

## Reply

### Patent Holdup and Royalty Stacking\*

Mark A. Lemley\*\* & Carl Shapiro\*\*\*

We argued in our article, *Patent Holdup and Royalty Stacking*,<sup>1</sup> that the threat to obtain a permanent injunction can greatly enhance a patent holder's negotiating power, leading to royalty rates that exceed a benchmark level based on the value of the patented technology and the strength of the patent. Our analysis showed that such problems are especially likely to arise for patents covering a minor feature of a complex product developed independently by the infringing party.

John Golden, in his extensive commentary on our article,<sup>2</sup> argues against a "categorical rule" that denies injunctive relief to broad categories of patent holders.<sup>3</sup> In doing so, he states that he is responding to our article, which he reads as "suggesting that as a matter of good economic policy, permanent injunctions should commonly be denied when they are sought by 'noncompeting patent holders.'"<sup>4</sup> We do not, in fact, advocate any "categorical rule." To the contrary, we stress the advantages of equitable discretion, and even in cases of noncompeting patent holders who have substantial holdup power, we favor *stays* on permanent injunctions, rather than the outright denial of such injunctions, in cases where the infringing party can design around the patent at moderate cost while the injunction is stayed.<sup>5</sup>

Golden goes on, in a section entitled "Flaws in Lemley and Shapiro's Theoretical Approach," to critique our approach to analyzing prelitigation royalty negotiations, "pointing out specific defects that make their approach

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\*\* William H. Neukom Professor, Stanford Law School; Of Counsel, Kecker & Van Nest LLP.

\*\*\* Transamerica Professor, Haas School of Business, University of California at Berkeley; Senior Consultant, CRA International. We have read Professor Golden's lengthy commentary and prepared this Reply with extremely short notice. Given the time constraints, we have not been able to respond to all of the things Golden says with which we disagree, and our failure to discuss certain of his claims should not be read as agreement with them. We also believe that, had we been able to iterate drafts with Golden, we could have explained our position to his satisfaction on a number of issues.

1. Mark A. Lemley & Carl Shapiro, *Patent Holdup and Royalty Stacking*, 85 TEXAS L. REV. 1991 (2007).

2. John M. Golden, Commentary, "*Patent Trolls*" and *Patent Remedies*, 85 TEXAS L. REV. 2111 (2007).

3. *Id.* at 2114.

4. *Id.*

5. Lemley & Shapiro, *supra* note 1, at 2036.

incapable of proving what they say it proves—namely, ‘that under current law patentees whose inventions are only one component of a larger product are systematically overcompensated.’”<sup>6</sup> In fact, there are no flaws or defects in our analysis, as we explain in Part I below. In Part II, we briefly respond to his criticism of our empirical study of court-awarded reasonable royalties. Golden also claims that our recommendation to reduce the availability of permanent injunctions to patent holders who have claims to reasonable royalties but not lost profits “threatens to distort the market for invention.”<sup>7</sup> We strongly disagree, for reasons we explain in Part III.

### I. Benchmark Royalty Rate

Golden states: “Indeed, there are fundamental flaws in Lemley and Shapiro’s use of a ‘benchmark royalty rate’  $B \times V \times \theta$ .”<sup>8</sup> Here,  $B$  is the patent holder’s bargaining skill,  $V$  is the per-unit value of the patented feature, and  $\theta$  is the patent strength. Golden observes that we use this benchmark for the purposes of measuring patent overcharges, stating: “Nonetheless, they do remarkably little to justify this use. How could they?”<sup>9</sup>

How indeed? In fact, we explain in our article that the  $B \times V \times \theta$  benchmark equals the royalty rate that would be negotiated in the absence of any holdup, i.e., if the downstream firm could, in the event the patent is found valid and infringed, shift to the best noninfringing technology rapidly and without stranding any of its investments. This is also the expected value of the royalty rate that would be negotiated if the patent’s validity and the downstream firm’s infringement could be resolved before the downstream firm makes any investments specific to the patented technology. Golden does not dispute this characterization.

If we made any error, it was in assuming that readers would understand that holdup is recognized as a form of market failure that leads to inefficiency, primarily by discouraging what would otherwise be socially desirable investments. An enormous literature explores holdup as a market dysfunction, typically emphasizing the ways in which private firms can manage their affairs to avoid holdup or mitigate its effects. The classic reference in this literature is Oliver Williamson’s 1985 book, *The Economic Institutions of Capitalism: Firms, Markets, Relational Contracting*.<sup>10</sup> There is a consensus among the antitrust authorities that bilateral ex ante royalty negotiations promote competition and innovation by mitigating patent

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6. Golden, *supra* note 2, at 2136 (quoting Lemley & Shapiro, *supra* note 1, at 2044).

7. *Id.* at 2155–56.

8. *Id.* at 2116.

9. *Id.* at 2137.

10. OLIVER WILLIAMSON, *THE ECONOMIC INSTITUTIONS OF CAPITALISM: FIRMS, MARKETS, RELATIONAL CONTRACTING* (1985).

holdup.<sup>11</sup> We freely and happily acknowledge that our benchmark is based on the market (negotiated) outcome in the absence of holdup.

Golden pours scorn on our benchmark because it includes a factor reflecting the patent holder's bargaining skill.<sup>12</sup> In fact, however, market outcomes routinely depend upon bargaining skills whenever there are gains from trade that are unique to a buyer–seller pair. Our benchmark simply reflects the market outcome in the absence of a known market failure, namely holdup. We then identify the key underlying economic factors that determine the size of the gap between the negotiated royalties and this benchmark. In this fashion, we can isolate and study the effects of permanent injunctions on patent holdup. Our approach—isolating one type of market failure and developing an equilibrium model to better understand the implications of a particular public policy in the face of that market failure—is standard practice in the field of economics. This approach is routinely followed in other areas of law and economics, including competition policy.<sup>13</sup> We consider it a virtue of our analysis that it is quite general, applying regardless of the bargaining skills of the patent holder and the downstream firm.<sup>14</sup>

Golden is incorrect when he states that our argument is “fundamentally circular”<sup>15</sup> and that we permit our argument “to spin in normative circles.”<sup>16</sup> Our normative approach is firmly rooted in economic principles and the literature on the inefficiency of holdup. As we point out in our article, our approach is also rooted in well-established patent law, which at least attempts to base reasonable royalties on a hypothetical *ex ante* negotiation.<sup>17</sup>

Setting aside Golden's strident tone, a serious question underlies his attack on our benchmark: if patent holders who lack holdup power are systematically *underrewarded*, might enabling them to engage in holdup

11. The Department of Justice and the Federal Trade Commission recently emphasized the benefits of *ex ante* negotiations in mitigating the effects of patent holdup. See U.S. DEP'T OF JUSTICE & FED. TRADE COMM'N, ANTITRUST ENFORCEMENT AND INTELLECTUAL PROPERTY RIGHTS: PROMOTING INNOVATION AND COMPETITION 33–56 (2007), available at <http://www.usdoj.gov/atr/public/hearings/ip/222655.pdf>.

12. Golden, *supra* note 2, at 2137–38.

13. See, e.g., MASSIMO MOTTA, COMPETITION POLICY: THEORY AND PRACTICE (2004).

14. In the model used by Farrell and Shapiro, the patent holder has the ability to make a take-it-or-leave-it offer, which implies that  $B = 1$ , so the benchmark becomes  $V \times \theta$ . Joseph Farrell & Carl Shapiro, How Strong Are Weak Patents? (Jan. 2007) (unpublished manuscript), available at <http://faculty.haas.berkeley.edu/shapiro/weak.pdf>. Our article is more general in terms of bargaining skill. However, the Farrell and Shapiro model is more general in that it models the interactions among competing downstream users, which leads to excessive royalties for weak patents even in the absence of holdup or royalty stacking.

15. Golden, *supra* note 2, at 2139.

16. *Id.* at 2140.

17. Lemley & Shapiro, *supra* note 1, at 1999. Golden claims that we have misrepresented current law. Golden, *supra* note 2, at 2141. He observes that the Patent Act specifies that patent damages should compensate the patent holder for the infringement, and such compensation may be larger than reasonable royalties in cases involving lost profits. *Id.* But we stated in our original article, “[o]ur analysis applies to cases involving reasonable royalties but not lost profits.” Lemley & Shapiro, *supra* note 1, at 1991.

correct for those underrewards and thus be a desirable feature of the patent system? This question fits into the classic theory of the second best, which has long been a fixture in welfare analysis in the field of economics: can one market failure (here, holdup) raise social welfare by correcting, at least in part, for another market failure (here, putative underrewards to patent holders)? By contrast, to the extent that patent holders who lack holdup power are *overrewarded*, policies that enable them to engage in holdup will exacerbate that inefficiency.

Our article certainly does not include a full analysis of whether patent holders lacking holdup power are under- or overrewarded from a social-welfare perspective. The deep and complex question of whether the patent system over- or underrewards patent holders has vexed scholars for decades, generating a substantial literature. Above and beyond the points just made, this literature contains important strands that support our normative analysis and policy conclusions.

In a recent contribution to this literature, Shapiro provides a series of reasons why the current patent system tends to *overreward* patent holders in the presence of holdup.<sup>18</sup> Two of his points are especially relevant here. The first point builds on what we hope is a noncontroversial proposition: a patent holder who captures more in profits than it contributes socially is overrewarded. Applying this principle, patent holders are generally overrewarded in situations where other parties independently achieve the same (or a similar) invention at roughly the same time. This is commonly the case when one firm incorporates a patented feature into its product without knowledge that the feature was (or would become) patented. With this fact pattern, the patent holder's social contribution does *not* include use of the patented invention by the party that independently achieved the same invention. In such cases, enabling the patent holder to engage in holdup does not correct for any underreward to the patent holder; it exacerbates the overreward to the patent holder. In terms of our bargaining model, the patent holder's (expected) social contribution does *not* include the downstream firm's use of the patented technology, as measured by  $V \times \theta$ , in cases in which the downstream firm developed the patented technology on its own. Contrary to Golden's assertion that our benchmark  $B \times V \times \theta$  is too low, in fact if anything it tends to be too high. This strengthens our policy conclusions.

Second, in the presence of complementary innovations, which are especially important for complex products, it is generally not feasible for all of the innovators who contribute to a product's value to capture the entire

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18. Carl Shapiro, *Patent Reform: Aligning Reward and Contribution*, in 7 INNOVATION POLICY AND THE ECONOMY (Adam B. Jaffe et al. eds.) (forthcoming 2007) (manuscript at 18–19), available at <http://faculty.haas.berkeley.edu/shapiro/align.pdf>.

incremental value of their innovations.<sup>19</sup> With complementary innovations, the sum of the contributions of each of the innovators adds up to *more* than their total value. Therefore, if one innovator captures 100% of the value of its innovation, others must get less than 100% of the value of their innovations, at least in the absence of government subsidies. This is important because much of Golden's rhetoric seems inspired by his conviction that a patent holder is underrewarded if it receives less than the full value of its invention, discounted by patent strength.<sup>20</sup> In our bargaining model, Golden's full appropriability benchmark,  $V \times \theta$ , is neither feasible nor desirable.

Promoting innovation generally requires that the value created jointly by multiple inventors be split among them. The optimal way to split the reward in order to promote innovation depends upon economic factors that are generally not observable, especially the elasticity of invention with respect to reward for each innovator.<sup>21</sup> Our bargaining model acknowledges that such splitting will occur and is agnostic about how the parties actually divide the value they have jointly created. Under the  $B \times V \times \theta$  benchmark, the patent holder and the downstream firm negotiate over how to split up the value that they have jointly created, without holdup tilting this split one way or another. Any benchmark that gives one patent holder 100% of the total value jointly created leaves none of that value for other complementary innovators, including other patent holders and the downstream firm itself, and cannot be optimal. Because holdup discourages investments and innovation by users, and reduces the return to complementary innovators generally, there are very strong reasons to believe that patent holdup discourages innovation.

As emphasized by Frischmann and Lemley, the norm in a market economy is for private parties to capture only a portion of the social value of their output.<sup>22</sup> The market mechanism generally does not lead to the extreme result under which one party captures the full value of its contribution. Indeed, in our analysis such a result would leave the downstream firm with no incentive to use the new technology at all. Innovation policy should not

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19. This idea is explained and developed in Shapiro's *Patent Reform: Aligning Reward and Contribution*. *Id.* (manuscript at 14–18).

20. By our reading, Golden would be much less exercised had we used the benchmark of  $V \times \theta$  rather than  $B \times V \times \theta$ . So far as we can tell, Golden does not object to the notion that the benchmark for assessing negotiated royalties should reflect patent strength, i.e., the probability that the patent is valid and infringed, or the technical contribution of the invention. It appears to be the sharing of that value between the inventor and the implementer that bothers him.

21. Shapiro derives an optimal splitting formula with two complementary innovators. Shapiro, *supra* note 18 (manuscript at 14–18).

22. Brett M. Frischmann & Mark A. Lemley, *Spillovers*, 107 COLUM. L. REV. 257 (2007); see also Mark A. Lemley, *Property, Intellectual Property, and Free Riding*, 83 TEXAS L. REV. 1031, 1046, 1046–69 (2005) (“We do not permit producers to capture the full social value of their output.”).

favor inventions leading to patents that involve holdup over other types of innovations.

Even if artificially increasing the money paid to patent owners were seen as desirable, allowing patent holders to engage in holdup is a very poorly targeted and inefficient way in which to increase the returns on innovation.<sup>23</sup> The extra return to the patent holder generated by the threat of an injunction depends upon the redesign costs,  $C$ , the value of the product *without* the patented feature,  $M - V$ , and the redesign lag,  $L$ . None of these is directly related to the value of the patented feature,  $V$ , or to the patent holder's social contribution.<sup>24</sup>

Moreover, even if one uses Golden's  $V \times \theta$  as a benchmark, giving one patent owner all the surplus jointly created and leaving none for complementary innovators, our policy conclusions remain valid. In the case where the "Litigate" strategy is optimal for the accused infringer (as it will be for sufficiently weak patents),<sup>25</sup> the negotiated royalty rate in our model exceeds  $V \times \theta$  if and only if:

$$B(1 + C + \frac{M - V}{V}L) > 1.$$

This condition is easily met for a wide range of parameter values, further supporting our proposition that "patentees whose inventions are only one component of a larger product are systematically overcompensated."<sup>26</sup> For example, following the numerical example in our article, suppose that the redesign costs are  $C = 20\%$  of the value of the patented feature and that an injunction would cause the downstream firm to lose  $L = 10\%$  of the total unit sales expected during the patent lifetime. With  $M = \$10$  and  $V = \$1$ , the negotiated royalty exceeds  $V \times \theta$  if  $B$  is at least 48%, which includes the case of equal bargaining skill. For a minor feature, the redesign costs can be very large relative to the value of that feature. If the redesign costs are twice the value of the feature,  $C = 200\%$ , then the negotiated royalty exceeds  $V \times \theta$  if  $B$  is at least 26%. Even if Golden's basic challenge to our model were correct, the model would still show systematic overcompensation of patentees, albeit in a smaller set of cases.

23. This point is developed in Joseph Farrell et al., *Standard Setting, Patents, and Holdup*, ANTITRUST L.J. (forthcoming 2007), available at <http://faculty.haas.berkeley.edu/shapiro/standards2007.pdf>.

24. Golden does not dispute this point: "Lemley and Shapiro successfully use a theoretical model for licensing negotiations to illustrate how a patent owner's ability to obtain a permanent injunction can produce licensing fees that are driven not by any value specifically contributed by the patented invention, but instead by the cost of implementing a noninfringing 'design-around' . . . ." Golden, *supra* note 2, at 2114.

25. Lemley & Shapiro, *supra* note 1, at 2001.

26. *Id.* at 2044.

Golden's other alleged "flaws" with our theoretical approach<sup>27</sup> can readily be dismissed.

- He challenges what he says is our implicit assumption that the per-unit incremental value of the invention over noninfringing alternatives,  $V$ , is a well-defined quantity.<sup>28</sup> Certainly,  $V$  is well defined conceptually, so Golden's objection must be about measurement. But this misses the point of our article. We do *not* need to measure  $V$  in any given case in order to show that the patentee's return exceeds  $B \times V \times \theta$  (or  $V \times \theta$ ); that is one reason why we express our results in terms of percentage overcharges rather than dollars.
- He claims that we "neglect to take account of the limited nature of the patent term."<sup>29</sup> He seems to be arguing that negotiated royalties in the absence of holdup underreward patent holders because the public gets the invention for free once the patent expires. However, this argument is plainly incorrect in the central case where the infringing party independently develops the patented invention, which is common in holdup situations. In those situations, the patent holder's reward typically exceeds its social contribution, the finite patent lifetime notwithstanding.
- Golden says that we ignore litigation costs and the delay associated with litigation. He claims that a "defect" of our article is the "treatment of litigation costs as 'of no significance' to patent hold-out concerns."<sup>30</sup> He is simply incorrect on this point. We report that the underlying bargaining model on which we are relying expressly includes litigation costs, and we note: "because litigation costs are relevant in both the benchmark and the holdup royalty calculations, they drop out of the comparison of the two and are of no significance for our purposes."<sup>31</sup> In our model, the effect of holdup on the negotiated royalty rate is independent of litigation costs. While we agree with Golden that litigation costs can greatly influence negotiated royalty rates in practice, this observation does not alter our economic or policy conclusions regarding injunctions. We welcome additional reforms designed to improve court

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27. Golden, *supra* note 2, at 2136.

28. *Id.*

29. *Id.*

30. *Id.*

31. Lemley & Shapiro, *supra* note 1, at 1999 n.16. The more technical paper on which we rely, Carl Shapiro, *Injunctions, Hold-Up, and Patent Royalties* 1 (Competition Policy Ctr., Working Paper No. CPC06-062, 2006), available at <http://faculty.haas.berkeley.edu/shapiro/royalties.pdf>, provides formulas for the negotiated royalty rate with and without holdup as a function of the litigation costs of the patent holder and the alleged infringer.

proceedings and to reduce litigation costs, as Golden suggests,<sup>32</sup> but they do not solve the patent-holdup problem.

- Golden argues that asymmetric information will affect the negotiations.<sup>33</sup> We agree that asymmetric information can be important, but it is unclear which way it cuts. Golden says the infringing party has better information about redesign costs and lags, and profit margins, but patent holders have access to information on these issues and can get more information from the accused infringer during discovery. More importantly, a patentee's misinformation can just as easily make the patentee demand more money as less and therefore is unlikely to have any systematic effect on the division of the surplus in settlement. Furthermore, information asymmetry is not one sided: the patent holder may well have better information than the defendant about patent validity. In the end, the law and economics literature teaches us that the main systematic impact of asymmetric information is not to tilt the settlement terms one way or the other, but instead to lead to litigation (rather than settlement) in cases where both sides are optimistic about their chances in court.
- Golden asserts that we failed to acknowledge the likely length of patent enforcement proceedings.<sup>34</sup> In fact, the model we rely on has a variable for the length of these proceedings.<sup>35</sup> The length of patent enforcement proceedings is not directly relevant to our main point about patent overcharges, since the patentee will be well compensated (indeed, likely overcompensated, as we have shown) in damages for infringement that takes place during the pendency of those proceedings. The fact that the injunction-based holdup starts only after the injunction is issued does not eliminate overcharges based on holdup.

## II. Empirical Study of Reasonable Royalties

Golden misunderstands both the scope and the purpose of our empirical investigation of court-ordered reasonable-royalty rates. He criticizes the data as “likely to be unrepresentative of the vast universe of licensing agreements.”<sup>36</sup> We agree. The data demonstrate what courts award as reasonable royalties, not what parties agree upon when settling litigation. Those data are useful because, as we demonstrated, the damages a court will award will necessarily influence how the parties are likely to settle litigation.

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32. Golden, *supra* note 2, at 2125.

33. *Id.* at 2132–33.

34. *Id.* at 2137.

35. Shapiro, *supra* note 31, at 7, introduces the variable  $T$  to denote the length of time required for patent litigation to produce a final decision as a fraction of the remaining patent lifetime.

36. Golden, *supra* note 2, at 2146.

In our article, we offered several theoretical reasons to believe that judicial determinations of reasonable royalties might systematically overcompensate patent owners where multicomponent products are at issue.<sup>37</sup> The empirical data from judicial awards allows us to test whether courts are properly ameliorating those problems by reducing royalty rates in component industries. We find only a very modest reduction, one that seems unlikely to solve the problems we have identified.<sup>38</sup> We do not need to know whether the 13.1% average royalty award is “high,” “low,” or “just right” to see whether or not courts are varying their royalty awards in response to the relative proportion of the patentee’s contribution and the contributions of others.

### III. “Discrimination”

Golden asserts that our proposal to limit injunctive relief according to the *eBay* test would “categorically discriminate among patent holders based on their business models.”<sup>39</sup> Our proposal does not discriminate, at least if “discrimination” is given its ordinary meaning of treating like things unlike.<sup>40</sup> Patent owners should be entitled to use their patent to obtain value in the marketplace, either by selling products embodying the invention or by licensing the right to use the invention to others. But those different uses require different remedies. A patent owner may need injunctive relief if the way it seeks remuneration is by selling products and keeping competition out of the market. By contrast, if it seeks only royalty payments from others who use the invention, money damages, not injunctive relief, are sufficient to compensate it. There is no unjustified discrimination here; in both cases, the goal of patent remedies is properly to ensure that patent owners are compensated for any unauthorized uses made by others. But the level of that compensation will necessarily depend on the patent owner’s business model and therefore the patentee’s loss, just as patent law currently “discriminates” between practicing and nonpracticing entities by giving the former lost-profits damages and the latter only reasonable royalties.

For a patent holder who does not compete against the infringing party (or have a commercial interest in such competitors), patent law provides that

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37. Lemley & Shapiro, *supra* note 1, at 2020–25.

38. *Id.* at 2034.

39. Golden, *supra* note 2, at 2147.

40. The term “discrimination” is sometimes used by economists to mean any differential treatment, even differences in treatment justified by differences in circumstances. “Price discrimination” is an example. See Molly Shaffer Van Houweling, *Distributive Values in Copyright*, 83 TEXAS L. REV. 1535, 1570–71 (2005) (describing the use of price discrimination in copyright—where publishers are charged higher prices than consumers—that facilitates the needs of poorly financed creators). We agree that the *eBay Inc. v. MercExchange, L.L.C.*, 126 S. Ct. 1837, 1841 (2006) approach “discriminates” in this specialized sense, which is the same sense in which a tort rule that compensates victims for lost wages “discriminates” against poor people by paying rich people their (higher) lost wages. But there is nothing wrong with discrimination in this neutral sense.

the patent holder is entitled to damages equal to reasonable royalties.<sup>41</sup> Reasonable royalties are the courts' best estimate of what the patent holder could have obtained in the market and thus reflect the legitimate market reward to the patent holder.<sup>42</sup> In contrast, for a patent holder who competes against the infringing party (or has a commercial interest in such competitors), patent law provides that the patent holder may be entitled to lost profits.<sup>43</sup> By Golden's logic, then, patent law is also "discriminating" against patent holders who compete with allegedly infringing parties in the money-damages context.<sup>44</sup> To be consistent, presumably he would have to reject that distinction as well. But we think that would similarly be unwise. Our recommendation is designed to align the reward and contribution of the patent holder for *all* patent holders, regardless of their business models.

Golden points out that damages are hard to calculate, and that courts will sometimes get it wrong.<sup>45</sup> We agree. However, all that is required for reasonable royalties to play their role in guiding parties to a negotiated settlement in the shadow of litigation is that they be unbiased, so that deviations from the benchmark royalty are not systematic one way or the other. Furthermore, all advantages are comparative. If injunctive relief did not present any risk of holdup or royalty stacking, it would be preferable to enmeshing courts in damages calculations. But since, as we have demonstrated, injunctive relief will systematically overcompensate patent owners in component industries,<sup>46</sup> there is a strong reason to prefer damages rules in those cases and therefore to devote substantial effort to getting those damages rules right.<sup>47</sup> In the end, Golden and we agree that the determination of remedies in patent cases should be driven by the goal of producing appropriate rewards to innovators.<sup>48</sup>

We do not intend to suggest—and do not read *eBay* to establish—a bright-line rule that patent owners who practice their inventions always get

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41. *Cf.* *Monsanto Co. v. Ralph*, 382 F.3d 1374, 1382–84 (Fed. Cir. 2004) (holding that the trial court's determination of reasonable royalties was supported by the evidence).

42. Golden notes correctly that patent holders are entitled to lost profits when these are larger than reasonable royalties. Golden, *supra* note 2, at 2141. Based on this observation, he suggests that reasonable royalties are an underestimate of what the patent holder is entitled to. *See id.* ("In fact, what the Patent Act explicitly says is that a reasonable royalty is the lower bound, not the upper bound, for what a patent holder should receive . . ."). We strongly disagree. For a patent holder who does not compete against the infringing party, reasonable royalties are the courts' best estimate of what the patent holder is entitled to.

43. Lemley & Shapiro, *supra* note 1, at 2017.

44. *Cf.* Golden, *supra* note 2, at 2116 (expressing skepticism about a rule under which courts would retain a presumption of injunctive relief only for practicing, competing patent holders and stating that such a rule would amount to "categorically discriminating among patent holders based on their business model").

45. *Id.* at 2150–52.

46. Lemley & Shapiro, *supra* note 1, at 2029–35.

47. *See, e.g.*, Mark A. Lemley & Philip J. Weiser, *Should Property or Liability Rules Govern Information?*, 85 TEXAS L. REV. 783 (2007) (elaborating on this point).

48. Golden, *supra* note 2, at 2116.

injunctions and those who do not practice never get injunctions. Sometimes nonpracticing entities should get injunctions, for example because they have granted an exclusive license to an entity that does practice the invention or because the defendant had engaged in deliberate copying that should be deterred. Similarly, sometimes practicing entities will be unable to satisfy the four-factor *eBay* test and so should be limited to damages remedies, for example because they practice the invention in an unrelated market and so do not need the injunction to protect their profits from the invention.<sup>49</sup> It is not the business model per se that matters, but the nature of the patent holder's contribution and how it seeks compensation in the marketplace. But Golden's suggested approach, under which every patent owner is entitled to an injunction by virtue of the fact that the threat of obtaining an injunction will allow them to engage in holdup and therefore make more money, would stifle rather than promote innovation. Crafting remedies that bear some relationship to the purposes of patent law is not improper discrimination; it is good public policy.

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49. While injunctions in lost-profits cases may also cause holdup problems, we do not see a practical and general way of avoiding these problems while providing adequate compensation to patent holders for infringement. There is a fundamental difference between cases involving reasonable royalties and those involving lost profits. In reasonable-royalty cases, the joint profits of the patent holder and the infringing firm are *increased* by the infringing firm's use of the patented invention, so the hypothetical ex ante negotiation concept makes good economic sense. In lost-profits cases, the joint profits of the patent holder and the infringing firm may well be *decreased* by the infringing firm's use of the patented invention. In such cases, the hypothetical ex ante negotiations concept is not helpful for assessing damages and it is not possible to find licensing terms that are commercially acceptable to the downstream firm and adequately compensate the patent holder.