

# Enhancing Patent Quality: Assessing Patent Use Patterns

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A principal goal of the patent quality initiative is to “provide certainty as to [patents’] validity to encourage investment in research, development, and commercialization.” However, my colleagues and I have evidence suggesting that a large number of patents are used by non-practicing entities (NPEs) in a fashion that is not only non-commercial, but directly impedes other firms’ research, development, and commercialization efforts.

Our research shows that NPEs—in particular, large patent aggregators—on average act as patent trolls: They target firms that are flush with cash (or have just had large positive cash shocks), even if that cash is not derived from alleged infringement. Moreover, NPEs typically target firms that are busy with non-intellectual property lawsuits, or are otherwise likely to settle. The cash-targeting behavior we observe seems to be unique to NPE-driven intellectual property litigation. Cash is neither a determinant of practicing entities’ (PEs’) intellectual property lawsuits, nor a driver of other forms of litigation (tort, contract, securities, environmental, or labor).

Meanwhile, as we also show, NPE litigation has a real negative impact on future innovative activity at targeted firms. Losing to an NPE (either in court or through settlement) leads a firm to decrease its future research and development activity by about 30%, on average.<sup>1</sup>

To ensure that patents serve to encourage—rather than hinder—innovative activity, we must reduce (or preferably, eliminate) trolling behavior by non-practicing entities. Towards this goal, in this note I comment on how the Patent and Trademark Office can leverage information about patents’ use patterns to improve assessment of patent quality.<sup>2</sup>

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My collaborators and I have demonstrated significant empirical differences between the determinants of intellectual property lawsuits brought by NPEs and those brought by PEs. Likewise,

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This comment is in response to the Patent and Trademark Office’s “Request for Comments on Enhancing Patent Quality” (80 *Federal Register* 6475, posted on February 2, 2015). The views presented herein are those of the author and his collaborators, Umit G. Gurun and Scott Duke Kominers, and do not necessarily reflect the views of Harvard Business School or its affiliates.

<sup>1</sup>The research findings described here are presented in “Patent Trolls: Evidence from Targeted Firms,” joint work with Umit G. Gurun and Scott Duke Kominers, originally circulated as National Bureau of Economic Research Working Paper No. 20322. Our empirical analysis examines *all* NPE lawsuits filed against publicly-traded firms from 2000–2012 (over 3,500 lawsuits in total), using data from both PatentFreedom/RPX and the work of Christopher Anthony Cotropia, Jay P. Kesan, and David L. Schwartz (99 *Minnesota Law Review* 649, (2014)).

<sup>2</sup>Each of my collaborators has submitted a comment that begins with the same discussion of our research results, but focuses on a different aspect of patent quality.

we have found marked differences across classes of NPEs; in particular, large aggregators are much more cash-driven than small inventors are.

Differences in litigation behavior do not on their own carry direct implications for the quality of the underlying patents. Nevertheless, our findings suggest that the way in which a given patent is used may give valuable insight into whether that patent’s quality should be investigated further. I describe several such *usage-based patent assessment strategies* in this note.

Under usage-based assessment, the Patent and Trademark Office would attempt to identify patent litigation/assertion profiles that are suggestive of trolling, rather than protection of real commercial interests. Patents whose litigation and assertion patterns seem questionable would then be subjected to further quality review. High-quality patents would clear review successfully; those patents would gain an extra stamp of approval, which could even in principle help in future litigation actions. Low-quality patents, however, would be weakened (or potentially invalidated) through negative review findings.<sup>3</sup>

Since PEs engage in the majority of development and commercialization efforts, one attractive usage-based assessment strategy would be to review the quality of patents whose litigation targeting patterns differ markedly from those of PEs’ patents. To do this, one would compare the characteristics of firms targeted under a given patent to those of firms targeted under similar patents held by PEs.

Usage-based assessments of the type just described, however, require combining litigation filing records with detailed data about targeted firms, on an ongoing basis. This may be difficult, in general, both because of the complex effort required and because much intellectual property litigation is targeted at privately held firms (for whom data may be unavailable). Luckily, sensible heuristics are available.

One heuristic, suggested by recent work of Brian J. Love (161 *University of Pennsylvania Law Review* 1309, (2013)), would be to review patents whose assertion begins late in the patent term. Love has shown that PEs “predominately enforce their patents soon after issuance”; hence, looking at late-in-term assertion may proxy for a comparison to PE litigation behavior.

An even simpler heuristic would be to review all patents that are litigated sufficiently frequently.<sup>4</sup> This would help ensure that the most “actively used” patents are of high quality.

Patents whose assertion patterns shift markedly following legal rule changes may also be candidates for review. For example, the Patent and Trademark Office could assess the quality of patents whose litigation patterns changed discontinuously following the *Alice Corp. v. CLS Bank International* decision—those patents likely comprise a large fraction of the “active” patents actually affected by the *Alice* decision, and thus may now represent an especially low-quality portion of the patent stock.

Finally, we might hope to use empirical modeling to identify usage patterns predictive of low-quality patent assertion. For example, we could train machine learning algorithms to identify

<sup>3</sup>The form of review is on its own an important question; the key for our purposes is that the review be unbiased, and able to effectively assess patent quality under current law. It might be sensible to give the reviewing body the power to invalidate certain patents, although this feature is not strictly necessary.

<sup>4</sup>Of course, setting the threshold for triggering assessment requires a careful calibration, likely varying by patent type and industrial sector.

currently valid patents whose patterns of assertion are similar to those of patents that were eventually invalidated.

In my colleagues' and my view, usage-based assessment could be a powerful tool for identifying potentially low-quality patents in the active patent stock. By reviewing patents whose usage patterns are questionable, the Patent and Trademark Office can also learn valuable information about the types of patents whose eventual assertion is of low quality.

It is worth noting, however, that significant care is required in implementing usage-based assessment: Any change in the evaluation of patents will cause equilibrium shifts in the intellectual property market. Just as teachers sometimes "teach to the test," patent holders may adjust their litigation behavior in response to usage-based assessment rules. Thus, it is essential for usage-based quality assessment systems to be dynamic, with rules that adapt to changes in the landscape of intellectual property litigation.