official duties are largely limited to patent examination and issuance. Other than providing a forum for revocation proceedings initiated by third parties, the agency generally takes a hands-off approach to regulating other aspects of the patent system. The limited regulatory footprint of the courts and that of the PTO have accordingly left large swaths of the patent system effectively unregulated by either entity, such as out-of-court assertions, licensing, and transactions. And, as revealed by the “resilience” of the patent system, their regulatory efforts within their respective, limited regulatory spheres have not materially improved the situation with regard to poor patent quality and the high cost of defense. Because problematic assertions have multiple contributing factors that span a variety of contexts, it may be necessary to expand the regulatory footprint of the courts and/or that of the PTO to ensure adequate regulatory coverage. Doing so for the courts may be difficult, given their jurisdictional constraints under Article III. But the PTO is not so constrained, such that it may be in a better position to undertake expanded regulatory responsibilities—beyond just focusing on patent quality issues—to include a wide range of post-issuance activity, both in and out of court. In considering how the PTO’s regulatory footprint can be enlarged, it may be helpful to analyze why the current regulatory capacity of the PTO may be inadequate or otherwise underdeveloped.

B. The PTO’s Regulatory Passivity

Looking just at its name, the PTO may appear to the public at large as the logical choice to act as the primary regulator of the patent system. But that role has been largely co-opted by the Federal Circuit, which scholars have described as a de facto agency that administers the Patent Act. The PTO, which has been relegated to a secondary role, is an agency that is seemingly enfeebled by design (e.g., powers largely limited to

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74. U.S. CONST. art. III, § 2, cl. 1 (setting forth “case or controversy” limitation on judicial power).
For much of its history, through the present day, the PTO’s role in the patent system has been largely limited to the examination function.\textsuperscript{83} Once a patent application has passed through the examination stage and issues as a patent, the PTO takes a hands-off approach during the patent term.\textsuperscript{84} Other than the (extremely) rare Director-initiated ex parte reexamination,\textsuperscript{85} any substantive activity at the PTO affecting an issued patent is usually initiated by the patentee (e.g., reissues)\textsuperscript{86} or by a third party (e.g., inter partes review at the PTAB). The only interaction most patentees will have with the PTO after issuance is the periodic payment of the maintenance fees.\textsuperscript{87} The successful applicant takes his patent off into the world to enforce, and in nearly all cases the patentee’s ability to do so is greatly diminished by the administrative state’s intervention.\textsuperscript{88}

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\textsuperscript{76} 35 U.S.C. § 2(a) (2018) ("The United States Patent and Trademark Office . . . (1) shall be responsible for the granting and issuing of patents and the registration of trademarks; and (2) shall be responsible for disseminating to the public information with respect to patents and trademarks.").

\textsuperscript{77} Merck & Co. v. Kessler, 80 F.3d 1543, 1549–50 (Fed. Cir. 1996) ("[T]he broadest of the PTO’s rulemaking powers—35 U.S.C. § 6(a)—authorizes the Commissioner to promulgate regulations directed only to ‘the conduct of proceedings in the [PTO]; it does NOT grant the Commissioner the authority to issue substantive rules.” (second alteration in original) (citing Animal Legal Def. Fund v. Quigg, 932 F.2d 920, 930 (Fed. Cir. 1991))).

\textsuperscript{78} See, e.g., Frakes & Wasserman, Time Allocated, supra note 41.


\textsuperscript{80} Jonathan S. Masur, Regulating Patents, 2010 SUP. CT. REV. 275, 302 (2010).

\textsuperscript{81} Id. at 302–03.

\textsuperscript{82} John F. Duffy, The FCC and the Patent System: Progressive Ideals, Jacksonian Realism, and the Technology of Regulation, 71 U. COLO. L. REV. 1071, 1079 (2000) ("[T]he patent system continues to thrive with much the same structure that it was given in 1836.").


\textsuperscript{85} U.S. PATENT & TRADEMARK OFFICE, MANUAL OF PATENT EXAMINATION PROCEDURE § 2239 (9th ed. 2018) (citing 37 C.F.R. § 1.520 (2018)), https://www.uspto.gov/web/offices/pac/mpep/s2239.html ("A decision to order reexamination at the Director’s initiative is . . . rare. Only in compelling circumstances, after a review of all the facts concerning the patent, would such a decision be made.").

maintenance fees required to keep a patent in force.87 And in the event of litigation involving a patent, the Patent Act imposes a duty to notify the agency—not on the patentee but rather on the clerk of the court where the patent suit is filed.88

At a high level, the PTO’s regulatory passivity is reflected in the lack of any meaningful public interest focus by the PTO beyond the interests of patentees. An illustration of this is provided by the PTO website,89 which, as of the writing of this Article, does not solicit information from the public about patent abuses or provide information on how to handle them. Relatedly, information about challenging patents at the PTAB is not presented in a manner that can be readily found and easily understood by the general public. Although the PTO undertook some public-focused initiatives in recent years, those efforts have been fleeting. For example, during Michelle Lee’s tenure as PTO Director, the PTO had created a website to provide a plain-English online patent litigation “toolkit” to help “main street” retailers and consumers understand their options for handling demand letters,90 including seeking invalidation of the patent.91 This public resource, which was criticized by patent attorneys for “disseminating information on how to ‘challenge’ patents,”92 was removed from the PTO website upon a change of presidential administration.93 Presumably, furnishing information to help members of the public handle patent assertions is not deemed the responsibility of the PTO. This lack of public interest focus is reflective of the PTO viewing only patentees as its “customers,” which has led the agency to conflate the private interests of patent holders with that of the public.94

Notably, the PTO operates in a manner that seems largely unaffected by the current state of the patent system95: the PTO continues to grant an

88. 35 U.S.C. § 290 (“The clerks of the courts of the United States, within one month after the filing of an action under this title shall give notice thereof in writing to the Director . . . .”).
91. This information is no longer accessible on the PTO website, but it has been archived by the Internet Archive’s “Wayback Machine” at https://web.archive.org/web/20141208132117/http://www.uspto.gov:80/patents/litigation/I_got_a_letter.jsp.
93. As of January 15, 2018, the link to the patent litigation toolkit (http://www.uspto.gov/patents/litigation) returns a 404 error on the PTO website, and updated or alternative links cannot be found. However, the original page with working links has been archived by the Internet Archive’s “Wayback Machine” at https://web.archive.org/web/20141219092216/http://www.uspto.gov/patents/litigation.
95. Cf. Lefstin, supra note 84, at 853 n.45 (“Historically, the Patent Office appeared little influenced even by the external influences most directly relevant to its responsibilities.”).
ever-increasing number of patents each year, despite concerns raised by numerous commentators about patent quality, as well as the high rate of invalidations in post-issuance proceedings at the PTAB. Part of this disconnect might be attributable to the fact that the PTO’s own internal performance metrics may not indicate that there is a problem. That is, the PTO may not be tracking or measuring patent quality in a way that would explain the high invalidity rates in litigation and in post-issuance proceedings at the PTAB. Much of the PTO management’s focus is directed to the metrics for application pendency and workload management—so much so that, according to a 2015 audit by the Inspector General of the Department of Commerce, patent examiners were disciplined substantially more often for production and docket management issues (264 and 233 examiners, respectively, in a two-year period) than for quality issues (only 7 examiners in that same period). The PTO’s focus on throughput is further apparent from the “Performance Highlights” section of its Performance and Accountability Report for fiscal year 2017, in which “Optimize Patent Quality and Timeliness” is listed as a strategic goal with two “Key Performance Measures,” both of which relate to application pendency (“Average First Action Pendency” and “Average Total Pendency”). In a later section of the PTO’s 2017 Performance Report, some metrics related to patent quality are presented, but they likely capture some type of process-oriented, superficial indication of patent quality because the metrics seemingly have little relationship to the high invalidity rates in the district courts and at the PTAB. Specifically, the PTO’s 2017 Performance Report includes a table displaying “the correctness of office actions” in connection with various statutory grounds for rejection (§§ 101, 102, 103, and 112), in which all of the “correctness” indicators exceed 90%. If the PTO’s own internal metrics show that it is scoring over 90% on various “quality” indicators, the PTO’s management probably does not perceive a crisis in quality, and thus sees no reason to change its operational priorities. This lack of impetus for change is compounded by the fact that the PTO is largely insulated from the consequences of issuing weak patents, as it cannot be directly sued under the Administrative Procedure Act for issuing an invalid patent. Absent congressional action, there are no direct

96. See supra note 2 and accompanying text.
97. A Westlaw search conducted on July 31, 2018, using the search term “ATLEAST("patent quality")” returned 221 law review articles that mentioned “patent quality” at least five times.
98. See supra note 28 and accompanying text.
100. PTO 2017 PERFORMANCE, supra note 2, at 14–15.
101. Id. at 53–55.
102. See supra notes 24–28 and accompanying text.
103. PTO 2017 PERFORMANCE, supra note 2, at 53 tbl.7.
104. Pregis Corp. v. Kappos, 700 F.3d 1348, 1359 (Fed. Cir. 2012) (“We conclude that a Congressional intent to preclude judicial review of the PTO’s reasons for issuing patents is fairly
external mechanisms that parties harmed by invalid patents can use to force the PTO to change its operational priorities. This “accountability gap” may predispose the PTO to largely continue what it has always been doing.

In those rare instances where the PTO has endeavored to take affirmative steps to meaningfully reform its processes in furtherance of the public interest beyond the immediate needs of patentees, the agency has, on several occasions, subsequently abandoned the endeavor in the face of opposition from patentees. In recent years, some of the more notable reforms that the PTO had proposed—and subsequently withdrawn—include: imposing restrictions on continuation applications to decrease the backlog and conserve examination resources; requiring examination support documents to facilitate review of applications with large numbers of claims; and requiring patentees to provide and update attributable owner or real-party-in-interest information in order to properly track patent ownership changes to enhance, among other things, transparency in patent assertions.

discernible’ from the statutory scheme of the Patent Act… [C]ollaterally attack[ing] issued patents through suits under the APA would destroy the Patent Act’s careful framework for judicial review, . . .” (citation omitted)). In light of the public comments received on the proposed rules, the PTO “opted not to advance the proposed rules to final at this time.”


106. The PTO introduced a rule in 2007 that required “an examination support document” (ESD) for applications having claims that exceeded a certain number. 2007 PTO Rules Package, supra note 105, at 46716. An ESD is a document prepared by the applicant that is intended to assist the examiner, in which the applicant reports the results of a prior art search it has conducted and explains how the claims are patentable over the prior art and supported by the specification. Id. at 46718. The ESD rule, which was challenged in court in the Tafas litigation along with the rule limiting continuations, was subsequently rescinded. See supra note 105. Presently, ESDs are required only in limited circumstances such as Accelerated Examination. See U.S. PATENT & TRADEMARK OFFICE, MANUAL OF PATENT EXAMINING PROCEDURE § 708.02(a) (9th ed., rev. Jan. 2018), https://www.uspto.gov/web/offices/pac/mpep/s708.html#d0e76886.

107. In 2014, the PTO proposed rules for collecting and updating the “attributable owner” information of issued patents and pending applications, and making the information publicly available with the goal of increasing market transparency and helping the public defend itself against abusive litigation. Changes to Require Identification of Attributable Owner, 79 Fed. Reg. 4105 (proposed Jan. 24, 2014) (to be codified at 37 C.F.R. pt. 1) [hereinafter Attributable Owner Proposed Rule]; see also FTC, EVOLVING IP MARKETPLACE, supra note 73, at 130 (“PTO records provide poor notice regarding current ownership of patents. Testimony suggested that parties often fail to report assignments to the PTO or list ‘shell companies’ as assignees, ‘making it as difficult as possible, apparently, to trace back to the true assignee of the patent.’” (footnotes omitted)). In light of the public comments received on the proposed rule, the PTO “opted not to advance the proposed rules to final at this time.” Attributable Ownership, U.S. PAT. & TRADEMARK OFF. (Feb. 5, 2014, 2:11 PM), https://www.uspto.gov/patent/initiatives/attributable-ownership; see also Ryan Davis, USPTO Backs Away from Patent Transparency Rules, LAW360 (Oct. 24, 2014, 4:48 PM), https://www.law360.com/articles/590197/uspto-backs-away-from-patent-transparency-rules
Finally, the PTO’s logistical issues may contribute to the agency’s disinclination to undertake major operational changes to enhance quality in favor of simply continuing what it has been doing. First, the sheer number and variety of applications that are filed, which exceed 600,000 annually in recent years, may make it difficult for the agency to devote substantially more resources to the examination of every application. Second, there may be a considerable time lag between when a particular patent issues and when it is invalidated, which may delay any responsive changes by the PTO. Third, the number of patents-in-force (3 million) makes it unrealistic for the PTO to actively police validity, post-issuance, by itself. With respect to the last point, the scope of the problem may require the PTO to rely on the public to help it identify problematic patents and bring them to its attention—such as through PTAB challenges—given that only a small fraction of patents are ever asserted and much of the activity occurs outside of litigation.

The next Part explores how the PTO, despite its weaknesses, can become an active regulator within the patent system whose influence may reach far beyond examination.

II. PROPOSAL: PTO REIMBURSEMENT OF PTAB INVALIDITY CHALLENGES

As revealed by the discussion in the previous Part, the PTO’s present-day regulatory footprint in the patent system has remained rather narrow through a confluence of history, institutional design, ingrained practices, and circumstances. The PTO also lacks some of the regulatory tools of the more (arguably) powerful agencies, such as substantive rulemaking authority. And when compared to an agency such as the Securities and Exchange Commission (SEC), which has broad enforcement powers, the PTO, whose formal role in the patent system is largely limited to patent examination, might be viewed as a relative weakling. But maybe the

(Reporting remarks by PTO Deputy Director Michelle Lee and summarizing concerns raised by stakeholders).

108. PTO 2017 PERFORMANCE, supra note 2, at 27.
109. Cf. Lefstin, supra note 84, at 853 n.45 (observing that the “long lapse of time between the Patent Office’s grant of the patent and its invalidation during litigation, and the lack of any formal mechanism to recognize and communicate such information to the examining corps, made the Patent Office unable or unwilling to change its standards of patentability in response”).
110. See infra note 229.
111. See Lemley, Rational Ignorance, supra note 48, at 1501 (estimating that “at most only about two percent of all patents are ever litigated”).
112. See supra note 77 and accompanying text.
113. What We Do, U.S. SEC. & EXCHANGE COMM’N, https://www.sec.gov/Article/whatwedo.html (“The [Securities Exchange] Act [of 1934] empowers the SEC with broad authority over all aspects of the securities industry. This includes the power to register, regulate, and oversee brokerage firms, transfer agents, and clearing agencies as well as the nation’s securities self regulatory organizations (SROs).”) (last modified June 10, 2013).
comparisons between the PTO and the more “powerful” agencies may not be all that helpful. Indeed, some scholars question the desirability\textsuperscript{116} or the necessity\textsuperscript{117} of according \textit{Chevron}\textsuperscript{118} deference to the PTO on matters of substantive law. In considering how the PTO might become a more engaged regulator, it may be instructive to look at entities which, like the PTO, do not have the powerful enforcement tools of modern regulatory agencies, but are somehow able to exert a regulatory function. That is, instead of just looking to powerful agencies like the SEC for ideas on enhancing and broadening the PTO’s regulatory footprint, perhaps we should also look at the insurance industry, whose members do not have any of the powers associated with an administrative agency but still manage to act as highly influential, de facto regulators in specific sectors of the economy.

\textit{A. Lessons from the Insurance Industry}

Although insurance is often thought of as a mechanism for reducing ex post costs arising from unforeseen or risky events, it also has the effect of incentivizing parties to refrain from risky behavior.\textsuperscript{119} To manage risk, auto insurers, for example, calibrate the insurance premiums for each driver-car combination according to the likelihood of paying out a claim, such as: the characteristics of the driver (e.g., age, gender, marital status, driving experience); the characteristics of the vehicle (e.g., safety features, miles driven, location); accident or claims history; and traffic violations.\textsuperscript{120} Through the process of assessing and charging risk-adjusted premiums, insurers manage risk not only by ensuring that an adequate pool of money exists to pay out claims but also by deterring undesirable (i.e., risk-
enhancing) conduct.\footnote{See Kyle D. Logue, Encouraging Insurers to Regulate: The Role (if Any) for Tort Law, 5 U.C. IRVINE L. REV. 1355, 1356 (2015) ("In many of the same ways that government agencies monitor and place limits on the risky behaviors of individuals and businesses within their jurisdictions, insurance companies also monitor and place limits on the risky behavior of their insureds.").} In further mitigating risk, insurers have successfully lobbied for changes to both the design of the products insured (e.g., cars) as well as the regulations affecting those products (e.g., seat belt laws).\footnote{See infra note 131 and accompanying text.} As noted by scholars, the alignment of the insurers’ economic interests in preventing losses with society’s interest in enhancing safety\footnote{See Ben-Shahar & Logue, supra note 119, at 202 (observing that, in some cases, insurers’ incentives may not necessarily be aligned with those of society in general, but “in a remarkable range of situations, the interests of insurers and of society are aligned, at least enough so that through competition insurers are induced to find effective ways to reduce overall accidents and safety costs”).} has allowed insurers to exert a quasi-governance or regulatory effect, rendering them de facto private regulators.\footnote{See infra note 131 and accompanying text.} The auto insurance industry can thus be viewed as effectively “regulating” automobile manufacturers and drivers through their risk management practices.

Of primary importance in the insurance companies’ risk management practices is the collection and analysis of massive quantities of data, which underlie the calculation of the risk-adjusted premiums charged to each policyholder in light of the specific risk of loss associated with that policyholder. In some cases, the manner of collecting and using data may be sophisticated enough to allow insurers to effectively establish detailed standards of behavior for policyholders to follow.\footnote{See Richard V. Ericson, Aaron Doyle & Dean Barry, Insurance as Governance 48 (2003) ("Insurance offers governance through surveillance and audit."); Kenneth S. Abraham, Four Conceptions of Insurance, 161 U. PA. L. REV. 653, 685 (2013) ("One of the principal insights of the insurance-as-governance scholars is that, in the modern state, insurers often perform quasi-governmental, behavior-control functions."); Logue, supra note 121, at 1360 & n.15 (collecting sources showing that “[m]any commentators have noted that insurance companies can and do act as regulators of risk”).} For example, in the case of auto insurance, the insurer may collect data through devices that are plugged into the car to measure driving style and specific habits such as hard braking, time of day driven, and distance driven.\footnote{See e.g., Alexander B. Lemann, Coercive Insurance and the Soul of Tort Law, 105 GEO. L.J. 55, 56 (2016) ("With technologies like telematics devices, insurance companies are increasingly able to establish standards of behavior and penalize deviations from those standards."); see also Abraham, supra note 124, at 685 ("[T]o combat moral hazard, property and liability insurers often charge experience-rated premiums. Experience-rating premiums influences the behavior of policyholders by creating incentives for them to behave more carefully than they would otherwise behave."); Jeffrey W. Stempel, The Insurance Policy as Social Instrument and Social Institution, 51 WM. & MARY L. REV. 1489, 1495 (2010).} Because hard braking, late night drives on weekends, and lots of miles driven may be correlated with an increased likelihood of accidents, the premium would be adjusted according to their frequency and/or magnitude.\footnote{One example is the “Snapshot” program run by Progressive Casualty Insurance Company, which requires a driver to either download an app or plug in a device under the steering wheel. Snapshot Means BIG Discounts for Good Drivers, PROGRESSIVE, https://www.progressive.com/auto/discounts/snapshot (last visited Mar. 12, 2019).} That the
insurers’ risk management strategies can encourage pro-social behavior among its policyholders is not limited to the auto insurance industry: property insurers have encouraged homeowners to engage in risk mitigation by offering premium discounts for installing smoke detectors, sprinkler systems, and storm-resistant features.\(^{128}\)

In addition to analyzing data collected from the insured and third-parties,\(^ {129}\) the insurance industry undertakes research into the underlying causes of covered losses and explores techniques for mitigation (i.e., “loss engineering”), which have contributed to the development of safer products and the adoption of legislation enhancing public safety. Notably, some insurers have established industry-wide organizations dedicated to loss engineering, such as the Insurance Institute for Highway Safety (IIHS). The IIHS, which is “wholly supported by auto insurers and insurance associations,” conducts research into the reasons behind motor vehicle crashes.\(^ {130}\) Work by the IIHS, especially its crash tests, along with lobbying by the insurance industry, have led to safer vehicle design (e.g., frontal airbags) as well as the adoption of seat belt laws and graduated licensing requirements.\(^ {131}\) And like the auto industry, there is an analogous research organization supported by property insurers—the Insurance Institute for Business & Home Safety (IBHS)—that tests building materials and construction practices for their ability to withstand natural disasters like wind, rain, hail, and wildfire.\(^ {132}\) In some cases, the insurance industry’s loss engineering organizations have been directly involved in the regulatory process at the federal level. For example, the National Highway Traffic Safety Administration (NHTSA) partnered with IIHS in recent years to broker an agreement with twenty automakers to make automated emergency braking standard on passenger vehicles by 2022.\(^ {133}\)

To summarize, in the course of achieving their risk management goals—that is, decreasing the frequency and magnitude of covered losses—the auto insurers have managed to effect a form of quasi-regulation without the trappings of a regulatory agency. The insurers drive instead of just traditional factors. It’s simple. Drive safe and save. Drive extra safe and save even more.”

\(^{128}\) Ben-Shahar & Logue, supra note 119, at 224.

\(^{129}\) For example, an insurance company may obtain information from the department of motor vehicles regarding an accident involving the insured. See, e.g., How Information is Protected or Disclosed, CAL. DEPT’MOTOR VEHICLES, https://www.dmv.ca.gov/portal/dmv/detail/dl/how_info_shared (“Insurance companies licensed to do business in California may request information to obtain information on an accident with their insured.”) (last visited Mar. 12, 2019).


\(^{131}\) See id.; see also Ben-Shahar & Logue, supra note 119, at 222–23.

\(^{132}\) About IBHS, INS. INST. FOR BUS. & HOME SAFETY, https://disastersafety.org/about (last visited Mar. 12, 2019); see also Ben-Shahar & Logue, supra note 119, at 224–25 (comparing IBHS and IIHS).

accomplished this by collecting data, conducting safety-related research, and using their findings to: (1) set risk-adjusted premiums, which may influence the behaviors of their policyholders; and (2) lobby manufacturers and the government for design changes and legislation, respectively, that would enhance vehicle safety. The next Section explores how these lessons may be adapted for the PTO.

B. Proposal Overview

The quasi-regulatory practices of the insurance industry may hold lessons for the PTO’s participation in the regulation of the patent system because the problems for which the complaints have been the loudest (e.g., the “patent troll” phenomenon)\textsuperscript{134} can be viewed as risk management issues. Specifically, how can the patent system discourage the assertion of weak (i.e., likely invalid) patents, which is perpetrated by only a small fraction of patentees? Relatedly, how can we make it less costly for accused infringers to challenge patents, so as to discourage both the assertion of weak patents by patentees and the payment of nuisance fees by accused infringers (which may be reinvested in additional problematic assertions)?

Presently, the cost of handling problematic patent assertions—and by extension, policing patent quality—is borne primarily by accused infringers, while the PTO generally takes a hands-off approach after issuance and remains largely insulated from the consequences of granting low quality patents.\textsuperscript{135} As discussed previously, the PTO’s regulatory passivity may be an artifact of its history, institutional design, ingrained practices, and circumstances.\textsuperscript{136} However, by modeling problematic assertions as a risk management issue, it is possible that the PTO has nearly all the tools it needs to act as an impactful regulator whose reach can extend beyond examination, even though it may lack some of the tools (e.g., substantive rulemaking authority, broad enforcement powers) that are available to other agencies.

First, like the insurance companies, the PTO currently generates and collects a tremendous amount of data. It has an Office of the Chief Economist that can analyze this data to inform policymaking.\textsuperscript{137} The ability to collect, analyze, and act on data is a characteristic that sets the PTO apart from the courts, which currently serve as the de facto regulator of the patent system. Second, the PTO presently collects fees (i.e., maintenance fees) that every patent owner must pay periodically to keep a patent in force.\textsuperscript{138} A mandatory requirement that must be satisfied periodically can be a useful tool for exerting regulatory influence, as illustrated by how the auto insurance industry exerts influence over driver

\textsuperscript{134} See supra note 18 and accompanying text.
\textsuperscript{135} See supra Section I.B.
\textsuperscript{136} See supra Section I.B.
\textsuperscript{137} See supra note 14.
\textsuperscript{138} See supra note 87.
behavior through the requirement that every driver must carry insurance (and hence must periodically pay premiums) as a condition of operating a vehicle. As with the case of risk-adjusted auto insurance premiums, properly calibrating the periodic, mandatory fees assessed for a given patent in accordance with the likelihood of that patent’s invalidation could be a useful tool for influencing patentee behavior. Third, the PTO has considerable influence in the development of both case law and legislation affecting the patent system.\textsuperscript{139} Much like the manner in which the insurance companies lobbied for regulations requiring certain safety features,\textsuperscript{140} the PTO is well positioned to advocate for changes to patent law and related procedures. Finally, there is the PTAB, which is a tribunal empowered to determine patent validity that is accessible to a much broader group of accused infringers than a federal district court: because there is no standing requirement for IPRs, anyone (other than the patentee) can file an IPR petition to challenge a patent at the PTAB.\textsuperscript{141}

There is, however, an important item that is missing: a fiscal impetus that would induce the PTO to use its existing capabilities and resources (as listed above) to take a more active role in, among other things, policing validity post-issuance with the help of the public, discouraging problematic litigation and nuisance-value payments, and providing greater regulatory coverage over out-of-court patent enforcement activities. To this end, this Article draws on the lessons from the insurance industry to propose one possible option for supplying the impetus necessary for the PTO to redirect its capabilities for the purpose of expanding its regulatory footprint in the patent system: Congress should require the PTO to administer an “Invalidity Challenge Reimbursement Program” (ICR program) that reimburses the petition fees, reasonable attorney fees, and related expenses incurred by accused infringers who have prevailed in a post-issuance proceeding at the PTAB (including appeal, if any) by invalidating at least one patent claim. A claim that is amended during a PTAB challenge will count as having been “invalidated” for reimbursement purposes because the original version did not survive the proceeding. To fund the program, Congress should require the agency to charge a periodic “ICR fee” on each patent-in-force that is tailored to the risk of a payout associated with that patent.

As described in greater detail below and in the next Section, the ICR program is expected to introduce a feedback loop into the patent system that involves the PTO, the patentees, and the public. The specific contours of the PTO’s expanded regulatory footprint are defined by this feedback

\textsuperscript{139} See infra notes 176–190 and accompanying text.

\textsuperscript{140} See supra note 131 and accompanying text.

\textsuperscript{141} 35 U.S.C. § 311(a) (2018) (“[A] person who is not the owner of a patent may file with the Office a petition to institute an inter partes review of the patent.”). Post-Grant Review (PGR), which is used much less often than IPRs, also does not have a standing requirement. Id. § 321(a). However, Covered Business Method (CBM) review does have a standing requirement similar to Article III. 37 C.F.R. § 42.302(a) (2018).
loop, which would encompass both examination and assertions (litigated and unlitigated), as well as patentees and accused infringers. The feedback loop, by its nature, would be responsive to changes in the behavior of the actors within the patent system. The feedback loop would be driven by two fiscal components that work in tandem: (1) the PTO’s obligation to reimburse accused infringers who prevail at the PTAB; and (2) the PTO’s imposition of a periodic, individualized, risk-adjusted ICR fee on each of the 3 million patents-in-force that is tailored to the payout risk posed by each patent, in order to create a pool of funds for the payouts.

As devised, the ICR program may encourage some accused infringers who otherwise would have paid a nuisance fee (to avoid or settle litigation) to instead challenge weak patents. And, in operating the ICR program, it is expected that the fiscal pressure created by the need to decrease the frequency of payouts—and ensure that adequate funds exist for reimbursements—may prompt the PTO to take a more active role in monitoring post-issuance activity in the patent system (in order to improve the risk-based tailoring of ICR fees) and to find ways to discourage patentees from obtaining or asserting weak patents (in order to decrease the likelihood of a payout). Also, the risk management concerns introduced by the ICR program could supply the PTO with the institutional will to make quality-enhancing changes to the examination process that might upset its “customers.”

To fund the ICR program, the PTO would charge an annual (or possibly semi-annual) ICR fee customized for each patent based on a set of risk factors indicative of the likelihood that the patent would attract a PTAB challenge and get invalidated as a result (and thus require a payout). At a high level, the calculation of the ICR fee for a given patent would resemble the calculation of auto insurance premiums, in that they would be risk-adjusted according to the characteristics of the patent, its owner, and events involving the patent. The use of risk-adjusted fees that are customized for each patent is preferable to across-the-board fee increases because the former may be more amenable to policy-based tailoring and may also enhance the agency’s ability to encourage or discourage specific behaviors.

It is worth noting that the standalone, risk-adjusted ICR fee is just one option for funding the ICR program with risk-tailored fees. As an alternative, a separate ICR fee would not be necessary if the maintenance fees for each patent were risk-adjusted and assessed annually—rather than the current schedule with payments due at 3.5 years, 7.5 years, and...

142. See infra note 229.
143. See infra Section II.C.
144. In the rest of the world, maintenance fees are typically assessed annually. See Patents, WORLD INTELL. PROP. ORG., http://www.wipo.int/sme/en/ip_business/patents/patent_procedure.htm ("In most countries, patent maintenance fees are to be paid annually (annuities.") (last visited Mar. 12, 2019).
11.5 years after issuance—such that the ICR program would be funded by a portion of the total risk-adjusted maintenance fees collected each year. However, to streamline the presentation of the major points, this Article will use the standalone, risk-adjusted ICR fee in discussing the operation of the ICR program.

Much like auto insurance, the ICR fee should be assessed and due for payment at least annually (if not every six months) in order to update the payout risk for a given patent in a timely manner after the occurrence of a material event (e.g., change of owner, assertion, etc.) that affects its risk profile. Thus, when a patent is asserted, for example, the risk-adjusted ICR fee for that individual patent would increase for the next installment because an assertion would increase the likelihood that a PTAB challenge may materialize, which may yield a potential payout if the challenger were to prevail.

The fiscal pressure imposed by the ICR program will likely leave the PTAB susceptible to pressure from or manipulation by the PTO Director, who might make it difficult for accused infringers to prove invalidity. The PTAB may be vulnerable to influence because the Administrative Patent Judges (APJs) who serve on it are essentially employees who receive performance reviews and bonuses. Because APJs are Administrative Judges (AJs), they may have less judicial independence than Administrative Law Judges (ALJs). Apart from exerting direct pressure on PTAB personnel, the PTO Director could also introduce new regulations or change the “standard operating procedures” of the PTAB so as to make it more difficult for patent challengers to prevail. Accordingly, implementation of the ICR program would require the PTO Director to be divested of control over the patent challenge proceedings at the PTAB and the APJs who handle them. To this end, it may be necessary to spin off a portion of the PTAB as an independent entity charged with handling adversarial patent challenges (i.e., Inter Partes Review (IPR), Post-Grant Review (PGR), and Covered Business Method Review (CBM)), whereas the portion that would remain with the PTO would continue to handle everything else (e.g., ex parte appeals, derivation actions, etc.). As one option, the PTAB spin-off could be an independent, standalone, quasi-judicial agency like the U.S. International Trade

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145. 37 C.F.R. § 1.20(e)–(g) (2018).
146. In other words, the maintenance fees would be used to cover the general operating expenses of the PTO, and the ICR program would be one of many expenses covered.
147. See Golden, Working Without Chevron, supra note 117, at 1682.
149. See infra note 280.
151. See supra notes 26, 27, 141 and accompanying text.
Commission. Alternatively, the PTAB spin-off might be incorporated into another agency, such as the Federal Trade Commission. If necessary to further shield the PTAB spin-off from any executive branch influence, perhaps it could be set up as a specialized, standalone Article I court, such as the Tax Court or the Court of Appeals for Veterans Claims, which are part of the judicial branch and not any executive agency. Otherwise, if PTAB decisions were not insulated from influence by PTO management, the agency could readily decrease the rate of payouts, and then scale back or avoid the difficult and unpopular (with patentees) work of: monitoring assertions, improving its examination operations to issue fewer weak patents, and setting the ICR fees to accurately reflect the risk profile of each patent. In short, the triggering event for reimbursement (namely, a PTAB determination of invalidity) must be shielded from any influence by the administrator of the ICR program (namely, the PTO Director).

For the purposes of the ICR program, only accused infringers (i.e., those who have been put on notice of a potential claim of infringement, such as by receiving a demand letter or being named in a patent suit) will be eligible for reimbursement. This is because the ICR program is intended to encourage patent challenges at the PTAB by making the option of paying a nuisance fee less financially compelling by reimbursing the expenses associated with a successful challenge. Otherwise, opening up the ICR program to any PTAB petitioner could substantially increase the cost of the program and may result in the harassment of patentees.

As discussed in greater detail in the rest of Part II, infra, the ICR program engages multiple actors in the patent system (i.e., the PTO, patentees, and accused infringers) and operates in an adaptive manner using risk factors that can evolve over time. This gives rise to a system of sufficient complexity for which a trial period may be prudent. Indeed, various reforms that have been introduced in recent years have been subject to a trial period, including the Patent Pilot Program to enhance expertise in patent cases among district judges and the PTO’s fee-setting authority.

Accordingly, the ICR program should be enacted with a

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156. Leahy-Smith America Invents Act, Pub. L. No. 112-29, § 10(i)(2), 125 Stat. 284, 319 (2011) (“The authority of the Director to set or adjust any fee under subsection (a) shall terminate upon the expiration of the 7-year period beginning on the date of the enactment of this Act.”). In 2018, the PTO’s fee-setting authority was extended by eight years. See Study of Underrepresented Classes Chasing Engineering and Science Success (SUCCESS) Act, Pub. L. No. 115-273, § 4, 132 Stat. 4158, 4159 (2018) (amending § 10(i)(2) of the Leahy-Smith America Invents Act by striking “7-year” and inserting “15-year”).
sunset provision that terminates the program after several years, unless it is renewed.

C. Regulatory Dynamics

The previous Section introduced the components of the ICR program; this Section explores its regulatory dynamics in greater detail. Through the operation of the ICR program, a regulatory feedback loop is expected to emerge that connects the PTO, the patentees, and the public. The loop would be sustained through the alignment of the PTO’s economic interests with that of the public, which is an element that is largely absent in the current patent system. Specifically, under the ICR program, the PTO’s funds would no longer flow one way from the patentees to the PTO but would also flow out from the PTO to the accused infringers. As a consequence, the PTO would have a strong fiscal interest in ensuring the solvency of the ICR program by engaging in one or more of the following behaviors: (1) monitoring post-issuance activity in order to tailor the ICR fees so as to adequately price the risk posed by patents that are likely to be involved in “riskier” assertions (i.e., those with an increased probability of attracting a successful PTAB challenge); (2) encouraging quality-enhancing prosecution habits by patentees; and (3) improving its examination operations to decrease the likelihood of issuing a patent of questionable validity in order to mitigate the risk of a payout. As explained below, the PTO’s risk management concerns could be a powerful driver of welfare-enhancing behavior by the agency.

As a self-funded agency, the PTO is dependent on user fees. Accordingly, its collections increase with the number of patents granted and kept in force. By requiring payouts to accused infringers, the ICR program would force the PTO to quantify the impact of invalid patents on its budget. This is important because—unlike critical commentary, academic studies on patent quality, or bad publicity—the amount of payouts made under the ICR program would be an actionable, concrete metric for the PTO that cannot be ignored by the agency, as it would need to be actively managed as an item in its budget. To this end, the PTO will need to appropriately calibrate the ICR fees in order to be able to make payments to accused infringers who have prevailed at the PTAB. The ICR fees cannot be set too low for too many patents, or else the PTO

157. See supra note 46.
158. Cf. Brett McDonnell & Daniel Schwarcz, Regulatory Contrarians, 89 N.C. L. REV. 1629, 1677 (2011) (“If feasible, well-designed performance metrics not only improve agency accountability, but they also shape the objectives of the organization being evaluated.”).
will need to dip into other parts of its operating budget to fund the payouts. Nor can the ICR fees be set too high for too many patents, for a couple of reasons. As an initial matter, the agency’s fee-setting authority is limited to collecting funds necessary to cover its operations. More importantly, it may result in too many patents being abandoned. Having too few patents being maintained would create fiscal difficulties for the agency because it receives a substantial portion of its operating funds from the maintenance fees that are paid after a patent is issued. As a large agency with over 12,000 employees, the PTO may have difficulty weathering a sudden, substantial drop in fee revenue. Thus, the ICR fees would need to be carefully tailored for each patent according to its payout risk, whereby the subpopulation of patents that are likely to trigger a payout could be charged much higher ICR fees than the vast majority of patents that are unlikely to be the subject of a PTAB challenge.

The PTO can use the risk-differentiated nature of assessing ICR fees to incentivize patentees to engage in conduct that would decrease the likelihood that a patent might be successfully challenged at the PTAB. For example, the PTO might provide discounts on the ICR fee for a given patent if the patentee had conducted a prior art search before filing the application from which the patent issued or if all of the claims in the patent are means-plus-function claims (which are generally considered to be narrower and thus more resistant to invalidation). Conversely, the PTO may increase the ICR fees for behaviors that increase the risk of a payout, such as the sale of the patent to a PAE. The PTO can readily incorporate such considerations in the calculation of the ICR fee by designating them as risk factors and assigning appropriate weights. As discussed in greater detail in Section II.D, infra, the risk factors relevant to the payout risk are not limited to prosecution-related events, such that the imposition of risk-adjusted ICR fees for each patent may allow the PTO to exert regulatory influence in the patent system beyond its traditional role of patent examination and issuance.

A critical feature of the ICR fees is the highly adaptive and dynamic manner of their calculation: the risk factors and their weights would need to evolve over time as the actors in the patent system change their strategies in response to changes in the law or the economics of patent monetization. If, for example, the business models for patent monetization were to change such that ownership by a PAE, in and of itself, were no
longer deemed a strong predictor of a patent’s likelihood of being invalidated, the risk factors that predict the likelihood of a successful PTAB challenge (and a consequent payout) would be changed or weighted differently so as to provide less emphasis on whether the owner is a PAE and more emphasis on whatever new problematic behavior or marker has emerged. As a matter of actuarial necessity, the ICR fee calculation procedure would need to incorporate the most current understanding of the behaviors of the various actors within the patent system (as revealed by, for example, empirical scholarship) in order to accurately project the risk of a payout and set the fees needed to keep the ICR program solvent.

In administering the ICR program, the PTO will need to collect relevant and accurate data for calculating the risk-adjusted ICR fees for each patent. This might prompt the agency to adopt new procedures, introduce new rules, or seek legislation that would enhance its ability to track and monitor patents post-issue, such as: operating a demand letter registry to track non-litigation assertions (because the likelihood of a PTAB challenge would increase with the number of accused infringers); and requiring patentees to report real-party-in-interest information to the PTO in order to properly track patent ownership changes (because, for example, selling a patent to a litigious owner, such as a PAE, may increase the likelihood of a PTAB challenge). Notably, the demand letter registry and the reporting of real-party-in-interest information are items that commentators and policymakers have previously suggested as reform measures to combat abusive patent assertions. The fact that these two measures may also serve the PTO’s risk management interests under the ICR program reflects the degree to which the proposed program may help align the PTO’s fiscal concerns with the public interest.

The requirement to compensate successful invalidations at the PTAB could also provide the necessary impetus for the PTO to come up with better ways to filter weak applications prior to issuance, in order to better manage the risk of payouts. Although it is possible for the PTO to operate the ICR program without making any changes to its current examination operations—such that the risk management aspects of the ICR program would be effected exclusively through the assessment of risk-adjusted fees—it is also possible that the agency might seek to further decrease the risk of future payouts by culling questionable applications more

167. See infra notes 212 and 214.
168. See infra notes 198–199 and accompanying text.
169. This was proposed in the Demand Letter Transparency Act of 2015, H.R. 1896, 114th Cong. (2015), which is one of the many patent reform bills that have been introduced in recent years. A related idea was proposed in the same Federal Register notice as the Attributable Owner Proposed Rule, supra note 107, where the PTO solicited comments “on whether the Office should enable patent applicants and owners to voluntarily report licensing offers and related information to the Office, which the Office will then make available to the public in an accessible online format.” Id. at 4105. As of the writing of this Article, it appears no additional action has been taken on this proposal.
170. See supra note 107 and accompanying text.
aggressively. That is, the need to keep the ICR program solvent could engender within the PTO the necessary creativity, coupled with a sense of urgency, that may yield meaningful changes to its examination operations. When such changes are introduced, the PTO will likely encounter opposition from patent applicants and patentees. However, the fiscal constraint imposed by the ICR program might bolster the PTO’s willingness to proceed with unpopular rule changes and, if necessary, prompt the agency to lobby Congress for legislation in furtherance of its risk management practices. To this end, the PTO might pursue certain changes to improve examination that were previously withdrawn in the face of patentee opposition, such as limiting continuation applications and imposing additional examination requirements (e.g., pre-filing prior art searches and examination support documents for all applications).

Because the PTO is an agency without substantive rulemaking authority or expansive enforcement powers, the point about its ability to lobby Congress for certain legislation or additional powers is worth exploring further. The ICR program might re-create in the patent system the dynamics that exist within the insurance industry that have prompted insurers to undertake the effort and expense to lobby for laws that would help decrease the risk of reimbursable events. As the agency tasked with handling intellectual property matters, the PTO is uniquely positioned to lobby effectively on those issues. Its officials advise the President, who, in turn, can propose legislation to Congress. The Director of the PTO also routinely testifies before Congress. In general, agencies exercise considerable influence on the legislative process. Notably, one

172. See supra note 105 and accompanying text.
173. Currently, patent applicants have no obligation to conduct a prior art search before filing a patent application. Am. Hoist & Derrick Co. v. Sowa & Sons, Inc., 725 F.2d 1350, 1362 (Fed. Cir. 1984) ("[A]n applicant for patent . . . has no duty to conduct a prior art search. . . ."), abrogated on other grounds by Therasense, Inc. v. Becton, Dickinson & Co., 649 F.3d 1276 (Fed. Cir. 2011).
174. See supra note 106.
175. See supra notes 12, 77, 113–115 and accompanying text.
180. See Felix Frankfurter, A Symposium on Statutory Construction: Foreword, 3 VAND. L. REV. 365, 367 (1950) ("The effective authors of federal legislation have, ever since the days of Alexander Hamilton, largely been the various agencies of the Government.").
of the primary drafters of the 1952 Patent Act was a PTO official, P.J. Federico, who was an Examiner-in-Chief. And during the drafting of the America Invents Act (AIA)—perhaps the most consequential legislative update to the 1952 Patent Act in recent years—the PTO provided input that strongly influenced the provisions governing validity challenges at the PTAB. Given the right impetus, the PTO is capable of exerting considerable influence on the development of statutory law, or any other aspect of patent law. Indeed, a similar observation may be made for decisional law: as noted by John Golden, the PTO enjoys a first-mover advantage in influencing the courts’ development of substantive patent law. Notably, the PTO has been a frequent co-author of the Solicitor General’s briefs filed at the Supreme Court, in which the government’s position has prevailed over that of the Federal Circuit in multiple cases affecting a diverse array of procedural and substantive issues in patent law, including extraterritoriality, obviousness, and declaratory judgment jurisdiction.

D. Risk Factors

The risk factors used to calculate the ICR fee are a critical part of the regulatory feedback loop established by the ICR program because they can

184. Joe Matal, who served as a staff member on the Senate Judiciary Committee when the AIA was being drafted, recounts the PTO’s involvement as follows:

   In early 2010, the Leahy-Sessions managers’ amendment converted inter partes reexamination into an adjudicative proceeding that is similar to post-grant review (though still limited in scope to patents and printed publications), and it imposed elevated thresholds for instituting both post-grant and inter partes review—changes that had been sought by the USPTO.


187. Rai, Who’s Afraid, supra note 12, at 341 (“[T]he PTO co-authored the government brief in fifteen of the sixteen cases involving Solicitor General participation. In nine of these cases, the PTO put itself on record as disagreeing with the Federal Circuit. And the PTO has been on the winning side of all nine of these cases.” (footnote omitted)); see also John F. Duffy, The Federal Circuit in the Shadow of the Solicitor General, 78 GEO. WASH. L. REV. 518, 546–47 (2010).
188. Brief for the United States as Amicus Curiae Supporting Petitioner, Microsoft Corp. v. AT & T Corp., 550 U.S. 437 (2007) (No. 05-1056), 2006 WL 3693464 (listing staff from the PTO as co-authors).
serve as a systematized, highly adaptive, and responsive mechanism for determining how the loop reacts to changes in the behavior of the actors in the patent system. The calculation of the ICR fee for a given patent can resemble the risk-differentiated calculation of auto insurance premiums, whereby the “premium” (that is, the ICR fee) for each patent would be assessed based on a set of risk factors that may predict the likelihood of a reimbursable event, namely a PTAB invalidation. Relevant risk factors would include not only the markers of invalidity or poor quality but also factors that may be indicative of the likelihood of assertion. The likelihood of assertion is an important macro factor that is material to the likelihood of invalidation because a patent that is asserted frequently, especially against a large number of accused infringers, has a greater likelihood of becoming involved in a PTAB proceeding than a patent that is rarely, if ever, asserted and targets few accused infringers. A patent that is prone to assertion may thus be charged a higher ICR fee than a patent that is unlikely to be asserted. This is akin to charging higher auto insurance premiums for policyholders who drive more: the more miles driven, the more chances for getting into an accident. And recent empirical research suggests that the causal relationship between the likelihood of assertion and the likelihood of invalidation may operate in both directions: patents that are asserted frequently have a greater likelihood of attracting a validity challenge, and, at the same time, weaker patents (validity-wise) have a greater likelihood of being asserted than stronger ones. This bi-directional relationship underscores the need to include factors relating to the likelihood of assertion in the actuarial analysis of the likelihood of a PTAB invalidation (and a resulting payout under the ICR program).

In compiling a set of risk factors for calculating the ICR fees, we can draw upon various empirical studies of litigated patents and those that have been challenged at the PTAB. Another key source for identifying

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191. See Michael Risch, A Generation of Patent Litigation, 52 SAN DIEGO L. REV. 67, 122 (2015) (reporting results of empirical study suggesting that “the most statistically—and magnitudinally—significant factors influencing invalidation related to whether the plaintiff asserted a patent in a way that was more likely to invite a patent challenge”). The regression estimates in Michael Risch’s study “imply that the NPE patents were invalidated more often because the plaintiff sued more defendants more often and more aggressively.” Id. at 123.

192. See STATE FARM, supra note 120 (“People who use their car for business and long-distance commuting normally pay more than those who drive less. The more miles you drive in a year, the higher the chances of a crash—regardless of how safe a driver you are.”).


194. See supra note 29 and accompanying text.


196. The ICR program is well-suited for execution at the time of the writing of this Article because we now have several years’ worth of data from the AIA proceedings at the PTAB that can help uncover new risk factors (and refine existing ones) indicative of the likelihood of invalidity. See Brian J. Love, Shawn P. Miller & Shawn Ambwani, Determinants of Patent Quality: Evidence from
risk factors, particularly those relating to the likelihood of invalidation, would be the PTO itself, which, through its Office of the Chief Economist (OCE), can collect and synthesize the PTO’s extensive data on patent examination and PTAB activity. The OCE can cross-reference the agency’s data with publicly available litigation data to further analyze the attributes of a patent that render it likely to be asserted or have invalid claims. Given that the OCE already compiles a variety of statistics and analyzes large datasets, it may be well-suited for the actuarial aspects of risk factor analysis and the calculation of ICR fees.

Based on a survey of the literature, an initial set of risk factors associated with a given patent might be drawn from the following list: owner type (e.g., size, business model, U.S./foreign); ownership changes (e.g., size, type, timing, and frequency); technology; length and complexity of the patent document; number of claims; average claim length; time spent in prosecution; size of prosecuting firm; etc.

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Inter Parts Review Proceedings, 90 U. COLO. L. REV. 67, 74–76 (2019). Love and his co-authors use institution decisions as an indicator of patent quality. Id. at 108–09. In explaining this choice, they note that the instituted claims are "[o]verwhelmingly . . . cancelled in final written decisions," and that PTAB proceedings at this stage might be less susceptible to selection effects compared to district court litigation. Id. at 109–11.


198. See, e.g., Allison et al., Valuable Patents, supra note 195, at 465 ("Patents originally issued to individuals and small businesses were far more likely to be litigated than patents originally issued to large corporations."); id. at 470 ("We found that patents issued to foreign owners are much less likely to be litigated than patents issued to U.S. owners. Foreign-owned patents accounted for 46% of issued patents, but only 17% of litigated patents."); Love et al., supra note 196, at 119 ("[T]he number of claims is significantly less likely to pass muster in a PTAB institution decision."); id. at 143 (finding "significant positive correlations between a patent’s institution and its ownership by an NPE or PAE.").

199. See, e.g., Chien, Predicting, supra note 195, at 317 ("Litigated patents are more likely to be transferred and nearly four times as likely as unlitigated patents to experience a change in owner size."); Love et al., supra note 196, at 142 ("[I]nstituted patents are more likely to have changed hands and more likely to have changed hands frequently.").

200. See, e.g., Allison et al., Valuable Patents, supra note 195, at 472 ("Drugs and medicine and computer and communications patents are far more likely to be litigated than their numbers in the general population would suggest. By contrast, mechanical, chemistry, and electrical and electronic patents are significantly underrepresented in the category of litigated patents.").

201. See, e.g., Love et al., supra note 196, at 133 ("[N]ever-instituted patents have fewer total words, shorter abstracts, and shorter specifications . . . .")

202. See, e.g., Allison et al., Most-Litigated Patents, supra note 195, at 15 ("The most-litigated patents have more than 50% more claims than the control set—39.3 on average compared with 24.5 for once-litigated patents.").

203. See, e.g., Love et al., supra note 196, at 135 ("[I]nstituted patents have significantly shorter individual claims, while patents that avoided institution have significantly longer claims.").

204. See, e.g., Allison et al., Valuable Patents, supra note 195, at 459 ("Litigated patents also spent significantly longer in prosecution than issued patents.").

205. See, e.g., Love et al., supra note 196, at 120 (finding that "patents prosecuted by large firms were less likely to be instituted.").
number of citations (backward\textsuperscript{206} and forward\textsuperscript{207}); existence of related applications (e.g., continuations);\textsuperscript{208} age of patent;\textsuperscript{209} collateralization or securitization;\textsuperscript{210} number of post-issuance proceedings (in court or at the PTAB);\textsuperscript{211} and number of accused infringers named in adversarial proceedings.\textsuperscript{212} Possible additional factors might include: claim characteristics (e.g., use of means-plus-function claims, which are considered to be narrower);\textsuperscript{213} degree of applicant due diligence during patent prosecution (e.g., conducting pre-filing prior art searches); and the number of accused infringers to which demand letters have been sent (to capture non-litigation assertions).\textsuperscript{214}

There may be other factors that might be highly relevant to validity issues but which could be unfair if used in the calculation of the ICR fee. One such factor is the examiner assigned to the application. Frakes and Wasserman have found that patents examined by more senior examiners, who are allocated less time for examination, were generally of lower

\textsuperscript{206} See, e.g., Risch, supra note 191, at 118, 120 tbl.16 (“[M]ore backward citations are associated with a fairly substantial increase in the odds of invalidation.”). For pharmaceutical patents, however, there appears to be a negative correlation between the number of backward citations added by the examiner and the likelihood of institution of a PTAB challenge. Love et al., supra note 196, at 155.

\textsuperscript{207} See, e.g., Allison et al., Most-Litigated Patents, supra note 195, at 13–14 (“[T]he most-litigated patents are cited more than twice as often as the control-set patents.”); Love et al., supra note 196, at 156 (“[T]he forward citation count for challenged patents, while not significant among the population of patents, has a significant negative relationship with institution for one subpopulation: patents owned by PAEs.”).

\textsuperscript{208} See, e.g., Allison et al., Valuable Patents, supra note 195, at 456–57 (“Patent applicants whose patents were ultimately litigated filed many more continuation applications than ordinary applicants—an average of 0.72 per litigated patent, compared with 0.24 for issued patents in our sample study.”), Love et al., supra note 196, at 155–56 (“Pharmaceutical patents with more parent applications are less likely to be instituted, while NPE-owned patents with more parents are more likely to be instituted.”).

\textsuperscript{209} See, e.g., 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, 1312 (2013) (“Product-producing companies predominantly enforce their patents soon after they issue and complete their enforcement activities well before their patents expire. NPEs, on the other hand, begin asserting their patents relatively late in the patent term and frequently continue to litigate their patents to expiration.”).

\textsuperscript{210} See, e.g., Chien, Predicting, supra note 195, at 318 (“Litigated patents were nearly twice as likely to have been used as collateral as were unlitigated patents.”).

\textsuperscript{211} See, e.g., id. at 317 (finding that litigated patents “are a hundredfold more likely to experience ex parte reexamination than are unlitigated patents”); Risch, supra note 191, at 120 tbl.16 (showing that the number of times a patent has been asserted has a statistically significant relationship with the likelihood of its invalidation).

\textsuperscript{212} See, e.g., Risch, supra note 191, at 120 tbl.16 (showing that the number of defendants against whom a patent has been asserted has a statistically significant relationship with the likelihood of its invalidation).

\textsuperscript{213} Means-plus-function claims, as defined in 35 U.S.C. § 112(f) (2018), are generally considered to be narrower than non-means-plus-function claims. See, e.g., Nicholas R. Mattingly, Avoiding Invocation of Functional Claim Language in Computer-Implemented Inventions, IPWATCHDOG (June 18, 2015), http://ipwatchdog.com/2015/06/18/avoiding-invocation-of-functional-claim-language-in-computer-implemented-inventions/id=58803 (“[D]rafting claims to avoid the invocation of [35 U.S.C.] § 112(f) is the first line of defense for . . . unnecessarily narrowing the scope of the invention.”).

\textsuperscript{214} This may require the PTO to operate a demand letter registry. See supra note 169 and accompanying text.
quality than those examined by junior examiners, who are allocated more time.\textsuperscript{215} Relatedly, Love, Miller, and Ambwani found a significant, positive relationship between an examiner’s allowance rate and the likelihood that the PTAB would institute a post-issuance proceeding for challenging a patent.\textsuperscript{216} Although examiner characteristics are arguably highly predictive of the likelihood of invalidation, it may not be fair to use them as risk factors because the patentee has little or no control over whether a particular examiner is assigned to his or her application.\textsuperscript{217} The differences in invalidity risk arising from performance variations between examiners should be internalized by the PTO because it is an artifact of the PTO’s examiner training program and personnel policies, rather than something attributable to the patentee.\textsuperscript{218} By contrast, the risk factors listed in the previous paragraph focus on those traits and characteristics over which the patentee is able to exercise some amount of control.

The factors listed in this Section are not exhaustive; future research may reveal other factors relevant to the likelihood that a patent might be prone to assertion or is likely to have invalid claims. Nor would it be necessary (or desirable) to use all possible factors because some may be highly correlated, depending on the patent.\textsuperscript{219} For example, in one study analyzing the likelihood that a patent will be invalidated during litigation, Michael Risch found that “[o]nce other case factors are considered, such as the number of defendants, the number of assertions, et cetera, whether the party is an NPE adds little explanatory value.”\textsuperscript{220} In other instances, some factors may be significant only for risk models tailored to certain

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\item \textsuperscript{215} Frakes & Wasserman, \textit{Time Allocated}, \textit{supra} note 41, at 550 (“[W]e use application-level data to trace the behavior of individual examiners over the course of a series of promotions that carry with them reductions in examination time allocations. We find evidence demonstrating that such promotions are associated with reductions in examination scrutiny and increases in granting tendencies . . .”).
\item \textsuperscript{216} Love et al., \textit{supra} note 196, at 121–22 (“[W]e find a number of significant positive correlations between likelihood of institution and the grant rates of individual examiners and art units.”); \textit{see also id.} at 150–53 (analyzing statistical relationship between institution likelihood and examiner allowance rate).
\item \textsuperscript{217} See Mark A. Lemley & Bhaven Sampat, \textit{Examiner Characteristics and Patent Office Outcomes}, 94 REV. ECON. & STAT. 817, 822 (2012) (“[Supervisory Patent Examiners] for the most part assigned applications randomly, assigning applications to particular examiners on the basis of the last digit of the application serial number. Because application serial numbers are assigned sequentially in the central PTO, this assignment system . . . is not subject to manipulation by applicants . . .”).
\item \textsuperscript{218} See, e.g., Michael D. Frakes & Melissa F. Wasserman, \textit{Patent Office Cohorts}, 65 DUKE L.J. 1601, 1605 (2016) (“[W]e find that the observed differences in the mean grant rates of the various examiner cohorts align with changes in both the Agency’s culture regarding the allowance of patents as well as new-hire training programs at the PTO.”); Lemley & Sampat, \textit{supra} note 217, at 817 (reporting results suggesting that “human resource policies and incentive structures at the PTO could affect patent grant rates”).
\item \textsuperscript{219} See, e.g., Risch, \textit{supra} note 191, at 120 tbl.16 (showing that certain variables lose statistical significance based on the regression model).
\item \textsuperscript{220} Id. at 121.
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subpopulations of patents.221 By way of illustration, Brian Love and his co-authors found that a “negative relationship . . . between institution [of a PTAB invalidity challenge] and IPC [International Patent Classification] counts is significant . . . only for software patents and patents owned by NPEs.”222 In view of the considerable heterogeneity in litigation behavior and patent portfolio management practices among different industries and types of patent owners,223 multiple risk models may be employed for calculating ICR fees for different subpopulations of patents, whereby each risk model would contain a customized set of risk factors to cover a particular patent subpopulation. Under such an arrangement, a software patent owned by a PAE could have its ICR fee calculated by a risk model that shares some—but not all—risk factors with the model used to calculate the ICR fee for a drug patent owned by a pharmaceutical company. Initially, the PTO could start with a less complex arrangement, whereby the ICR fees for all patents are calculated according to a common set of risk factors; and, as new data become available, the agency can adopt customized risk models for specific subpopulations of patents as necessary.

In using risk factors to charge different patents different ICR fees, a question that might arise is whether this practice complies with Article 27(1) of the World Trade Organization’s Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS), which requires that “patents shall be available and patent rights enjoyable without discrimination as to the place of invention, the field of technology and whether products are imported or locally produced.”224 Would it violate the TRIPS nondiscrimination requirement to use “the field of technology” as a risk factor, which might cause patents from different industries to be assessed different ICR fees? Presumably, not all differential treatment constitutes discrimination: differential treatment might be justifiable if necessary to accommodate the specific needs or characteristics of different industries or product categories.225 To distinguish permissible differentiation from impermissible discrimination, Graeme Dinwoodie and Rochelle Dreyfuss suggest evaluating whether the differential

221. Love et al., supra note 196, at 155 (“[W]e find that several variables that failed to yield significant results in the population of patents do have a significant correlation with institution among one or more subpopulations.”).
222. Id.
treatment has a legitimate purpose. An argument can be made that the ICR program does not run afoul of TRIPS on the basis that using a risk factor keyed to the type of technology is, at bottom, an actuarial decision made to help keep the ICR program solvent, which is arguably a legitimate purpose grounded in capturing industry differences in invalidity risk. Moreover, the type of technology is just one of several factors used to calculate the ICR fee, such that patents in the same technology area might be charged different ICR fees, while those in different technology areas could be charged the same amount. Finally, it is possible that none of the three protected characteristics listed in TRIPS Article 27(1) (i.e., “place of invention,” “field of technology,” “whether products are imported or locally produced”) may need to be used as risk factors if suitable substitute factors emerge—thereby mooting the question of discrimination.

In the course of administering the ICR program, the PTO is expected to periodically adjust the selection, number, weighting, and grouping (into risk models) of risk factors in light of the data it collects, the OCE’s research, and the latest scholarship. Through risk factor analysis, the PTO has a vehicle for policy tailoring that can be refined as our understanding of the patent system evolves, and more importantly, as the actors in the patent system change their tactics. This stands in stark contrast with the habits of the current de facto regulator, the Federal Circuit, which does not appear to give adequate consideration to relevant scholarship in its quasi-policymaking role, and, given the uncertain and lengthy process of creating a usable body of precedent, may be slow to react to changes in the tactics adopted by problematic actors.

E. Affordability Calculations

To assess the economic feasibility of the ICR program, it may be instructive to calculate the total additional funds the PTO would need to collect annually from all patents-in-force in order for the program to break even. As of 2017, there are approximately 3 million U.S. patents-in-force. In recent years, the median cost of litigating an adversarial PTAB proceeding to a final decision and through a Federal Circuit appeal is

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226. Id. at 452 (“We suggest that those defending an exclusion as compliant with Article 27 should be permitted to rebut a showing of disparate treatment by demonstrating a legitimate purpose.”).
227. See supra note 224 and accompanying text.
The total number of patent validity challenge petitions filed per year at the PTAB has ranged from approximately 1500 to almost 1900 in PTO fiscal years 2014, 2015, and 2016. For IPR petitions (which constitute over 90% of the petitions), 29% were denied institution, 23% ultimately resulted in a final written decision invalidating all instituted claims, 5% resulted in the invalidation of some of the instituted claims, 5% resulted in no instituted claims being invalidated, 31% were terminated due to settlement, and the remaining 7% were terminated due to dismissal or a request for adverse judgment.

Based on these numbers, a conservative estimate of the yearly payouts to prevailing PTAB petitioners based on current conditions may be calculated by assuming that 2000 petitions (for IPR, PGR, and CBM) would be filed annually, where the accused infringer would ultimately prevail in 30% of those petitions, each of which would cost, on average, $350,000 through appeal at the Federal Circuit. This would yield $210 million (i.e., 2000 x 0.3 x $350,000) in projected reimbursements per year. This amount, when divided by the number of patents-in-force (3 million), would yield an average cost of $70 per patent per year to keep the ICR program solvent.

If the ICR program were funded by a standalone, risk-adjusted ICR fee on each patent, the $70-per-patent-per-year cost would correspond to the average annual ICR fee that the PTO would need to charge in order to allow the ICR program to break even. It is important to bear in mind that the $70 figure is an average number across 3 million patents-in-force. The patents that are at low risk for invalidation may be charged amounts much lower than the average or even have their ICR fees waived, while the patents at high risk for invalidation may be charged considerably higher amounts, possibly thousands of dollars.

As mentioned previously, an alternative to using standalone ICR fees would be to charge each patent an annual, risk-adjusted maintenance fee, and then allocate a portion of the total maintenance fees collected to fund the ICR program. Given that most patents take about two years to

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230. AIPLA 2017 SURVEY, supra note 30, at 43.
231. For proceedings authorized under the America Invents Act.
232. See PTAB FY 2016 STATISTICS, supra note 27, at 3. The numbers mentioned in the range (1500 and 1900) reflect the approximate yearly totals for all petitions (IPRs, CBMs, PGRs) in fiscal years 2014–2016.
233. Id. at 2.
234. Id. at 10 (calculation: 1075/3672).
235. Id.
236. Id.
237. Id.
238. Id. (calculation: (630+495)/3672).
239. Id. (calculation: (41+25+19+173)/3672).
240. See supra notes 144–146 and accompanying text.
issue, 241 the annualized maintenance fee for most patents would be approximately $700 per year. 242 If the ICR program were adopted, its $70-per-patent-per-year cost would increase this annual maintenance fee by 10% to $770 per year. Where the maintenance fees are risk-adjusted, the $770 figure would be an average number across a highly variable population: some patents might be charged annual maintenance fees that are far below $770 and other patents that are at high risk for invalidation may be charged several thousands of dollars.

It is worth emphasizing that the $70-per-patent-per-year break-even cost for the ICR program is estimated based on conditions existing as of the writing of this Article. If, for example, the adoption of the ICR program were to cause the number of PTAB post-issuance proceedings with a prevailing petitioner to double (possibly through a combination of an increase in the number of petitions filed and a decrease in the number of settlements at the PTAB), then the break-even cost would double to $140 per patent per year, assuming no material changes in the numbers of patents issued, maintained, and asserted each year. The same break-even cost ($140) would be necessary if, instead, the absolute number of PTAB challenges did not materially change but the numbers of patents issued and maintained were halved (possibly through a combination of examination reforms at the PTO and portfolio management decisions by patentees in response to the risk-adjusted ICR or maintenance fees). In a somewhat more extreme scenario, the break-even cost based on current conditions ($70) may need to be quadrupled to $280 if the current number of patents-in-force were to be halved and the absolute number of AIA challenges were to double compared to recent years. Finally, if the number of patents-in-force were to decrease and the number of PTAB challenges were to also decrease proportionally, then the break-even cost would remain at $70 per patent per year.

Before actually implementing the ICR program, it would be difficult to predict whether the annual break-even cost per patent in the steady-state condition would be closer to $70 or $280. Part of the reason is that the ICR program may affect multiple inputs to the system—the rate of application filing, patent issuance, maintenance, assertions, and PTAB challenges—such that changes in one input might result in a proportional or offsetting change in the other inputs. For example, the absolute number of PTAB challenges might fall if patentees became more cautious with assertions if a quick nuisance-value payment may be less forthcoming (because the ICR program has made PTAB challenges seem less financially risky for

241. PTO 2017 PERFORMANCE, supra note 2, at 15 tbl.2 (indicating that in fiscal year 2017, the "Average Total Pendency" for patents is 24.2 months).
242. Currently, the total amount of maintenance fees payable during the full patent term at 3.5 years, 7.5 years, and 11.5 years after issuance is $12,600 (= $1600 + $3600 + $7400). USPTO Fee Schedule, U.S. PAT. & TRADEMARK OFF. (Jan. 16, 2018), https://www.uspto.gov/learning-and-resources/fees-and-payment/uspto-fee-schedule-effective-jan-16#Patent%20Maintenance%20Fee. The annualized maintenance fee would thus be $700/year (i.e., $12,600 divided by 18 years in force).
accused infringers). Alternatively, the number of PTAB challenges might increase if patentees were to expand the number of potential accused infringers targeted in order to obtain the same net number of nuisance-value payments, if the availability of the ICR program decreased the yield or conversion rate of a licensing campaign.

The difficulty of predicting patentee reactions may be symptomatic of what Mark Lemley has characterized as the “resilience” of the patent system, whereby patents appear to be asserted with little regard to the merits.243 If the merits truly do not matter, then the assertions of weak patents should be treated more like randomly occurring risks that need to be managed using an insurance-like mechanism that compensates accused infringers who successfully challenge such patents instead of paying a nuisance fee—which is what the ICR program is designed to do.

Finally, it is worth considering whether the ICR program might create a fiscal “death spiral” for the PTO. If the payouts under the ICR program were to substantially exceed the total ICR fees collected in a given year (such that the agency would need to dip into its general operating budget to make payouts), the concern would be that the PTO might grant patents more readily—thereby yielding weaker patents—in ensuing years to make up budget shortfalls. This may arguably create a self-reinforcing downward spiral of increasing the grant rate, which leads to lower patent quality, which results in more frequent challenges and payouts, and which prompts an even greater number of weak patents to be granted to make up for an even larger budget shortfall. Although such a scenario might be possible, it may be unlikely to materialize: the sheer number of patents currently in force and their varied lifecycles will likely smooth out much of the year-to-year variance in assertions and PTAB activity. In addition, the PTO could set the ICR fees so that the average fee collected per patent per year is at some level above the break-even amount (e.g., at $100 instead of $70) in order to build a funding cushion for those years when the number of PTAB challenges (and the resulting payouts) might be unusually frequent, which might arise, for example, from changes in the law.

III. CONCERNS, IMPLICATIONS, AND OBJECTIONS

A. Alternative Configurations and Mechanisms

1. PTAB Fee Shifting

Rather than having the PTO reimburse prevailing petitioners, one might ask whether it may be preferable to simply empower the PTAB to

243. Lemley, Resilience, supra note 1, at 40.
award fees to the prevailing party. Although Congress has granted various agencies the power to award fees, it has not yet done so for the PTAB. There are, however, a couple of considerations that could make it challenging to adopt a fee-shifting regime.

As in other areas of the law, a two-way, “loser pays” fee-shifting rule at the PTAB may discourage patent challenges by parties of limited means, who are the most susceptible to paying a nuisance fee to avoid or settle a legal proceeding. The sheer number of patents-in-force, the weak quality of asserted patents, and the reality that much of the enforcement activity occurs outside of litigation, all combine to create a need for the public to step in and assist in the policing of the patent system. However, a two-way fee-shifting regime would discourage such public participation, particularly by those accused infringers who are the most susceptible to making a nuisance fee payment because they cannot afford their own legal fees, let alone the fees incurred by the other side. Nor would the situation improve with a one-way fee-shifting scheme used in certain types of public law litigation (of which PTAB challenges might arguably be a species), where only the prevailing petitioner, and not the patentee, would be awarded fees. This is because a fee-shifting rule at the PTAB might also discourage meritorious assertions by patent owners of limited means, who often rely on contingent-fee arrangements.

In addition, the operation of a fee-shifting regime would be frustrated when the losing party is judgment-proof. This is a particular concern not only with parties of limited means but also with PAEs, which are known to set up shell companies in order to assert patents. The shell companies

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244. See La Belle, Fee Shifting, supra note 64, at 399 (suggesting that “Congress consider granting the PTAB power to award attorney’s fees to prevailing parties, as it has done for a number of other agencies”).

245. Id. at 399 n.286 (listing examples of agencies empowered to award fees).

246. See, e.g., Fleischmann Distilling Corp. v. Maier Brewing Co., 386 U.S. 714, 718 (1967) (“In support of the American rule, it has been argued that since litigation is at best uncertain . . . the poor might be unjustly discouraged from instituting actions to vindicate their rights if the penalty for losing included the fees of their opponents’ counsel.”); see also La Belle, Fee Shifting, supra note 64, at 375–76 (explaining why two-way fee-shifting failed to take root in the United States); William W. Schwarzer, Fee-Shifting Offers of Judgment—An Approach to Reducing the Cost of Litigation, 76 JUDICATURE 147, 148 (1992) (observing how a loser pays system may burden access to justice).

247. See supra notes 24–29 and accompanying text.

248. Lemley et al., Iceberg, supra note 54, at 9 (reporting survey results that suggest 70% of assertions are not litigated).

249. See generally La Belle, Fee Shifting, supra note 64, at 372–75 (summarizing development of one-way fee-shifting regimes in public law litigation).


251. See Jane P. Mallor, Punitive Attorneys’ Fees for Abuses of the Judicial System, 61 N.C. L. REV. 613, 618 (1983) (“Even a litigant who had a contingent fee arrangement with his own attorney would be deterred from filing suit; this would cancel the benefit of the contingency fee as a means of financing litigation for litigants of modest means.”). David Schwartz has chronicled the rise of contingent-fee patent cases over the past decade. See generally David L. Schwartz, The Rise of Contingent Fee Representation in Patent Litigation, 64 ALA. L. REV. 335 (2012).

252. See Chien, Arms Race, supra note 21, at 319 (“IV, Acacia, and others have assigned their patents to thousands of shell companies and subsidiaries, making it hard to track what they do. This
may have no assets and could avoid paying fee awards simply by shutting down.\textsuperscript{253} One possible way to make a fee-shifting regime financially viable may be to introduce a bonding requirement\textsuperscript{254} in connection with the institution of a PTAB proceeding. However, the bonding requirement would need to be designed in a way that does not unduly impair parties of limited means from participating in PTAB proceedings.

The ICR program, by contrast, largely avoids or mitigates the shortcomings of the fee-shifting proposals by having the PTO itself pay the prevailing petitioner directly instead of requiring the patentee to do so. That is, the reimbursement of prevailing petitioners is not dependent on the patentee’s financial status. But more importantly, a PTAB fee-shifting regime where the PTO merely facilitates the transfer of funds from one party to another—rather than putting the agency’s funds directly at risk of a payout as in the ICR program—may not create the fiscal dynamics described in Part II, \textit{supra}, that could lead to the welfare-enhancing expansion of the PTO’s regulatory footprint over problematic assertions.

2. Compensation in Excess of Expenses

Some might argue that simply reimbursing the prevailing petitioner may not be enough, given the “public goods” problem associated with invalidity challenges, whereby, as noted by Joe Miller and others, “[a] patent challenger who succeeds in defeating a patent wins spoils that it must share with the world, including all its competitors.”\textsuperscript{255} This “public goods” aspect of an invalidity judgment may create free-rider problems that can weaken the motivation of accused infringers to pursue costly invalidity challenges.\textsuperscript{256} In addition, participating in an adversarial proceeding is a business distraction for the accused infringer, such that it incurs a real, substantial cost over and above its attorney fees.\textsuperscript{257} Because the true cost of a PTAB proceeding for an accused infringer is not limited to the cost of representation, reimbursing the actual amounts spent by the accused infringer in its PTAB challenge may result in

\begin{footnotes}
\footnotetext[253]{See Chien, \textit{Reforming, supra} note 17, at 382–83 (“Structured correctly, the entity need not be connected to the corporation’s sponsors or its assets. Faced with a sanction or attorney’s fee award against it, the LLC could go bankrupt rather than pay the penalty.”); Jason D. Gardner & Stephen J. E. Dew, \textit{North Carolina Abusive Patent Assertions Act: A Powerful Gun, but Will It Hold up in a Gunfight?}, 17 N.C. J.L. & TECH. 391, 404 (2016) (“An additional tactic used by NPEs is hiding behind multiple subsidiary companies to protect themselves from a loss. . . . [T]he NPE—which maintains no assets in its shell company—can simply close down and walk away from paying damages or attorneys fees.” (footnote omitted)).}
\footnotetext[254]{See Chien, \textit{Reforming, supra} note 17, at 383 (“Requiring plaintiffs to post a bond, or put up their patents as collateral, may be one way to bolster the policy aims of fee-shifting rules.” (footnote omitted)).}
\footnotetext[255]{Miller, \textit{supra} note 62, at 668.}
\footnotetext[256]{\textit{Id.} at 687–88.}
\footnotetext[257]{See Chien, \textit{Startups, supra} note 38, at 472 (noting that for startups, responding to PAE demands “can divert scarce money and founder time from the business, incense management, and at times, force significant operational changes”).}
\end{footnotes}
undercompensation. In addressing the free-riding and undercompensation problems, the literature offers several proposals, including Joe Miller’s litigation-stage bounty for successful patent challengers that is tied to the market significance of the patented technology, and Roger Ford’s suggestion to allow a successful patent challenger to bring an action for an accounting against other potential accused infringers to collect a portion of the royalties the patentee might have otherwise collected from them.

It is unclear, however, whether compensating the prevailing accused infringer in excess of its expenses would materially improve the operation of the ICR program. If the PTO were to award some multiple (e.g., double or triple) of the successful petitioner’s PTAB expenses, it might give rise to collusive arrangements. For example, the two opposing parties and their attorneys might manufacture a challenge whereby one party buys a weak patent and “asserts” it against the other, who, as the putative accused infringer, brings a PTAB challenge. If the “accused infringer” succeeds and is paid twice or thrice its expenses, it may profitably split the payout with the colluding patentee. Although the possibility of collusion may exist even if the accused infringer were reimbursed only its expenses (without multipliers) as proposed in the ICR program, collusion in such instances is expected to be far less common because it would not be as profitable if the PTO were to reimburse only “reasonable” attorney fees, rather than unreasonably inflated ones necessary to support a collusive arrangement.

3. Raising Maintenance Fees

To tackle problematic assertions, one might wonder if it may be preferable to have the PTO simply raise maintenance fees, rather than undertake the complex task of implementing the ICR program with its reimbursement requirement and individualized risk-adjusted fees.

As a general matter, raising maintenance fees will decrease the number of patents being maintained. Because the problematic behaviors in the patent system are associated with only a fraction of the patents-in-force, the literature provides various methods for tailoring maintenance

258. Miller, supra note 62, at 704 (“An award of attorney fees systematically under-compensates the alleged infringer by failing . . . to cover the indirect costs of defending the infringement suit . . . . The failure to compensate for lost employee research and development time is especially troubling, given that the goal of the patent system is to promote innovation.”).
259. Id. at 668 (“A litigation-stage bounty . . . would provide cash prizes to successful patent challengers that they alone would enjoy.”).
260. Id. at 739.
262. See Chien, Reforming, supra note 17, at 360–61 (collecting sources proposing raising maintenance fees to decrease the number of patents-in-force); see also Ian Ayres & Gideon Parchomovsky, Tradable Patent Rights, 60 STAN. L. REV. 863, 877–79 (2007) (noting the impact of modest renewal or maintenance fees on effective patent term).
fees as alternatives to across-the-board fee raises. For example, Bessen and Love have proposed a Pigovian taxation scheme that would dramatically increase maintenance fees at the end of the patent term, in light of data suggesting that a disproportionate number of end-of-life patent assertions are attributable to PAEs. As another example, David Olson has proposed increasing maintenance fees for unpracticed patents. These proposals for targeted increases in maintenance fees are intended to pare down the patent portfolios of PAEs.

However, proposals to tailor maintenance fees based on some specific criterion, standing alone, may not be as effective as the ICR program because the latter is designed to establish a feedback loop involving the PTO, the patentees, and the public. A feedback loop is important because it can adapt when problematic behaviors evolve. If maintenance fees were set based on Bessen and Love’s criterion relating to the age of the patent or Olson’s criterion relating to whether a patent is practiced, it is possible that, eventually, patentees might evolve their practices in a way that might neutralize the impact of the tailored maintenance fees—whether by buying and asserting patents earlier, or finding ways to nominally practice the invention. At that point, the PTO would need additional or alternative criteria for tailoring maintenance fees. That is, the tailoring criteria cannot remain static if we want to use maintenance fees as a regulatory tool that strikes an appropriate balance between discouraging undesirable behavior by a small proportion of patentees while not unduly burdening the rest with higher fees.

Indeed, the post-issuance risk-adjusted fees that fund the ICR program (whether as standalone ICR fees or risk-adjusted maintenance fees) constitute a form of dynamic tailoring because they are calculated based on an evolving set of criteria (i.e., risk factors). And because the criteria may cover both pre- and post-issuance actions by patentees, the imposition of the risk-adjusted fees allows the PTO to expand its regulatory influence across all stages of the patent lifecycle.

And while the PTO seemingly has the resources to implement a dynamic maintenance fee regime that can be responsive to changes in the patent system, it currently lacks the institutional will to do so. Adopting some criteria for charging tailored maintenance fees and subsequently changing the criteria to keep up with the evolutions in patent practice and

264. Love, supra note 209, at 1313 (“Congress should shorten the patent term by three years or even longer. In these final years of patent protection, more than 80% of patent assertions are brought by patent-holding firms that have no intention of commercializing a product.” (footnote omitted)).
265. Olson, supra note 49, at 546 (“This Article proposes that the PTO implement maintenance fee enhancements based on the number of non-practiced patents in a holder’s portfolio.”).
266. See supra Section II.D.
267. See supra Section II.C.
268. See supra Section II.B.
litigation would require the PTO to repeatedly overcome bureaucratic inertia and undertake actions that might upset its customers. Accordingly, the PTO needs to be provided with a concrete inducement to timely update the tailoring criteria as circumstances change. The ICR program, as proposed, supplies one possible inducement: the prospect of making payouts may motivate the PTO to be more proactive in monitoring the patent system and update its fee tailoring criteria. In addition, the petitioner-reimbursement feature of the ICR program provides a mechanism for encouraging the public policing of the patent system by helping accused infringers resist paying nuisance fees. In short, the impact of raising maintenance fees alone might have a salutary effect that may be fleeting, whereas the ICR program, albeit more complex, is designed to adapt to changing circumstances, expand the PTO’s regulatory influence beyond examination, and facilitate validity challenges.

4. Compensation of District Court Invalidations

Although the PTAB is increasing in popularity as a venue where an early decision on the merits can be obtained on patent validity issues, it is often a detour from the main event—namely, district court litigation. In recent years, about 86.7% of the patents challenged at the PTAB were also involved in district court litigation. Should, then, the ICR program also compensate accused infringers who manage to invalidate a patent claim in federal court? District court litigation is considerably more complex and expensive than a PTAB proceeding, with the legal fees of the former being potentially several multiples of the latter. To the extent the ICR program may be expanded to include district court invalidations, there are several policy considerations, aside from cost, that may restrict or delimit what should be reimbursable in such cases.

Specifically, there are fairness considerations that may militate against requiring the PTO to reimburse the cost of certain district court invalidations. First, the district court’s basis for invalidation might be one that could not have been raised at the PTAB. A patent can be invalidated in district court on any basis under 35 U.S.C. §§ 101, 102, 103, and 112. By contrast, the vast majority of validity challenges at the PTAB occur as IPRs, in which validity is tested only with respect to § 102 and § 103

269. See supra Section II.C.
270. Saurabh Vishnubhakat, Arti K. Rai & Jay P. Kesan, Strategic Decision Making in Dual PTAB and District Court Proceedings, 31 BERKELEY TECH. L.J. 45, 69 (2016) (reporting data indicating that “about 86.7% of IPR- or CBM-challenged patents are also being litigated in the federal courts”).
271. See supra notes 30–37 and accompanying text.
273. See PTAB FY 2016 STATISTICS, supra note 27, at 2 (showing that IPRs comprise 91% of petitions).
using only patents and printed publications as prior art. Although the other two PTAB proceedings for challenging validity—PGRs and CBMs—allow for additional bases for invalidation and the use of other types of prior art (e.g., evidence of public use and sales), only a small fraction of patents challenged at the PTAB satisfy the timing, subject matter, and standing limitations for those proceedings. It might be unfair to make the PTO reimburse invalidations in the district court that could not have occurred at the PTAB. Second, discovery is limited in PTAB proceedings compared to district court litigation. It may be unfair, then, to require the PTO to reimburse a district court invalidation based on evidence that was found only after extensive discovery that would not have been available in a PTAB proceeding. Third, at the district court, the process by which an invalidity determination was reached might have been very different from that available at the PTAB, particularly if the invalidity determination were made by a jury, whose deliberations are kept secret.

There are, however, some benefits to limiting the ICR program to PTAB invalidations. Such a restriction may help tighten the regulatory feedback loop because the PTAB proceedings generate data that the PTO can use to update its examination processes. Compared to district court invalidity determinations, PTAB data may be more useful to the PTO because of certain shared characteristics between PTAB proceedings and patent examination. For example, in both patent examination and PTAB validity challenges, the presumption of validity does not apply and the preponderance standard is used to prove invalidity. Although the PTAB will use the claim construction methodology set forth in Phillips v. AWH Corp. that is applied in the district courts instead of the “broadest reasonable interpretation” applied during examination, the two methodologies share enough similarities such that using one over the other

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274. 35 U.S.C. § 311(b) (“A petitioner in an inter partes review may request to cancel as unpatentable 1 or more claims of a patent only on a ground that could be raised under section 102 or 103 and only on the basis of prior art consisting of patents or printed publications.”).
278. See 35 U.S.C. § 316(e) (“In an inter partes review . . . the petitioner shall have the burden of proving a proposition of unpatentability by a preponderance of the evidence.”).
279. While this Article was being written, the PTO changed the claim construction methodology used in PTAB validity challenges from “broadest reasonable interpretation” to the standard used in the federal courts. Changes to the Claim Construction Standard for Interpreting Claims in Trial Proceedings Before the Patent Trial and Appeal Board, 83 Fed. Reg. 51340 (Oct. 11, 2018) (to be codified at 37 C.F.R. pt. 42).
is unlikely to change the result in most PTAB proceedings. In addition, both examiners and administrative patent judges (APJs)—about a third of whom are former examiners—have both technical degrees and patent-specific professional experience or training. By contrast, few federal judges and jurors possess backgrounds that combine technical knowledge with expertise in patent law. Also, the most popular adversarial PTAB proceeding—Inter Partes Review (IPR)—is conducted using only patents and printed publications as prior art, which are materials that have a high likelihood of having been available to a patent examiner at the time of examination. Therefore, compared to district court dispositions, the APJs’ analyses can be more readily adapted for use by examiners. Indeed, the PTO is presently exploring ways to use the results of PTAB post-issuance proceedings to improve patent examination. More generally, the PTAB’s expertise in patent law and technical fluency could serve as a counterweight to the Federal Circuit in a manner that would help improve the development of substantive patent law doctrines. It may be preferable then, to limit reimbursements only to PTAB proceedings, so as to further encourage their use.


282. See note 196, supra note 109.


284. See Vishnubhatk et al., supra note 270, at 53 (“[J]udges in the federal courts tend to be generalists who may not be equipped to tackle complex questions at the intersection of law, science, and policy . . . [J]uries . . . may be even less equipped than federal judges to address complex questions of law and science.”).


286. 35 U.S.C. § 311(b). Once a patent application is published, it becomes prior art that can be cited against another pending patent application. Id. § 102(a)(2). Given that patent applications are published eighteen months after filing, id. § 122(b)(1)(A), some prior art patent applications may not have been usable as prior art at the time the patent being challenged was originally examined.


B. Fairness to the Patentee

1. Compensate Prevailing Patentees?

A potential objection to this proposal is that it may be unfair to compensate only the prevailing accused infringer, while a patentee who successfully fends off a challenge is not reimbursed. Beyond the superficial appeal of symmetry, compensating prevailing patentees could substantially add to the cost of the proposal without materially enhancing welfare.

First, while invalidity can be affirmatively established, validity cannot be—which is why patent claims are found to be “not invalid” rather than valid.\textsuperscript{289} Claims that survive validity challenges may be challenged again, but invalidity determinations are accorded issue-preclusive effect.\textsuperscript{290} The law tolerates this asymmetry because it recognizes the value of encouraging validity challenges,\textsuperscript{291} which are costly and fraught with risks for challengers.\textsuperscript{292} One of the goals of reimbursing successful accused infringers at the PTAB is to provide an alternative to paying a nuisance fee. A greater willingness on the part of accused infringers to fight back at the PTAB might force patentees to exercise greater care in selecting the patent claims they assert because the expenses associated with a PTAB proceeding, while not as expensive as federal court litigation,\textsuperscript{293} may be substantial enough to give some patentees pause—especially those whose business models depend on collecting quick nuisance-value payments. If, however, the PTO were required to reimburse patentees as well, it is possible that some patentees with weak patents might feel less financially constrained in their assertions if there is a possibility that they can recoup the cost of defending against a PTAB challenge.

\begin{footnotes}
\footnotetext{289}{Shelcore, Inc. v. Durham Indus., Inc., 745 F.2d 621, 627 (Fed. Cir. 1984) (“A patent is not held valid for all purposes but, rather, not invalid on the record before the court.”).}
\footnotetext{290}{See Blonder-Tongue Labs., Inc. v. Univ. of Ill. Found., 402 U.S. 313, 313 (1971) (overruling precedent “to the extent it forecloses a plea of estoppel by one facing a charge of infringement of a patent that has once been declared invalid”).}
\footnotetext{291}{See, e.g., Oil States Energy Servs., LLC v. Greene’s Energy Grp., LLC, 138 S. Ct. 1365, 1374 (2018) (affirming the constitutionality of inter partes review proceedings, which “protect[] the public’s paramount interest in seeing that patent monopolies are kept within their legitimate scope” (quoting Cuozzo Speed Techs., LLC v. Lee, 136 S. Ct. 2131, 2144 (2016))); MedImmune, Inc. v. Genentech, Inc., 549 U.S. 118, 137 (2007) (adopting a broader view of jurisdiction under the Declaratory Judgment Act than the Federal Circuit in the context of patent validity challenges by licensees); Blonder-Tongue Labs., 402 U.S. at 344 (noting that the Court’s own precedents “encourage authoritative testing of patent validity”); Lear, Inc. v. Adkins, 395 U.S. 653, 670 (1969) (holding that licensees should not be estopped from challenging the validity of patents to which they have taken a license, lest “the public may continually be required to pay tribute to would-be monopolists without need or justification”).}
\footnotetext{293}{See supra notes 30–37 and accompanying text.}
\end{footnotes}
Second, compensating prevailing patentees could be costly for the PTO, especially in light of *SAS Institute Inc. v. Iancu,* which prohibits the PTAB from limiting institutions to a subset of the claims listed in the petition that have the most viable invalidity arguments. Once a claim is invalidated in connection with a PTAB proceeding (and the requisite finality has attached to this determination), it cannot be the subject of another invalidity challenge. Thus, the PTO would pay out only once for a successful challenge of that claim. If, however, the PTO had to make payments to patentees for defeating a validity challenge, it is possible that the PTO may be required to make payments multiple times on the same claim—that is, each time a challenger, who is not otherwise estopped, petitions for review of that claim and either fails to secure institution of a PTAB proceeding, or, after institution, the PTAB determines that the claim is not invalid. This can substantially increase the payouts by the PTO, potentially leading it, in turn, to substantially raise its fees.

2. Costlier Patents?

Questions may arise as to whether the ICR program might make it more difficult and/or expensive to obtain and maintain a patent. For some patents—in particular, the patents whose risk profile indicates a high likelihood of a PTAB invalidation (and thus a payout)—the ICR program will increase the cost of maintaining them. For a substantial portion of the patents-in-force, however, adoption of the ICR program may (or may not) be accompanied by material changes to current practices and/or fees, depending on the extent to which the PTO changes its examination operations as a risk management strategy and how it sets the ICR fees.

In one possible implementation, the PTO could operate the ICR program without changing its current examination processes or raising existing examination-related fees, such that its risk management strategy for keeping the program solvent relies solely on charging high, risk-adjusted ICR fees on a subpopulation of patents that are at moderate-to-high risk for invalidation at the PTAB, while charging the “low risk” patents a nominal ICR fee (e.g., $1) or even waiving it. In such a scenario, the “low risk” patents (which could constitute the bulk of the patents, depending on the risk factors used) may not see any material changes from current practice if the ICR program were adopted.

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295. *Id.* at 1353 (“The [Patent Office] cannot curate the claims at issue but must decide them all.”).
296. Either because no appeal to the Federal Circuit is taken, see B & B Hardware, Inc. v. Hargis Indus., Inc., 135 S. Ct. 1293, 1303 (2015), or, on appeal, the Federal Circuit either affirms the PTAB’s invalidity determination or reverses the PTAB’s finding of no invalidity in a manner that establishes invalidity as a matter of law.
In an alternative implementation, the PTO’s adoption of the ICR program may be followed by changes to its operations as an enhanced risk management measure in order to further decrease the risk of a payout.\footnote{See supra Section II.C.} It is possible that enhancing the agency’s ability to cull weak applications may increase the rate of Type I errors or false positives (i.e., the rejection of meritorious applications). However, to the extent that the increase in Type I errors is accompanied by a material decrease in Type II errors (i.e., the grant of invalid patents), the ICR program is expected to have a net positive effect, as the negative societal impact of Type II errors tends to be more severe than Type I errors.\footnote{See Rochelle Cooper Dreyfuss, \textit{Nonobviousness: A Comment on Three Learned Papers}, 12 \textit{Lewis & Clark Law Rev.} 431, 435 (2008) (“[T]he distortions produced by erroneous grants vastly outweigh the cost of erroneous denials. Type II errors take material out of the public domain, increase patent thickets and transaction costs, act as barriers to entry and to cumulative research, and encourage trolling.” (footnote omitted)); see also Ian Ayres & Paul Klemperer, \textit{Limiting Patentees’ Market Power Without Reducing Innovation Incentives: The Perverse Benefits of Uncertainty and Non-Injunctive Remedies}, 97 \textit{Mich. Law Rev.} 985, 1019–20 (1999) (“Enforcing invalid patents creates ex post pricing distortions without enhancing innovation, while our model showed that failing to enforce otherwise-valid patents could reduce the ex post distortions without reducing, or without substantially reducing, innovation incentives.” (footnote omitted)).} The relative balance between Type I and Type II errors will depend in large part on the nature of the operational changes made, and should be a consideration in evaluating the effectiveness of the ICR program for possible renewal at the end of its sunset period.

In general, any operational changes that increase examination burdens on applicants may have the effect of prompting prospective applicants of limited means to forgo patenting. There are a couple of ways that the PTO could mitigate this effect in conjunction with the ICR program. Based on an analysis of risk factors, the PTO might consider exempting low-risk applicants of limited means from certain additional requirements (e.g., performing a pre-filing prior art search). To further assist entities of limited means, perhaps any excess ICR fees that are collected can be used to subsidize the expenses incurred by such entities to comply with any additional examination burdens. Ultimately, as discussed previously in Section II.C., there may be a practical limit to how much and how quickly the PTO can raise fees (whether pre-grant or post-grant) or impose additional examination burdens, because a sudden, substantial decrease in the number of patents applied for, granted, and maintained may adversely affect its fiscal health as a user-fee funded agency.

3. Costlier Assertions?

On the whole, the ICR program might increase the cost of asserting a patent.
Increased Serial Petitioning. A particular concern of patentees in recent years has been the phenomenon of “serial petitions” (or “serial challenges”) at the PTAB, where the same patent has its validity tested multiple times, in challenges pursued in parallel or in seriatim by multiple accused infringers. Patentees view serial petitions as unfairly subjecting their patents to repeated attacks, by allowing accused infringers to “pile on.” Given that one of the goals of the ICR program is to encourage validity challenges, serial petitioning will likely increase if the ICR program were adopted. Although the possibility of patentee harassment exists with serial petitions, they could be socially beneficial to the extent they alleviate the collective action problems associated with invalidity challenges. It is worth noting that the categories of patents that are prone to serial challenges are those that cover computer/communications and electronic/electrical inventions, which are the technologies that are frequently the subject of broad licensing campaigns by PAEs and operating companies who monetize their portfolios by sending demand letters and/or suing large numbers of accused infringers. For this reason, the increase in serial petitioning is expected to be one of degree and largely localized to existing hotspots of serial petitioning at the PTAB. At this time, the PTAB is still developing its precedents for the efficient and equitable handling of serial petitions, such that it is difficult to predict whether any potential uptick in serial petitioning that may be attributable to the ICR program may materially change the dynamics of serial petitioning as they exist currently.

Costlier Licensing and Settlement. It is possible that the ICR program may increase the cost of licensing campaigns for patentees and prolong

300. See Matthew Bultman, What You Need to Know About Serial Challenges at PTAB, LAW360 (Apr. 4, 2018, 9:39 PM), https://www.law360.com/articles/1029955/what-you-need-to-know-about-serial-challenges-at-ptab (“The threat that a patent will be challenged over and over again with new petitions has historically been among the main concerns of patent owners, who complain it is unfair for petitioners to get multiple cracks at invalidating a patent at the PTAB.”).

301. Id.

302. At the time of the writing of this Article, Vishnubhakat and his co-authors were “studying the precise nature of these serial challenges (for example, whether they are being brought by the same petitioner) to determine whether they could represent harassment and therefore are problematic from a policy perspective.” Vishnubhakat et al., supra note 270, at 68.

303. Id. at 75.

304. Id. at 68, 95 (“Patents in the Chemical, CCM [Computers and Communications], and Electrical areas are particularly prone to multiple petitions. As Figure 8 shows, a majority of patents in each of these fields were the subject of multiple IPR petitions: 60.6% of Chemical patents, 50.9% of CCM patents, and 58.4% of Electrical patents.”). The “Chemical,” “CCM,” and “Electrical” categories referred to by Vishnubhakat and his co-authors are those used by the National Bureau of Economic Research (NBER) to “categorize[] patents into six different technology areas: (1) Chemical (excluding Drugs); (2) Computers and Communications (CCM); (3) Drugs and Medical; (4) Electrical and Electronics; (5) Mechanical; and (6) Others.” Id. at 66.

305. See Colleen V. Chien & Edward Reines, Why Technology Customers Are Being Sued En Masse for Patent Infringement and What Can Be Done, 49 WAKE FOREST L. REV. 235, 236 tbl.1 (2014) (listing patent litigation campaigns); see generally Chien, Arms Race, supra note 21 (explaining how both operating companies and PAEs engage in licensing campaigns).

306. See Bultman, supra note 300.
adjudicatory proceedings filed in connection with patent assertions. Specifically, the ICR program could potentially decrease the willingness of potential licensees and accused infringers to take a license or settle when approached or sued by a patentee. This might also be accompanied by a decrease in the license fees or the settlement amounts demanded by patentees and, conversely, an increase in the amounts paid by patentees as “reverse payments” to accused infringers as an inducement to drop a validity challenge. In proceedings at the PTAB and in district court—where the settlement rate is about 30% for IPR proceedings  and more than 90% for patent suits— the availability of the ICR program might prolong the dispute or increase the frequency of concurrent proceedings. But the impact on settlement dynamics may also be dependent on the size of the parties. If the accused infringer is either a large, well-capitalized company or an extremely small, undercapitalized one, it is possible that the existence of the ICR program may not have a material impact on its decision to challenge a patent at the PTAB: the former might have availed itself of the PTAB regardless (because it can readily afford to), and the latter may not be in a position to invest the time and money upfront to challenge a patent for an uncertain chance at reimbursement. Instead, the impact of the ICR program on settlement and licensing behavior may be the strongest for the accused infringers that fall outside of those extremes.

At the same time, in certain subpopulations of cases, there may be no material change in the settlement rate, depending on how much the settlement payment amount changes in response to the existence of the ICR program: a patentee might make a settlement more attractive by lowering the amount payable by an accused infringer. Although a decrease in the profit margins on assertions could lead some patentees to become highly selective with assertions, other patentees might increase the volume of assertions to make up for shortfalls and to compensate for lower yields. The option chosen may depend on the technology at issue, as the latter option may be viable where there is a large pool of potential accused infringers. Although there may be instances where the ICR program may not change the existing settlement and licensing dynamics, it is possible that in a nontrivial proportion of assertions—particularly those involving accused infringers who may be prone to paying nuisance fees in the absence of the program—the dynamics may change so as to discourage settlements, thereby raising the cost to the patentee, but which may

307. See PTAB FY 2016 STATISTICS, supra note 27, at 10 (reporting that, of the 3672 IPR petitions filed, 1125 settled (630 before institution and 495 after institution)).

308. See Allison et al., Modern Patent Litigation, supra note 24, at 1780 (“[L]ess than 10% of the patent lawsuits filed in 2008 and 2009 (462 of 5,029) resulted in any merits decision. In other words, more than 90% of lawsuits settle before the court resolves summary judgment or tries the case.” (footnote omitted)).

309. See Vishnubhakat et al., supra note 270, at 69 (reporting that “about 12.7% of litigated patents are also being challenged in the PTAB”).
ultimately have pro-social, welfare-enhancing effects by allowing more patents to be tested on the merits.\textsuperscript{310}

CONCLUSION

One way to mitigate the deficiencies in the regulatory coverage of the patent system would be to expand the regulatory footprint of the PTO. To accomplish this, the Article draws from the lessons of the auto insurance industry to propose that Congress should require the PTO to collect an annual, risk-adjusted fee on each patent-in-force to fund a program to reimburse the expenses incurred by accused infringers who have prevailed in a PTAB post-issuance validity challenge. This arrangement may yield several benefits: (1) it would further encourage PTAB challenges to weak patents, especially as an alternative to paying nuisance fees to avoid or settle litigation; (2) it would allow the PTO to regulate or influence the behavior of patentees with respect to both pre-issuance (i.e., examination) and post-issuance (e.g., assertion) activities by assessing risk-adjusted fees for each patent according to the likelihood of invalidation; and (3) it would act as a source of fiscal pressure for the PTO that may induce it to innovate on patent quality issues in spite of opposition from patentees.

\textsuperscript{310} See Farrell & Merges, supra note 292, at 968–69 (“In negotiation between a patentee and a single challenger, privately attractive settlements that short-change non-participants, and downstream customers in particular, are a likely result. . . [T]here will be very few [completed patent] challenges, and patentees will be able to extract royalties disproportionate to their patents’ likely strength.”); Megan M. La Belle, Against Settlement of (Some) Patent Cases, 67 VAND. L. REV. 375, 379–80 (2014) (“When patent litigants settle, the accused infringer usually agrees to pay the patent owner, stipulates to the patent’s validity, and promises not to challenge the patent in the future. . . [S]uch an agreement . . . may undermine the public’s interest by allowing a potentially invalid patent to remain intact.”).