

# UNCERTAINTY AND REVERSE PAYMENTS

RAMSIA A. WOODCOCK\*

*The current approach to “reverse payment” settlements of drug patent litigation seeks to preclude only those settlements guaranteed to harm consumers, rather than all that could harm them. Antitrust tolerates the possibility of harm in order to give firms the freedom to make settlements that might benefit consumers, relative to what courts would achieve under patent law. Antitrust’s mission is not, however, to improve upon outcomes under patent law, but rather to prevent harm to consumers. Accordingly, antitrust must minimize the possibility of harm, even if that precludes the chance of gain. I show that a ban on all settlements that fix a date of entry, regardless of the existence of a reverse payment or the number of generic challengers, is the best way to do that.*

INTRODUCTION .....	100
I. THE STANDARD ENTRY MODEL.....	105
A. <i>Some Institutional Background</i> .....	106
B. <i>The Model without Litigation Costs</i> .....	107
1. The Setup of the Model .....	107
2. Delay and Reverse Payments.....	110
3. The Litigation Baseline.....	111
C. <i>Litigation Costs</i> .....	112
1. The Settlement Range.....	112
2. The Litigation Cost Rule .....	118
D. <i>The Case of Multiple Generic Entrants</i> .....	120
II. THE LIMITS OF THE POLICY IN FAVOR OF SETTLEMENT.....	123
A. <i>The Rationale for a Policy in Favor of Settlement</i> .....	124
B. <i>There Should Be No Policy in Favor of</i> <i>Patent Settlement</i> .....	126
C. <i>A Ban on Reverse Payments Does Not Necessarily Align</i> <i>the Interests of Generic and Consumers</i> .....	127
III. PROTECTING CONSUMERS MEANS GUARANTEEING NO HARM....	128
A. <i>The Protection Standard</i> .....	128
B. <i>The Uncertainty Corollary</i> .....	129
C. <i>The Current Approach to Entry Settlements</i> <i>and Uncertainty</i> .....	131

---

\* Assistant Professor, Department of Risk Management and Insurance, J. Mack Robinson College of Business, Secondary Appointment, College of Law, Georgia State University. Ian Ayres provided helpful comments.

D. <i>Rejecting a Maximization Standard in the Patent Context</i> .....	134
IV. APPLICATION OF THE UNCERTAINTY COROLLARY TO DRUG PATENT ENTRY SETTLEMENTS.....	135
A. <i>The Uncertainty Corollary Applies</i> .....	136
B. <i>Laissez Faire Allows Consumer Harm</i> .....	136
C. <i>A Reverse Payment Cap Allows Consumer Harm</i> .....	137
D. <i>Shortcomings of the Principle of Insufficient Reason as Applied</i> .....	138
V. CHOICE OF A RULE UNDER THE UNCERTAINTY COROLLARY.....	140
A. <i>Institutional Detail Regarding a Settlement Ban</i> .....	142
B. <i>The Case for a Settlement Ban</i> .....	145
1. In Relation to a Rule of Reason.....	145
2. In Relation to an Obverse Payment Rule.....	147
CONCLUSION.....	150

#### INTRODUCTION

It is hard to discover a chemical compound that is safe and effective at treating illness, but easy to copy it. As a result, the firm that discovers a new drug (“Brand”) faces stiff price competition from copycats, which are known as generics. A patent allows Brand to earn a return on its investment by excluding generics from the market for the duration of the patent’s term. However, because of the great value of monopoly, Brand sometimes abuses the patent system by suing a generic (“Generic”) to exclude it from the market even when it is not entitled to do so.

Any suit by Brand to exclude Generic may be resolved by a final order of the court deciding the appropriate date of entry for Generic under patent law. But Brand and Generic sometimes settle the suit instead by agreeing on a date upon which Generic may enter the market (an “entry settlement”). In so doing, Brand and Generic interpose a privately-negotiated patent term for the one that patent law would impose through the final order of the court hearing the case.

Antitrust’s job is to prevent the parties from using the private law of their settlement contract to set a new term that makes consumers worse off than they would be under the one chosen by the court using patent law.<sup>1</sup> I call this mission antitrust’s “protection

---

1. Sometimes, as here, I mean by “antitrust” or “antitrust law” not the set of U.S. statutes and caselaw regulating competitive practices, the most famous of which are the prohibitions on cartels and monopolization in the Sherman Act, 15 U.S.C. §§

standard” because it seeks to protect consumers from harm. It follows from this standard that antitrust should eliminate settlements that could harm consumers, even if there is uncertainty whether they actually will, so long as doing so would not otherwise interfere with antitrust’s mission. I call this the “uncertainty corollary” to the protection standard because it tells antitrust how to handle settlements of uncertain effect on consumers.

Antitrust is in violation of the uncertainty corollary because it has accepted a possibility of harm to consumers in order to pursue an illegitimate end. Antitrust has squandered much intellectual effort over the past two decades trying to find a way to preserve the right of the parties to decide on a new term when they settle. In order to preserve that right, antitrust allows the possibility that the parties will instead choose a term that harms consumers.

Antitrust’s hope, despite the absence of any supporting evidence,<sup>2</sup> is that the settling parties might choose a new term that would make consumers even better off than they would be under the one that the court would set using patent law.<sup>3</sup> But making consumers better off than they would be under the outcome dictated by the court using patent law is not part of antitrust’s mission. As a matter of institutional deference, antitrust must treat the term that patent law would impose through the court as the best possible outcome for consumers. Preserving the opportunity of firms to make beneficial settlements is therefore alien to antitrust’s mission in this area. Antitrust must stop trying to preserve the possibility of benefit at the cost of its proper mission of minimizing the possibility of harm.

Reversing a common feature of settlements of patent litigation, in which Generic pays Brand for infringing a valid patent, Brand often makes a payment to Generic as part of an entry settlement. Antitrust regulates entry settlements only when they include these “reverse payments,” which can run to hundreds of millions of dollars.<sup>4</sup> The Federal Trade Commission (“FTC”), which estimates

---

1, 2 (2013), but instead the body of scholars, judges, antitrust lawyers, and other policymakers who influence the nature and application of these laws.

2. For evidence that the parties tend to make settlements that harm consumers, see *infra* note 65.

3. See *infra* notes 14 & 15, and accompanying text.

4. See C. Scott Hemphill, *An Aggregate Approach to Antitrust: Using New Data and Rulemaking to Preserve Drug Competition*, 109 COLUM. L. REV. 629, 647–

that consumers lose \$3.5 billion per year from the delay in generic entry that results from the payments,<sup>5</sup> has sought for years<sup>6</sup> to obtain harsh treatment<sup>7</sup> for them.<sup>8</sup> After showing some initial favor to the FTC,<sup>9</sup> courts refused to regulate such payments, initially preferring instead to rule them per se legal,<sup>10</sup> and only recently relenting in part in the Supreme Court's decision in *FTC v. Actavis*, which held that reverse payment entry settlements should be

---

57 (2009) [hereinafter Hemphill, *An Aggregate Approach to Antitrust*] (giving many examples of reverse payment amounts); C. Scott Hemphill, *Drug Patent Settlements Between Rivals: A Survey* 6–11 (Mar. 12, 2007) (unpublished manuscript, available at <http://ssrn.com/abstract=969492>) (including more data on such settlements).

5. Fed. Trade Comm'n, *Pay for Delay: How Drug Company Payoffs Cost Consumers Billions* 2 (2010), <https://www.ftc.gov/sites/default/files/documents/reports/pay-delay-how-drug-company-pay-offs-cost-consumers-billions-federal-trade-commission-staff-study/100112payfordelayrpt.pdf> (last visited Oct. 20, 2016).

6. *See, e.g.*, Complaint, In the Matter of Abbott Labs., No. C-3945, 2000 WL 681848, at \*1, \*4–5 (Fed. Trade Comm'n May 22, 2000) (challenging a 1990s-era reverse payment settlement).

7. Brief for the Petitioner at 33, *Fed. Trade Comm'n v. Actavis*, 133 S.Ct. 2223, 33–40 (2013) (No. 12-416), 2013 WL 267027 at \*33 (calling for “quick look” review of reverse payment settlements).

8. *See id.* at 2, (defining “reverse payment” agreements”).

9. *See In re Cardizem CD Antitrust Litigation*, 332 F.3d 896, 900 (6th Cir. 2003) (holding reverse payment per se illegal).

10. The courts professed to apply a “scope of the patent” test to reverse payment settlements. Under such a test, reverse payment settlements are legal unless they extend Brand's power beyond the scope of the patent by, for example, preventing Generic from entering after the expiration of the patent term. *See In re Ciprofloxacin Hydrochloride Antitrust Lit.*, 544 F.3d 1323, 1333–35 (Fed. Cir. 2008) (holding that reverse payment settlements are not anticompetitive unless they exceed the scope of the patent, the patent was procured by fraud, or the patent litigation was a sham); *In re Tamoxifen Citrate Antitrust Litigation*, 466 F.3d 187, 208–13 (2d Cir. 2005) (endorsing rule that only reverse payment settlements that exceed the scope of the patent are reviewable for antitrust violations but adding an exception for cases in which the patent suit was fraudulently brought as an excuse for striking an agreement); *Schering-Plough Corp. v. FTC*, 402 F.3d 1056, 1065–66 (11th Cir. 2005) (holding that reverse payment settlements are not per se illegal and do not violate antitrust laws unless they exceed the “scope” of the patent grant); *Valley Drug Co. v. Geneva Pharm., Inc.*, 344 F.3d 1294, 1311–13 (11th Cir. 2003) (holding the same). I consider this a standard of per se legality for reverse payment settlements. *See Joshua P. Davis, Applying Litigation Economics to Patent Settlements: Why Reverse Payments Should Be Per Se Illegal*, 41 RUTGERS L.J. 255, 260 (2009) (describing the scope of the patent rule as “essentially involv[ing] a rule of per se legality”).

subject to case-by-case review for legality, also known as “rule of reason” treatment.<sup>11</sup>

A ban on all entry settlements,<sup>12</sup> regardless whether they involve a reverse payment, is the best rule that satisfies the requirement that antitrust allow no harm. Both laissez faire and any rule that allows a reverse payment, regardless of the amount, allow delay and harm to consumers, and therefore violate the protection standard. Antitrust’s only policy alternatives are an entry settlement ban, which meets the protection standard because it ensures that consumers always achieve the value to which they are entitled in litigation, a rule of reason, which requires review of settlements for harm on a case-by-case basis, and a rule requiring Generic to make a payment to Brand as part of any entry settlement. I show that a rule requiring such an “obverse payment” is unworkable. A rule of reason is too expensive, the Supreme Court’s embrace of one for reverse payment settlements notwithstanding. A ban on entry settlements, which is not to be confused with a ban on settlement generally, is therefore the best option.

The antitrust economics literature is divided into a camp that would ban reverse payments in excess of litigation cost (the advocates of the “litigation cost rule”) and one that would impose a rule of reason. Both are concerned exclusively with the irrelevant problem of finding a rule that does not preclude any settlements that could benefit consumers. The literature reflects broad agreement on the model to use to analyze entry settlements (the “standard entry model”).<sup>13</sup> The litigation cost rule advocates use it to show that entry settlements that include a payment from Brand to Generic in excess of litigation cost hurt consumers.<sup>14</sup> The skeptics

---

11. Fed. Trade Comm’n v. Actavis, 133 S. Ct. 2223, 2227, 2234–37 (2013) (holding that a reverse payment settlement can violate Sherman Act § 1 and must be evaluated under a rule of reason standard).

12. The discussion in this article is limited entirely to patent settlements that fix the date of entry (and which may or may not include a reverse payment). Any reference to settlement herein refers exclusively to such a patent entry settlement.

13. For a good basic introduction to the model, see Aaron Edlin et al., *Activating Actavis*, 28 ANTITRUST 16, 22 (2013). For a more detailed exposition, see Robert D. Willig & John P. Bigelow, *Antitrust Policy Toward Agreements That Settle Patent Litigation*, 49 ANTITRUST BULL. 655 (2004).

14. See Aaron Edlin et al., *The Actavis Inference: Theory and Practice*, 67 RUTGERS U. L. REV. 585, 590 (2015); Einer Elhauge and Alex Krueger, *Solving the Patent Settlement Puzzle*, 91 TEX. L. REV. 283, 297 (2012); Herbert Hovenkamp et al.,

use it to show that if asymmetric information or risk aversion are taken into account, some entry settlements involving payments in excess of litigation cost do not hurt consumers and could even make them better off. They argue that because such salutary results are possible, a litigation cost rule is inappropriate and antitrust should consider each entry settlement on a case-by-case basis.<sup>15</sup>

In the standard entry model, only a small number of generics may enter after settlement or litigation success, leading to duopoly or oligopoly pricing until the end of the patent term. I call this the “single entry” case. The skeptics have sought to undermine the

---

*Anticompetitive Settlement of Intellectual Property Disputes*, 87 MINN. L. REV. 1719, 1759–60 (2002); Carl Shapiro, *Antitrust Limits to Patent Settlements*, 34 RAND J. ECON. 391, 407–08 (2003); Aaron S. Edlin et al., *Actavis and Error Costs: A Reply to Critics*, 14 THE ANTITRUST SOURCE C1, C1 (2014); Aaron Edlin et al., *supra* note 13. The conclusions of this camp have been endorsed by another scholar, who does not directly discuss the model. See Michael A. Carrier, *Unsettling Drug Patent Settlements: A Framework for Presumptive Illegality*, 108 MICH. L. REV. 37, 63, 76 (2009) (relying on the work of Carl Shapiro).

The FTC probably belongs in or near this camp as well. In *FTC v. Actavis*, it explicitly declined to call for a per se rule against any reverse payment. *Supra* note 7, at 33. (“Although there are abundant reasons to be skeptical of reverse-payment agreements as a class, such agreements should not be treated as categorically unlawful, because per se condemnation would foreclose consideration of possible legitimate justifications for the payment or procompetitive potential that some such agreements may have.”). But it also opposed a full blown rule of reason approach. *Id.* at 33–40.

15. See Willig and Bigelow, *supra* note 13, at 677–78; Barry C. Harris et al., *Activating Actavis: A More Complete Story*, 28 ANTITRUST 83, 87–88 (2014). For a more accessible summary of these arguments, see generally Marc G. Schildkraut, *Patent-Splitting Settlements and the Reverse Payment Fallacy*, 71 ANTITRUST L.J. 1033 (2004).

A third camp argues that the model demands a per se rule against reverse payments generally. See Davis, *supra* note 10, at 261–64; Catherine E. Creely, *Prognosis Negative: Why the Language of the Hatch-Waxman Act Spells Trouble for Reverse Payment Agreements*, 56 CATH. U. L. REV. 155, 171–73, 185–86 (2006) (arguing for a reverse payment ban on the ground that reverse payment settlements mostly redistribute wealth between producers instead of creating greater incentives for innovation and the deadweight loss they inflict on consumers is large); Cristofer Leffler and Keith Leffler, *Settling the Controversy over Patent Settlements: Payments by the Patent Holder Should Be Per Se Illegal*, 21 RES. IN L. & ECON.: ANTITRUST L. & ECON. 475, 476 (John B. Kirkwood ed., 2004) (arguing that benefits from reverse payment settlements are rare and therefore reverse payments should be banned); Michael Owens, *A Cure for Collusive Settlements: The Case for a Per Se Prohibition on Pay-for-Delay Agreements in Pharmaceutical Patent Litigation*, 78 MO. L. REV. 1353, 1399 (2013) (arguing that because producers always have an incentive to harm consumers through reverse payment settlements, the costs of allowing reverse payment settlements must exceed the costs of banning such settlements).

litigation cost rule by arguing that if large numbers of generics enter to drive price to competitive levels before the expiration of the patent term, some large payments do not hurt consumers.<sup>16</sup> I call this the “multiple entry” case. I show that an entry settlement ban is appropriate under both single and multiple entry.<sup>17</sup>

I proceed as follows. I first use the standard entry model to define the range of possible entry dates to which the parties may agree in settlement when a reverse payment or an obverse payment is available.<sup>18</sup> As part of this discussion, I trace the efforts of scholars to defend the litigation cost rule on the ground that it does not preclude any settlements that benefit consumers. I next use this settlement range to challenge the common observation that reverse payment settlements harm consumers because a reverse payment causes the interests of consumers and Generic to diverge.<sup>19</sup> I show that even in the absence of a reverse payment, the incentives of Generic and consumers diverge, which is why I cannot merely rely on a ban on reverse payments, let alone a litigation cost rule, to preclude the possibility of harm to consumers through settlement. I then introduce the protection standard,<sup>20</sup> defend the uncertainty corollary,<sup>21</sup> discuss the current approach to uncertainty,<sup>22</sup> demonstrate that *laissez faire* and a reverse payment cap fail the uncertainty corollary,<sup>23</sup> and show that a settlement ban is the best rule that satisfies it.<sup>24</sup> Throughout, I show that my results apply equally in the case of multiple generic entrants.

### I. THE STANDARD ENTRY MODEL

In this Part, I provide some institutional detail, give a full account of the standard entry model, and use it to identify the range

---

16. See Aaron Edlin et al., *The Actavis Inference*, *supra* note 14, at 612–13; Bruce H. Kobayashi et al., *Actavis and Multiple ANDA Entrants: Beyond the Temporary Duopoly*, 29 ANTITRUST 89, 95 (2015).

17. I note any changes in my analysis required by the multiple entry case as they arise throughout this article.

18. See *infra* Part 0.

19. See *infra* Part 0.

20. See *infra* Part 0.

21. See *infra* Part 0.

22. See *infra* Part 0.C.

23. See *infra* Part 10.

24. See *infra* Part 0.

of dates of entry upon which Brand and Generic may settle.<sup>25</sup> This range is important because a settlement entry date that delays entry relative to the date of entry that might be permitted by a court harms consumers. I determine the range of possible entry dates to which the parties may agree if they are permitted to use settlement to avoid litigation costs.<sup>26</sup> I then extend the analysis to the case in which the parties may include a reverse or obverse payment in their settlement. Thereafter, I explain the debate over the litigation cost rule in terms of the model<sup>27</sup> and extend the analysis to the case of multiple generic entrants.<sup>28</sup> With the exception of the obverse payment analysis, the model I describe here is the standard model that has already been developed in the literature. It is essential, however, to the argument that follows.

#### A. *Some Institutional Background*

I am concerned with settlements of litigation regarding patents covering drugs approved by the U.S. Food and Drug Administration (“FDA”). The Hatch-Waxman Act<sup>29</sup> regulates challenges by Generic to patents covering such drugs.<sup>30</sup> The act determines how Generic may seek to enter the market and Brand may use its patents to prevent it from doing so. Under the act, prior to entering the market, Generic must obtain approval from the FDA for its generic version of the drug.<sup>31</sup> When it applies for such approval, it must declare its belief that it is entitled to enter the market because Brand’s patent is invalid or will not be infringed (a “Paragraph IV certification”).<sup>32</sup> Brand is then accorded the opportunity to immediately sue Generic for violating its patent rights and may obtain a thirty-month stay on approval of the generic drug pending the outcome of litigation.<sup>33</sup> If Generic wins and it is the first company to try to enter the generic market for the drug in this way,

---

25. For the sources upon which this account is based, see *supra* note 13.

26. See *infra* Part 0.

27. See *infra* Part 0.

28. See *infra* Part 0.

29. 21 U.S.C. §§ 355, 360 (2012); 35 U.S.C. §§ 156, 271, 282 (2012).

30. See Colleen Kelly, *The Balance Between Innovation and Competition: The Hatch-Waxman Act, the 2003 Amendments, and Beyond*, 66 FOOD & DRUG L.J. 417, 419–26 (2011).

31. See 21 U.S.C. § 355(j) (2012).

32. 21 U.S.C. § 355(j)(2)(A)(vii)(IV) (2012).

33. See 35 U.S.C. § 271(e)(2); 21 U.S.C. § 355(j)(5)(B)(iii) (2012).

the law accords it 180 days of marketing exclusivity, after which other generic competitors may enter the market as well.<sup>34</sup>

### *B. The Model without Litigation Costs*

#### 1. The Setup of the Model

The foundation of any model is a stylized set of behaviors; that is, a story. The model takes it as given and explores its consequences. The story underlying the standard entry model is this. Brand has a patent on an aspect of a drug that is essential enough to its production that the patent gives Brand the power to exclude competitors in the drug market. Brand goes to court to use its patent to exclude Generic from the market.<sup>35</sup> If Brand loses, Generic enters the market immediately. If Brand wins, Generic enters on the patent expiration date. Whether Brand will win is uncertain. Brand and Generic can settle their dispute. As part of any settlement, Brand and Generic agree on an entry date, which need neither be immediate nor at the end of the patent term, but can lie somewhere in between.<sup>36</sup> I assume that Brand and Generic are rational, share expectations regarding the litigated outcome, and are not risk averse.<sup>37</sup>

Having set forth the underlying story of the model, I make some initial observations about it. When Brand is alone in the market, it

---

34. 21 U.S.C. § 355(j)(5)(B)(iv) (2012).

35. I simplify the regulatory situation considerably. *See* Part 0.

36. The model described here ignores the duration of litigation, assuming instead that litigation or settlement negotiation take place instantaneously at the earliest possible date of Generic entry, any litigation costs incurred are incurred instantaneously at that time as well, and there are no settlement costs. In single entry, Generic's first-filer exclusivity lasts until the expiration of the patent, whereas in multiple entry, which I discuss in Part 0, it lasts just 180 days.

Some commentators relax some of these assumptions. *See* Elhauge & Krueger, *supra* note 14, at 298 (litigation takes place over a period of time and Generic may choose to enter before resolution of the litigation); Thomas F. Cotter, *Refining the "Presumptive Illegality" Approach to Settlements of Patent Disputes Involving Reverse Payments: A Commentary on Hovenkamp, Janis & Lemley*, 87 MINN. L. REV. 1789, 1802–04 (2002) (providing for the same); Sencer Ecer & Richard S. Higgins, *A Welfare Analysis of Prohibitions on Reverse Payments in Pharmaceutical Patent Disputes, with and without the Hatch-Waxman Entry Injunction*, 12 GEO. MASON L. REV. 923, 923, 927 (2003) (modeling the thirty-month Hatch-Waxman stay on litigation).

37. Some commentators relax these assumptions. *See generally* Willig & Bigelow, *supra* note 13; Schildkraut, *supra* note 15; Harris et al., *supra* note 15.

will charge a monopoly price, which is the price that maximizes Brand's quasi-profit.<sup>38</sup> No other price will generate as much quasi-profit from the sale of the drug to consumers as this monopoly price.<sup>39</sup> When Generic enters, price falls to a duopoly<sup>40</sup> level, which is below the monopoly price level but above the (zero quasi-profit) competitive level. Brand remains in the market, and Brand and Generic share the quasi-profit generated at the duopoly price level for the remaining duration of the patent. I consider the multiple entry case, in which profit falls to a competitive level, in Part 0. It is of great importance to the analysis that follows to observe that because monopoly profit is by definition the greatest possible quasi-profit, duopoly quasi-profit is necessarily less than monopoly quasi-profit.<sup>41</sup>

Consumers, Brand, and Generic have conflicting interests when it comes to deciding Generic's date of entry. Consumers want the lowest possible price. When Brand is in the market alone and the price is at a monopoly level, consumer value is at a minimum. Brand takes a larger share of the potential value generated by the drug (which is represented by the area under the large triangle

---

38. Quasi-profit is Brand's profit before deduction of any fixed costs. See ALFRED MARSHALL, PRINCIPLES OF ECONOMICS, at Bk. V Ch. IX ¶ 27 n.87 (8th ed. 1920). The two fixed costs discussed in this paper are litigation cost and the cost of research and development.

39. See, e.g., ANDREU MAS-COLELL ET AL., MICROECONOMIC THEORY 384 (1995) (observing that a monopolist chooses its price to "maximize its profits").

40. For convenience, I refer to "Generic" in the singular as the challenger and to a "duopoly" when Brand and Generic are in the market together. However, I mean these terms to include the case in which several generic firms may challenge the patent at the same time or enter together. The only case these terms exclude is that in which so many firms enter together initially as to drive price all the way down to the competitive zero-profit level. Cf. Luke Olson & Brett W. Wendling, *Estimating the Effect of Entry on Generic Drug Prices Using Hatch-Waxman Exclusivity* 13, 18, 35 (April 2013) (unpublished manuscript, available at <http://ssrn.com/abstract=2254059>) (finding that entry pursuant to a Paragraph IV certification results in no more than three generic entrants within eighteen months of initial entry whereas more than three generic firms tend to enter at patent expiry). In the single entry case, this happens only at expiration of the patent term. In the multiple entry case that I discuss in Part 0, a large number of generics enter the market 180 days after the initial entry of generics, driving price down from a duopoly level to a competitive level.

41. I assume that marginal cost is either negligible or approximately constant over all units of production and the same in monopoly and duopoly markets for all producers. So I ignore marginal cost. The cost of making pills and putting them in bottles is constant and small relative to the demand for pills. In this Part 0, I also assume no fixed costs.

created by the downward sloping consumer demand line in **Error! Reference source not found.**). Also, if pricing is uniform across all units of the drug sold, some consumers who value the drug cannot afford it at a monopoly price and therefore some of the potential value of the drug for consumers is lost. This lost potential value is the area of the smaller triangle, labeled DWL, in **Error! Reference source not found.** and is known as “deadweight loss.”

When Generic enters the market, price falls to a duopoly level and consumers gain because both some of the value once taken by Brand is returned to consumers and the lower price makes the drug affordable to some consumers who were once priced out of the market.<sup>42</sup> But because price has not fallen to the zero profit level, consumers still do not enjoy the entire value of the drug.<sup>43</sup> That happens only after the expiration of the patent, at which point many generic drug makers enter the market and drive price to zero,<sup>44</sup> dissipating the power of producers to control any part of the value of the drug and eliminating the last of the deadweight loss.<sup>45</sup>

For consumers, the ideal date of entry is the earliest possible date because that converts the entire monopoly pricing period into a duopoly pricing period under which consumers enjoy more of the value of the drug.<sup>46</sup> In the absence of a reverse payment, this is also the preferred outcome for Generic, which makes a profit exclusively during the duopoly period and would therefore like to see that

42. This is depicted in **Error! Reference source not found.**. In the figure, price is at duopoly price  $p_D$  and quantity is at  $q_D$ . The dotted lines give the monopoly price and quantity that no longer obtain in the market.

43. Some deadweight loss remains, as shown by the DWL triangle in **Error! Reference source not found.**. And producers continue to retain some value, as shown by the duopoly profit box in the same figure.

44. That price can fall to zero without the market disappearing is a quirk of my zero cost assumption. In a competitive market, firms make no economic profit, but their owners do earn a return on their investment, which is treated as part of firms' costs. This return gives owners their reason for staying in the competitive market. I have assumed that fixed and marginal cost are zero, *see supra* note 41, meaning that for some reason owners are happy to remain in the market even though they earn no return. The model works as well when fixed and marginal costs are small.

45. This is depicted in **Error! Reference source not found.**. In the figure, price  $p_C$  is zero and quantity  $q_C$  is at a maximum. The dotted lines give the monopoly and duopoly prices and quantities that no longer obtain in the market.

46. The greater consumer value under duopoly is evident from a comparison of **Error! Reference source not found.** and **Error! Reference source not found.**, in which consumer value is depicted in grey.

period maximized in length.<sup>47</sup> I show in Part 0, however, that once litigation costs are taken into account, Generic's interest is no longer perfectly aligned with that of consumers, even in the absence of a reverse payment.

The interest of Brand is not aligned with that of consumers or Generic. Brand profits more when in the market alone and enjoying monopoly pricing than when in duopoly with Generic.<sup>48</sup> Brand would prefer that Generic not enter the market at all before patent expiry, thereby converting all of the duopoly pricing period into a monopoly pricing period.

Treating the values realized by consumers, Brand, and Generic as realized per unit time, I graph them over the set of possible Generic entry dates. The graph, which is **Error! Reference source not found.**,<sup>49</sup> shows that as Generic's entry is delayed for an increasing period of time, consumer value and Generic's profit fall, but Brand's profit increases, reflecting the interest of consumers and Generic in early entry and of Brand in the greatest possible delay. Brand's profit rises more quickly than Generic's profit falls (i.e., Brand's profit line slopes upward more steeply than Generic's slopes down in **Error! Reference source not found.**). There are two reasons for this. First, Brand must share duopoly profit with Generic whereas Brand can keep all of its monopoly profit for itself. Second, as I noted above, monopoly profit is greater than duopoly profit.

## 2. Delay and Reverse Payments

---

47. This is reflected in **Error! Reference source not found.** through **Error! Reference source not found.**, which give Generic's profit in gray under each of the three pricing regimes. Note that **Error! Reference source not found.** shows Generic receiving a share of duopoly profit of arbitrary size. Brand gets the rest of duopoly profit, as shown in **Error! Reference source not found.**.

48. This is reflected in **Error! Reference source not found.** through **Error! Reference source not found.**, which give Brand's quasi-profit in gray under each of the three pricing regimes. Brand's profit box under monopoly is larger than that under duopoly, so it prefers monopoly pricing. Note that **Error! Reference source not found.** shows Brand receiving a share of duopoly profit of arbitrary size. Generic gets the rest, as shown in **Error! Reference source not found.**.

49. In **Error! Reference source not found.**, the  $v_B^{set}$  line gives Brand's profit as a function of entry date, the  $v_G^{set}$  line gives Generic's profit as a function of entry date, and the CS line gives consumer value as a function of entry date.

Because Brand's gain from delay exceeds Generic's loss, Brand can always afford to fully compensate Generic for the losses it suffers from delay and to split the remaining surplus with Generic, thereby making it worthwhile for Brand and Generic to agree to entry delay.<sup>50</sup> In other words, delay increases the profit pie available to producers, and whenever there is a larger pie it may be divided in such a way that the parties to the smaller pie will all be made better off. Brand and Generic always find it profitable to agree to the latest possible entry date, because the greater the delay, the more monopoly profit can be substituted for duopoly profit and the greater the surplus that Brand and Generic may split between themselves.<sup>51</sup>

A settlement for entry at the latest possible date is only possible, however, if Brand has some means of sharing with Generic the surplus it gains from delay. A reverse payment permits Brand to share the spoils of delay with Generic. Delay increases the aggregate profits of Generic and Brand, but the increase goes entirely to Brand. When Brand may make a reverse payment of any size to Generic, Brand always has the means to share this increase



Figure 1 and



Figure 1. Regions D, C, and A together are monopoly profit and regions A and B together are duopoly profit. Because duopoly and monopoly profit share region A in common and duopoly profit is less than monopoly profit, region B must fit into the remaining part of monopoly profit. This is shown as region C. Region D is the part of monopoly profit that remains after duopoly profit is subtracted from it. It is called surplus. In

Figure 2, regions A and C, which equal duopoly profit, have been split arbitrarily into two parts to reflect the division of duopoly profit between Brand and Generic. When price moves from duopoly to monopoly, Brand goes from earning only the profit represented by the small rectangle labeled "Brand" to earning the entire profit represented by the larger dotted rectangle enclosing all three smaller labeled rectangles, including the surplus rectangle D. At this high profit level, clearly Brand can afford to give Generic back its lost share of duopoly profit, retain its own duopoly profit share, and split the surplus D with Generic to make both parties better off than under duopoly.

51. This point is emphasized in Edlin et al., *Actavis and Error Costs*, *supra* note 14, at C5.

with Generic in the form of a payment, which guarantees that Brand can always make it worth Generic's while to agree to additional delay.

### 3. The Litigation Baseline

So far I have considered only the consequences of settlement. I now consider the consequences of litigation. If Brand wins its challenge to Generic's entry, then entry is at patent expiry and consumer value is low. If Brand loses, then entry is immediate and consumer value is high. Unfortunately, I am uncertain which party will win. I therefore assign a probability to Brand's victory, which is known as the "strength" of the patent.<sup>52</sup> I identify as the expected value of consumers a level of consumer value above that at patent expiry, reducing the extent to which it is above by an amount proportional to Brand's probability of winning the litigation. As patent strength increases, consumer value falls until, if I suppose that Brand has a 100% chance of winning the litigation, I expect consumer value to equal that at patent expiry. If I apply this probability to the patent term, I obtain an expected duration of exclusivity in litigation that increases with the probability of Brand's success until, at 100% probability, it equals the patent term. I call this duration the "litigation entry date."<sup>53</sup>

As the litigation entry date increases, expected consumer value falls at a constant rate, since both are determined by the same probability. But consumer value in settlement also falls from its high to its low value at a constant rate as the settlement entry date increases. This implies that expected consumer value for a given litigation entry date is the same as consumer value at a settlement entry date that is the same as that litigation entry date. A similar argument establishes that expected Brand and Generic profit in litigation are the same as Brand and Generic profit for a settlement entry date equal to the litigation entry date.  $v_B^{set}$ ,  $v_G^{set}$ , and  $CS$  in **Error! Reference source not found.** therefore describe expected

---

52. See Shapiro, *supra* note 14, at 399 ("The probability that the patentholder 'wins' will be called 'patent strength.'").

53. See, e.g., Willig & Bigelow, *supra* note 13, at 664 ("[I]f the remaining life of the patent is 8 years, and the incumbent's probability of winning the litigation is 75%, then the expected date of entry is 75% of the way through those 8 years, or 6 years.").

value for a given litigation entry date just as well as they describe value for a given actual entry date.<sup>54</sup>

### C. Litigation Costs

#### 1. The Settlement Range

When litigation is costly to Brand and Generic, litigation and settlement value for a given entry date no longer coincide. The parties now avoid litigation costs when they settle, driving up settlement value for each party in the amount of those avoided litigations costs. For nonzero litigation costs, Brand and Generic's profit lines in litigation therefore lie below their settlement lines, at  $v_B^{lit}$  and  $v_B^{set}$  in **Error! Reference source not found.** Litigation costs have no effect, however, on consumer value because consumers do not pay them, either directly or indirectly.<sup>55</sup> Thus *CS* in **Error! Reference source not found.** continues to describe consumer value under both litigation and settlement. While Brand and Generic have litigation cost savings to gain from settlement,<sup>56</sup> consumers do not.

The range of settlements to which Brand and Generic might agree includes only those settlements that leave the parties no worse off than they would find themselves under litigation.<sup>57</sup> I consider first the range when no transfer of value between Brand and Generic, in either direction, is permitted.

54. See C. Scott Hemphill, *Paying for Delay: Pharmaceutical Patent Settlement as a Regulatory Design Problem*, 81 N.Y.U. L. REV. 1553, 1588–89 (2006) [hereinafter Hemphill, *Paying for Delay*] (making the argument in this paragraph).

55. I am not aware of an acknowledgment of this fact in any other source. The saving of litigation cost does increase total welfare. See, e.g., Willig & Bigelow, *supra* note 13, at 680–81 (developing an algebraic expression for total welfare that is decreasing in litigation costs). But antitrust is concerned with consumer value alone. See *infra* note 106.

56. This is reflected in **Error! Reference source not found.**, which shows Brand and Generic's profit lines under settlement and expected profit lines under litigation. The litigation lines lie below the profit lines by the amount of each party's litigation cost. If in settlement the parties agree to entry at the expected litigation date and do not agree to any cash payment, both are made better off because each moves up at the expected litigation date from their litigation line to their settlement line.

57. See, e.g., Willig & Bigelow, *supra* note 13, at 681 ("The range of viable outcomes from bargaining is the set that make each party at least as well off as they would be under litigation . . .").

The first settlement that must be in the range is a settlement for entry at the litigation entry date. Each party gains an amount equal to their litigation cost avoided from such a settlement, so each is no worse off under settlement, meeting my criterion for admission to the range. Settlements that change entry from the litigation entry date are also possible because the settlement date is a currency that has value to both parties. An earlier date is worth Generic's share of duopoly profit to Generic, and a later date is worth the difference between monopoly profit and Brand's share of duopoly profit to Brand. So Brand may use early entry relative to the litigation entry date to reward Generic for settling. Similarly, Generic may use later entry to reward Brand for settling.

Brand is willing to agree to earlier entry up to the point at which the extra profit it loses equals its savings in litigation cost. Similarly, Generic is willing to agree to delay up to the point at which the profits it loses come to equal its savings on litigation. The settlement date upon which Brand and Generic may agree may be early or late relative to the litigation entry date.<sup>58</sup> This range is shown in **Error! Reference source not found.** between the points labeled "min" and "max."<sup>59</sup>

Allowing transfers of value extends the range in both directions. The availability of a reverse payment extends the maximum delay in the settlement range. I have observed that Brand gets more from delay than Generic loses because delay increases the aggregate profits of both firms. This allows Brand to compensate Generic for any losses Generic suffers from delay after Generic's litigation cost savings have been exhausted, and still retain some of the gains for itself. In principle, the availability of a reverse payment allows infinite delay because total profits are always increasing in delay in

---

58. THOMAS J. MICELI, *ECONOMICS OF THE LAW: TORTS, CONTRACTS, PROPERTY, AND LITIGATION* 158 (1997) ("[A] settlement range always exists given the higher cost of trials compared to settlements.").

59. Consider **Error! Reference source not found.** The dotted horizontal line from  $v_B^{lit}$  to  $v_B^{set}$  gives the earliest entry date, labeled min, for which Brand is at least as well off under settlement as it would be under litigation. All entry dates above min are preferred by Brand. Similarly, max gives the latest entry date for which Generic is at least as well off as under litigation. The range of dates between min and max gives all settlement dates that would make Brand and Generic better off and at which consequently they might settle. Note that this range includes dates after the date of expected entry under litigation. For these dates consumer value,  $CS$ , is lower than under the expected litigation entry date. For an algebraic development, see Willig & Bigelow, *supra* note 13, at 664–65, 681–82.

this model. In practice, courts will not permit an agreement to delay entry past patent expiry. If antitrust places a cap on the amount of any reverse payment, then this will also limit the amount of possible delay because it places an upper bound on the amount of losses due to delay for which Brand may compensate Generic.

The availability of an obverse payment extends the maximum hastening in the settlement range. In the absence of an obverse payment, Brand will only agree to accept a loss from hastening up to the litigation cost it avoids by settling. An obverse payment from Generic compensates Brand for losses from additional hastening. Unlike a reverse payment, an obverse payment has a natural limit. Brand's losses from hastening must exceed Generic's gains, just as Brand's gains from delay must exceed Generic's losses. Generic therefore cannot compensate Brand for hastening unless Generic dips into its litigation cost savings from settlement in order to do so. As Generic buys more hastening, these savings are used up, until eventually Generic can purchase no more hastening.

The settlement range therefore extends from the natural maximum on hastening up to the maximum delay allowed by any reverse payment cap and, if none, all the way to patent expiry.<sup>60</sup> All

60. The range may be specified algebraically. Let  $L_B$  and  $L_G$  be Brand and Generic's litigation costs, respectively. Let  $M_B$ ,  $D_B$ , and  $D_G$  be Brand's profit in monopoly and duopoly and Generic's duopoly profit, respectively. Let  $\pi$  be the amount of any payment flowing between Brand and Generic. And let  $T$ ,  $E$ , and  $P$  be the patent term, the period before entry (which I also loosely refer to as the "entry date"), and the probability that Brand will win the litigation, respectively. See Edlin et al., *The Actavis Inference*, *supra* note 14, at 620–34 (using this notation). Generic is not worse off in settlement if  $(T - E)D_G + \pi \geq (1 - P)TD_G - L_G$ , which rearranges to  $\pi \geq (PT - E)D_G - L_G$ . Obverse payments increase Brand's settlement value and reverse payments reduce it. I am interested in all possible settlements, so I want Brand's settlement value to be as large as possible. I therefore want the largest obverse payment and the smallest reverse payment. Converting the payment condition to an equality produces this result. So I choose  $\pi$  to equal  $(PT - E)D_G - L_G$ . Brand is willing to settle if  $EM_B + (T - E)D_B - \pi \geq PTM_B + (1 - P)TD_B - L_B$ . I subtract  $\pi$  from Brand's settlement value because the flow of payment must be in a direction opposite to that for Generic. Obverse payments flow out of Generic's pocket and into Brand's, and vice versa for reverse payments. Plugging  $(PT - E)D_G - L_G$  for  $\pi$  into this expression and rearranging, I have  $E \geq PT - \frac{L_G + L_B}{M_B - D_G - D_B}$ . For the direction of the inequality I rely on the fact that monopoly profit must exceed total duopoly profit, and therefore  $M_B - D_G - D_B > 0$ .  $E \geq PT - \frac{L_G + L_B}{M_B - D_G - D_B}$  imposes a lower bound on  $E$ , indicating that there is a maximum limit to the amount of hastening that Generic may purchase with an obverse payment. Because it places no upper bound on  $E$ , it shows that a reverse payment may buy any amount of delay. Brand is willing to

settlements within this range are possible in the sense that they make neither party worse off than under litigation. Some settlements may leave one party better off than the other. Brand and Generic might settle for entry at the litigation entry date with a payment from Brand to Generic equal to Brand's litigation cost. Brand does not profit from such a settlement.<sup>61</sup> Or Generic might

purchase any amount of delay, but if a cap  $q \geq 0$  is placed on the reverse payment, Generic will accept an entry date only if it satisfies  $(T - E)D_G + q \geq (1 - P)TD_G - L_G$ . Rearranging, I obtain  $E \leq PT + \left[\frac{L_G + q}{D_G}\right]$ . This gives the upper bound on settlement delay under a reverse payment cap. The settlement range is therefore  $\left[\frac{L_G + L_B}{M_B - D_G - D_B}, \frac{L_G + q}{D_G}\right]$ .

In the multiple generic case, Brand and Generic earn duopoly profits for a fixed period  $H$  after Generic enters, after which additional generics enter the market and profit for all parties goes to zero. For  $E \leq T - H$ , Generic's settlement value is constant for all entry dates, so Generic is willing to settle for any date in this range as long as Generic must not make an obverse payment that reduces settlement value below litigation value. Generic will therefore settle only if  $HD_G + \pi \geq (1 - P)HD_G - L_G$ , which rearranges to  $\pi \geq -PHD_G - L_G$ .  $PHD_G + L_G$  is therefore the greatest obverse payment Generic will make. Brand is willing to settle over this range if  $EM_B + HD_B - \pi \geq PTM_B + (1 - P)HD_B - L_B$ . Substituting  $-PHD_G - L_G$  for  $\pi$  and rearranging, I have  $E \geq PT - PH \left[\frac{D_G + D_B}{M_B}\right] - \frac{L_G + L_B}{M_B}$ , which puts a lower bound on the settlement entry date.

Brand may not always be willing to agree to  $E \leq T - H$ . This can occur if  $PT$  is substantially greater than  $T - H$ . For  $E > T - H$ , Brand settles if  $EM_B + (T - E)D_B - \pi \geq PTM_B + (1 - P)HD_B - L_B$ . Substituting  $-PHD_G - L_G$  for  $\pi$  and rearranging, I have  $E \geq PT \left[\frac{M_B}{M_B - D_B}\right] - PH \left[\frac{D_G + D_B}{M_B - D_B}\right] - (T - H) \left[\frac{D_B}{M_B - D_B}\right] - \frac{L_B + L_G}{M_B - D_B}$ . If this expression yields a bound greater than  $T - H$ , then it gives the lower bound. Because only a small range of  $PT$  will give rise to this bound, I will ignore it in what follows.

Because settlement value is constant over  $E \leq T - H$ , there is no limit on the delay to which Generic will agree over this range. For  $E > T - H$ , Generic is not worse off in settlement if  $(T - E)D_G + \pi \geq (1 - P)HD_G - L_G$ , which rearranges to  $\pi \geq [(1 - P)H - (T - E)]D_G - L_G$ . Because reverse payments reduce Brand's settlement value, here again I want the smallest reverse payment for a given level of delay to which Generic will agree. I therefore want the expression for  $\pi$  to hold with equality. Over this range, Brand is no worse off in settlement if  $EM_B + (T - E)D_B - \pi \geq PTM_B + (1 - P)HD_B - L_B$ . Substituting  $[(1 - P)H - (T - E)]D_G - L_G$  for  $\pi$  into this condition and rearranging, I have  $E \geq PT \left[\frac{M_B - D_B}{M_B - D_B - D_G}\right] - (T - (1 - P)H) \left[\frac{D_G}{M_B - D_B - D_G}\right] - \frac{L_G + L_B}{M_B - D_B - D_G}$ , which imposes no limit on delay. For a reverse payment cap  $q \geq 0$ , however, I have a settlement condition for Generic of  $(T - E)D_G + q \geq (1 - P)HD_G - L_G$ , which rearranges to  $E \leq T - (1 - P)H + \frac{q + L_G}{D_G}$ . The settlement range is therefore  $\left[PT - PH \left[\frac{D_G + D_B}{M_B}\right] - \frac{L_G + L_B}{M_B}, T - (1 - P)H + \frac{q + L_G}{D_G}\right]$ .

61. This is shown in **Error! Reference source not found.**. If Brand pays its litigation cost,  $L_B$ , to Generic, then its settlement line  $v_B^{set}$  will shift down to become identical to its litigation line  $v_B^{lit}$ . But Generic's settlement line will rise to  $v_G^{set} + L_B$

pay its litigation cost avoided to Brand, in which case Generic does not profit. All settlements that do not make either party worse off than under litigation are included in the range, regardless of the distributive outcome.

Some settlements are better than others for Brand and Generic as a group. Total profit increases with delay, so from the perspective of the joint interest of Brand and Generic, the best settlement is for the greatest possible delay. Similarly, the worst settlement from this perspective is for the greatest possible hastening. The joint interest of the parties in the greatest possible delay has led some commentators to describe such a settlement as an “equilibrium.”<sup>62</sup> This must not be understood, however, to suggest that the parties, even if rational, must always choose the greatest available delay in settlement or even choose to settle at all. It is an enduring frustration of economics that it has not been able to explain why, within a given range of bargains that leave no one worse off, the parties must choose the bargain that maximizes their joint value over any other.<sup>63</sup> Each party wants to maximize its individual profit, not joint profit, and it is perfectly rational for each to hold out for a larger share of the value from the best deal, making agreement impossible and forcing a deal for less value, or none at all.<sup>64</sup> Any deal in the settlement range is possible, whether it minimizes joint

---

(not shown). Generic ends up with a profit if it settles at the litigation entry date, whereas Brand does not.

62. See Edlin et al., *Actavis and Error Costs*, *supra* note 12, at C5 (criticizing other commentators for suggesting that Brand and Generic could agree to a reverse payment settlement that involves no delay because such a non-delay reverse payment settlement “is simply not an equilibrium outcome in [the standard entry] model”); Shapiro, *supra* note 12, at 395 (“[W]ithout limits on patent settlements, consumers will receive only the surplus available facing a monopolist.”). Others have a similar view. Keith Leffler & Cristofer Leffler, *Efficiency Trade-Offs in Patent Litigation Settlements: Analysis Gone Astray*, 39 U.S.F. L. REV. 33, 43 (2004) (showing that settlements are possible without a reverse payment but observing that “litigants will always prefer cash payment settlements because such settlements will eliminate the sharing in the gains of the patent challenge by consumers”).

63. ROBERT COOTER & THOMAS ULEN, *LAW AND ECONOMICS* 77 n.5 (3d ed. 2000) (“Economists have long struggled with the fact that self-interested rationality alone does not seem sufficient to determine the distribution of the cooperative surplus.”).

64. See Robert Cooter, *The Cost of Coase*, 11 J. LEGAL STUD. 1, 17 (1982) (“The parties must haggle over the price until they can agree upon how to distribute the gains from trade. There is no guarantee that the rational pursuit of self-interest will permit agreement.”). See also *infra* note 124.

profits by maximizing hastening or maximizes joint profits by maximizing delay.<sup>65</sup>

The foregoing shows that settlement may harm consumers even when no reverse payment is permitted. Delay harms consumers. By trading delay for the litigation cost savings of settlement, the parties may harm consumers even when Brand does not share with Generic via a reverse payment any profits associated specifically with delay.<sup>66</sup> An above-zero cap on reverse payments permits settlements that allow more delay and therefore more harm.

The range that I define is broader than the range recognized by other commentators because it includes hastening made possible by an obverse payment.<sup>67</sup> I include such payments because there appears to be no economic explanation for the possibility of reverse payments in this model that does not apply equally well to obverse payments. Brand makes a reverse payment to enjoy some of the benefit of delay. Generic may do the same in order to obtain the benefit it enjoys from hastening. Use of a reverse payment allows the parties to maximize their aggregate value. Use of an obverse

---

65. The parties do seem to maximize delay in practice. See Hemphill, *An Aggregate Approach to Antitrust*, *supra* note 4, at 629, 646, 657–58 (observing, based on a dataset of 143 settlements from 1984 to 2008, that reverse payment settlements made prior to the commencement of pressure from antitrust enforcers in the late 1990s, “blocked entry until patent expiration”).

66. This seems the right place to share an observation about the difficulty of characterizing settlements in antitrust terms. Suppose that a settlement is funded entirely out of litigation cost savings in the sense that no party gives up more in a settlement than what she gains as a result of the settlement from the saving of litigation cost. And suppose further that there is no cash payment between the parties and that they agree to entry delay as part of the settlement. One would like to be able to characterize the settlement here as either being anticompetitive in the sense that it involves a splitting of the surplus associated with more monopoly pricing or as being procompetitive in the sense that it involves only the splitting of a surplus derived from some other gain associated with settlement, such as litigation cost savings.

But such a settlement resists such categorization. It of course hurts consumers and increases monopoly. But it is not anticompetitive in the sense that it involves a splitting of the surplus from monopoly because Generic does not share in the surplus. There is no cash payment from Brand to Generic. It is procompetitive in the sense that the parties do split the surplus from the avoidance of litigation costs. But it cannot be said that this is the only surplus that motivates the parties because Brand enjoys the surplus from increased monopoly as well.

67. See Edlin et al., *The Actavis Inference*, *supra* note 14, at 621 (modeling only the possibility of a reverse payment); Elhauge & Krueger, *supra* note 14, at 298 (doing the same); Willig & Bigelow, *supra* note 13, at 681 (also doing the same).

payment allows the parties to minimize their aggregate value.<sup>68</sup> Both these outcomes are possible bargains because they leave the parties no worse off than they are under litigation. If I admit the possibility of the best bargain in terms of aggregate profit, I ought also admit the possibility of the worst.

## 2. The Litigation Cost Rule

The settlement range I have identified shows that the cap on reverse payments in excess of litigation cost advocated by some economists<sup>69</sup> does not amount to a ban on all settlements that harm consumers.<sup>70</sup> Such a “litigation cost rule” simply places a cap on the amount of delay and harm that settlement may cause. Moreover, from the perspective of minimizing consumer harm, the magnitude of the cap is arbitrary. It is not clear why we should prefer to limit possible harm to that which can be bought with a payment equal to litigation cost as opposed to that which can be bought for half as much. Or for nothing.

The motivation for placing the cap at litigation cost is to ensure that the rule does not preclude any settlements that benefit consumers, rather than that it prevent all that could harm them.<sup>71</sup> When Brand makes a payment in excess of litigation cost, Brand has no litigation cost savings to spend on hastening, and therefore Brand will insist on at least some delay and therefore on at least

---

68. This happens when Generic makes the largest possible obverse payment. The joint value of Brand and Generic falls with hastening because hastening substitutes duopoly for monopoly. Note 138 shows that a cap on any obverse payment increases the lower settlement bound. It follows that the largest possible obverse payment renders the lower bound as low as possible and thereby the joint value of Brand and Generic as low as possible.

69. See Edlin et al., *Actavis and Error Costs*, *supra* note 14, at C1; Edlin et al., *supra* note 13, at 22; Elhauge & Krueger, *supra* note 14, at 297; Shapiro, *supra* note 14, at 407–08.

70. For sources that acknowledge this point, see *infra* note 134.

71. Edlin et al., *The Actavis Inference*, *supra* note 14, at 633 (“[T]he Actavis Inference with a litigation cost benchmark is favorable to defendants because by design it minimizes false condemnations without concern for false acquittals.”). *Cf.* Edlin et al., *supra* note 13, at 22 (emphasizing that all settlements involving a reverse payment in excess of litigation cost harm consumers); Hemphill, *Paying for Delay*, *supra* note 54, at 1594 (“By differentiating pay-for-delay settlements that include large cash payments from those with payments that are equal to or less than saved litigation expense, the safe harbor usefully distinguishes those settlements likely to inflict the largest allocative harm.”).

some harm to consumers.<sup>72</sup> When Brand makes a payment less than litigation cost, Brand is still amenable to some hastening.

Skeptics argue that the litigation cost rule fails even to avoid precluding any beneficial settlements.<sup>73</sup> They point out that the rule depends on a number of assumptions, including the absence of risk aversion and asymmetric information, that may not be realistic.<sup>74</sup> If any assumption fails to hold, then the rule will ban not only some settlements that harm consumers but also some that help consumers. Perhaps the most important assumption is that Brand shares the same expectation as consumers about the entry date under litigation. If Brand expects an earlier entry date than do consumers, then allowing Brand to pay a sum in excess of litigation cost for what it thinks is delay may nevertheless result in what consumers consider early entry relative to their own different expectation of what entry would be under litigation.<sup>75</sup>

#### D. The Case of Multiple Generic Entrants

Another group of skeptics argue<sup>76</sup> that the model is unrealistic because it fails to take into account the 180-day period of exclusivity granted to the first Generic to challenge the patent.<sup>77</sup> They argue that after the 180 days run out, generics will flood the market and drive price to competitive levels, so it is unreasonable to assume that duopoly will persist from entry all the way until patent expiry.<sup>78</sup> Recall that a model that takes account of competitive pricing after expiration of the 180-day period is a “multiple entry” model; one that does not is a “single entry” model. I now outline the

---

72. Consider **Error! Reference source not found.** If Brand makes a payment in excess of its litigation cost, its settlement line falls down below its litigation line, which means that settlement makes it worse off than litigation unless the agreed settlement date exceeds the expected entry date under litigation. The dotted horizontal line connecting Brand’s litigation value with Brand’s settlement value line must now extend out from litigation value in a rightward direction. The downward-shifting settlement line pushes Brand’s minimum acceptable settlement (“min” in the figure) up past the litigation entry date (“expected entry” in the figure).

73. See Harris et al., *supra* note 15, at 83; Willig & Bigelow, *supra* note 13, at 677–81.

74. See, e.g., Harris et al., *supra* note 15, at 85–87.

75. See generally Willig & Bigelow, *supra* note 13, at 692–96. Cf. Schildkraut, *supra* note 15, at 1063–64 (discussing “misplaced optimism” of Generic).

76. Kobayashi et al., *supra* note 16, at 91.

77. See *supra* note 34.

78. Kobayashi et al., *supra* note 16, at 89.

setup of the multiple entry model, consider its effect on the settlement range, and describe how the skeptics use it to attack the litigation cost rule.

The 180-day exclusivity period applies regardless whether the first filer enters by winning or settling litigation.<sup>79</sup> For settlement entry dates up to 180 days before patent expiry, the expiration of the 180-day exclusivity period allows consumers to enjoy the greater consumer value, and Brand to suffer the lesser private value, associated with competitive pricing before patent expiry, at least for a short period. This gives consumers more to lose from delay, and Brand more to gain, than if duopoly were to extend until patent expiry. Delay reduces the period of competition prior to patent expiry until, 180 days before patent expiry, there is no pre-expiry period of competition at all. Thereafter, delay reduces only the period of duopoly, just as it does in the single entry model. Thus, in moving from the single to multiple entry models, consumer value kinks upward, and Brand's downward, at 180 days before patent expiry, as shown in **Error! Reference source not found.**<sup>80</sup>

Expectations in litigation smooth value from pre-patent-expiry competition over the entire domain of entry dates, including those within 180 days of patent expiry, for which in settlement there is no pre-patent-expiry competition. This lifts litigation value above settlement value for consumers and drives it below settlement value for Brand, with the result that for any given entry date consumers are better off in litigation and Brand worse off. This effect is due to

---

79. Kobayashi et al. consider a slightly different case in which first-filer exclusivity followed by competitive pricing applies to entry through litigation but not to entry through settlement. *See id.* at 92. The basis for this distinction is that Brand must lose on patent validity in litigation before it can be estopped from asserting its patent against subsequent entrants. *See* *Blonder Tongue v. Univ. of Ill. Found.*, 402 U.S. 313, 330–34 (1971) (holding that a patent that has been found invalid in an action against one defendant may not be asserted against subsequent defendants); Edlin et al., *The Actavis Inference*, *supra* note 14, at 607. Thus when Generic enters as part of a litigated outcome, as opposed to settlement, Brand will often be powerless to challenge additional generic entrants once the 180-day first-filer period expires. A settlement prevents the courts from reaching a final judgment against Brand, allowing Brand to sue any additional generics that may wish to enter after the first-filer's exclusivity period has run out. If Brand vigorously defends its patent after settlement, the first-filer that settles may enjoy a duopoly until the expiration of the patent.

80. The figure shows consumer ( $CS$ ), Brand ( $v_B$ ), and Generic value ( $v_G$ ) in the multiple entry case with zero litigation cost. For each party, the kinked line is the settlement value line and the straight line is the litigation value line.

the prospect of pre-patent-expiry competition,<sup>81</sup> and not to litigation costs, so it holds even if there are no litigation costs. The straight lines in **Error! Reference source not found.** show litigation value when there is no litigation cost.

Switching to a multiple entry model has an ambiguous effect on maximum hastening. High litigation costs for Brand and Generic will tend to result in a lower hastening maximum relative to single entry and large monopoly profits for Brand will tend to result in a higher maximum.<sup>82</sup> For large patent strengths, maximum hastening increases. A multiple entry model results in a higher maximum delay for a given reverse payment cap.<sup>83</sup> Because the multiple entry model also renders consumers better off under litigation for any given date of entry, the avoidance of harm to consumers under it requires not just the absence of delay but a hastening of entry. This makes the increase in maximum delay of particular concern.

Because in multiple entry Brand is worse off in litigation regardless of litigation costs, Brand is willing to agree to some hastening of entry in exchange for settlement, even if litigation costs are zero. When litigation costs exist, Brand is willing to agree to additional hastening. It follows that when Brand makes a reverse payment equal to litigation cost Brand eliminates the part of its willingness to hasten entry that is attributable to the litigation cost, but not the part that is attributable to the smoothing in litigation of the effects of pre-patent-expiry competition. Thus a payment in excess of litigation cost might still result in a hastening of entry.

Litigation cost rule skeptics might rely on this observation to argue that a litigation cost rule prohibits some reverse payment

81. See Edlin et al., *The Actavis Inference*, *supra* note 14, at 623 n.111 (explaining the effect).

82. From note 60, the settlement range is  $[\frac{L_G+L_B}{M_B-D_G-D_B}, \frac{L_G+q}{D_G}]$  in the single entry case and  $[PH \frac{D_G+D_B}{M_B} - \frac{L_B+L_G}{M_B}, T - (1-P)H + \frac{q+L_G}{D_G}]$  in the multiple entry case. It follows from a comparison of the lower bounds that the lower bound in the multiple entry case is less than the lower bound in the single entry case if  $\frac{M_B-D_B-D_G}{M_B} < \frac{L_B+L_G}{PH(D_B+D_G)-(L_B+L_G)}$ . The effect on the lower bound of switching from a single entry to a multiple entry model is ambiguous; it depends on patent strength  $P$ , for example. The capped upper bound is higher in multiple than in single entry. Subtracting the single entry upper bound from the multiple entry upper bound, I have  $T - (1-P)H$ , which is positive if  $T > H$ , a condition that must hold.

83. See *supra* note 82.

settlements that benefit consumers.<sup>84</sup> The litigation cost advocates may counter by observing that in a multiple entry model consumers are better off in litigation and it follows that hastening is required for avoidance of harm to consumers. A litigation cost rule that denies Brand some settlements that hasten entry does not preclude some beneficial settlements unless the hastening required for consumers to benefit is less than the hastening denied by the litigation cost rule. If the hastening required for consumers to benefit is greater, then having some payments for which Brand is willing to hasten cannot preclude beneficial settlements because that hastening could not make consumers better off relative to litigation anyway.<sup>85</sup> The litigation cost advocates argue that estimates of monopoly, duopoly, and competitive values in the drug market suggest that the hastening required for consumer benefit tends to be greater than that allowed by Brand due to value smoothing, and therefore a litigation cost rule does not prohibit settlements that benefit consumers.<sup>86</sup>

---

84. The argument might be understood graphically in **Error! Reference source not found.** as follows. When Brand makes a payment equal to its litigation cost, it shifts its settlement value line to the position it would have in relation to its litigation value line if its litigation costs were zero. **Error! Reference source not found.**, which shows value in the absence of litigation costs, may therefore be used to consider Brand's choices when it makes a payment equal to, but not in excess of, its litigation costs. The intersection of the horizontal dashed line with Brand's settlement value gives the earliest entry date to which Brand is willing to agree. Because this intersection point falls earlier than the point of intersection of the horizontal dashed line with consumer value, which latter gives the latest entry date for which consumers are not harmed, it is clear that Brand may agree to a settlement that does not harm consumers. The space between these two intersection points gives the range of settlements involving payments in excess of litigation cost to which Brand may agree and that benefit consumers.

85. Consider **Error! Reference source not found.** A payment equal to litigation cost will result in the settlement and litigation value lines for Brand depicted in the graph. If the slopes of these lines are agreeable, and the litigation cost advocates argue that they are, then the greatest hastening tolerated by Brand cannot leave consumers better off. This happens when the intersection of the horizontal dashed line with Brand's settlement value line falls after the intersection of the horizontal dashed line with consumer settlement value (this case is not shown in the figure). If the slopes of Brand's value lines allow this for a payment equal to litigation cost, then they will also allow it for payments in excess of litigation cost, because such payments push Brand's settlement value line downward, driving Brand's earliest entry date even higher.

86. See Edlin et al., *The Actavis Inference*, *supra* note 14, at 627–28. A perplexing development in the debate between the skeptics and the advocates of the litigation cost rule is the argument of the skeptics that the rule should be avoided

## II. THE LIMITS OF THE POLICY IN FAVOR OF SETTLEMENT

Having outlined the standard entry model, I now pause to use it to reject a common explanation of the reverse payments problem. It is sometimes said that the root of the reverse payments problem is that consumers have an interest in the outcome of patent litigation but do not have their interest represented in the dispute between Brand and Generic.<sup>87</sup> Settlement is justified if the interests of the parties to a dispute generally exhaust the interests balanced by the law that is the subject of the dispute. When this is so, the outcome of settlement can be expected to approximate the outcome of litigation, but save the parties the higher cost of litigation. According to the common account, banning reverse payments brings the interest of Generic into alignment with that of consumers, giving the consumer interest a proxy in any settlement negotiation.<sup>88</sup> Once a ban on reverse payments is in place, a policy of allowing settlements is therefore appropriate.

The settlement range defined in Part 0 shows that a reverse payment ban fails to bring the interests of Generic and consumers into alignment. The average settlement under a reverse payment ban may involve delay. This calls into question the wisdom of extending the judicial policy in favor of settlement of disputes to the patent context.<sup>89</sup> I proceed by first giving a summary of the rationale for a policy in favor of settlement and then turning to its limitations in the drug patent context.

### A. *The Rationale for a Policy in Favor of Settlement*

---

because in a multiple entry model the entire settlement range may involve harm to consumers. *See Kobayashi et al., supra* note 16, at 92–93 (“all feasible settlements, including those in which there is no reverse payment, generate consumer welfare that is lower than the expected welfare net of litigation costs that would be produced through litigation.”). To the extent that the skeptics advocate *laissez faire* as an alternative to a litigation cost rule, *see id.* at 95 (suggesting that the “scope of the patent” test might be appropriate), this hardly helps their case. It is consistent with advocacy of a rule of reason, however. *See supra* note 15.

87. Davis, *supra* note 10, at 262 (“Reverse payments . . . threaten to drive a wedge between the interests of generic manufacturers and purchasers.”).

88. *See id.* at 261.

89. *Actavis*, 133 S. Ct. at 2234 (recognizing “a general legal policy favoring the settlement of disputes”).

From the perspective of the government, the reason to support settlement of disputes is that the parties to a settlement will negotiate approximately the result that the government wishes to obtain, but at a fraction of the cost because formalities are avoided.<sup>90</sup> The further that the settlement result deviates from the result desired by the government, the greater the extent to which the litigation cost savings of settlement are offset by the costs of an inaccurate result from the perspective of the government.<sup>91</sup>

In the entry settlement context this means that the further that the entry date agreed in settlement delays entry relative to the litigation entry date, the greater the extent to which the litigation cost savings associated with settlement are offset by the harm inflicted on consumers. Because consumers do not pay litigation costs, they are not affected by them in this model. As a result, there is no advantage to be had from settlement under a consumer welfare standard and nothing to balance out the harm associated with a settlement for delay. Thus in the entry settlement context no inaccuracy in settlement may be tolerated. Any amount of delay results in a net harm.

Whether settlement will approximate the litigated result is therefore an important criterion in determining whether the government should promote or ban settlements.<sup>92</sup> I may think of the law that underlies a given dispute as representing a balancing of competing interests. In general, if all the interests balanced by the law are party to the dispute, then the government can expect that the settlement outcome will approximate the outcome that would be

---

90. In other words, settlement is desirable where error costs are small and the transaction costs associated with litigation are high relative to those associated with settlement. *Cf. id.* at 272 (“From an economic perspective, two concerns in dispute resolution are primary: error costs and transaction costs.”).

91. *Cf. STEVEN SHAVELL, FOUNDATIONS OF ECONOMIC ANALYSIS OF LAW* 451, 454 (2004) (“[T]he level of accuracy that maximizes social welfare will reflect a compromise between the value of increasing accuracy and the cost of achieving it.”). Most standard discussions of the tradeoff between accuracy and enforcement cost, such as the one just cited, focus on the cost of making courts better able to accurately apply the law. The issue in this article is the cost associated with moving from a settlement regime to a litigation regime in order to eliminate inaccuracies associated with settlement. Steven Shavell hints at this issue when he observes that “[o]ne wonders . . . about the wisdom of promoting settlement, let alone allowing it, in situations in which deterrence is likely to be compromised” by the confidentiality of settlements. *Id.* at 415.

92. *Cf. Davis, supra* note 10, at 288 (“[S]ettlement for the expected value of litigation produces the same error costs, on average, as a trial on the merits.”).

obtained under litigation.<sup>93</sup> This is because each interest underlying the law will have a champion in settlement negotiations, and the relative weight placed by the law on each interest will give each champion relative bargaining power in settlement that will cause the balance of interests in settlement to approximate the balance of interests in the law.<sup>94</sup>

For example, suppose that Company A contracts to buy ten widgets from Company B, but rejects the delivery because it believes that the widgets are defective.<sup>95</sup> Suppose that if it were to examine the case the government would determine that the widgets are of high quality and Company A should pay. Company A has an interest in not paying (perhaps it does not need the widgets anymore) but Company B has an interest in demanding payment. Given the legal requirement that a party must pay if quality is delivered,<sup>96</sup> Company B's interests will have the greater negotiating power and the result of the settlement will be something like a requirement that Company B be paid.

*B. There Should Be No Policy in Favor of Patent Settlement*

The government cannot expect that settlement will approximate litigation, however, where some interests underlying the law are not represented at the bargaining table during settlement. If, in my example, Company A could somehow settle the case in the absence of Company B (indulge the fantasy of a unilateral settlement), then of course the government could not assume that the correct result from its perspective would be reached. Company A would simply settle for nonpayment. This is possible because Company B's

---

93. *Cf.* COOTER & ULEN, *supra* note 63, at 400 (observing that when the expectations of the parties are identical and they face the same litigation costs, then a "reasonable" settlement will "equal[] the expected judgment at trial").

94. The litigation entry date reflects the government's desired resolution of the case. As shown in **Error! Reference source not found.**, the location of the expected litigation entry date (marked "expected entry" in the figure) determines the maximum amount of delay to which Generic will agree. That maximum date ensures that Generic will have at least enough bargaining power in any settlement to enter at that maximum and no later. If the expected litigation entry date moves earlier, then Generic's maximum settlement entry date will also move earlier, reflecting the stronger bargaining position dealt to Generic by the more favorable underlying law.

95. U.C.C. § 2-602(2)(c) (AM. LAW INST. & UNIF. LAW COMM'N 2015).

96. U.C.C. §§ 2-708, 2-709 (AM. LAW INST. & UNIF. LAW COMM'N 2015).

interests would not be represented at the bargaining table.<sup>97</sup> Company B cannot refuse to settle if the agreement does not approximate what it would obtain under litigation because Company B is not at the table. In such a case, the government cannot promote settlement as an alternative to litigation.<sup>98</sup>

Both producers and consumers are interested in the terms of the exclusivity granted by patent law because higher prices and profits can mean less value for consumers.<sup>99</sup> In general, because consumers are not a party to patent settlements between producers, government cannot expect patent settlements to approximate judicial outcomes and therefore no policy in favor of settlement is justified in the patent context.<sup>100</sup> On the contrary, government must expect that any settlement will deviate substantially from the

---

97. *Cf.* Davis, *supra* note 10, at 265 (“A, B, and C each claim an individual ownership right in fee simple absolute to Blackacre. A and B then agree to settle their claims against one another by splitting the property between them. If C filed a lawsuit seeking to establish her ownership, it would be extraordinary to suggest that the settlement between A and B would extinguish her rights.”).

98. *Cf. In re Tamoxifen*, 466 F.3d at 212 (“[T]he antitrust laws could be read to outlaw all, or nearly all, settlements of Hatch-Waxman infringement actions. Patent holders would be required to litigate each threatened patent to final, unappealable judgment. Only patents that the courts held were valid would be entitled to confer monopoly power on their proprietors. But such a requirement would be contrary to well-established principles of law. [S]ettlement of patent litigation is not only suffered, it is encouraged for a variety of reasons even if it leads in some cases to the survival of monopolies created by what would otherwise be fatally weak patents. It is too late in the journey for us to alter course.”).

99. Of course, the mere fact that consumers have an interest in patent law does not imply that the government should care about that interest and therefore wish that settlement outcomes do it justice. Joshua Davis appears to argue that the interests of consumers enter the law through antitrust. *See* Davis, *supra* note 10, at 265 (“[D]rug purchasers have a right to prevent brand and generic drug manufacturers from agreeing not to compete . . .”). But I need not stray so far from patent law in order to find the entrance. The existence of a limited patent term, 35 U.S.C. § 154 (20 years), shows that Congress balanced the interests of consumers against those of producers in fashioning patent law. *But see* William F. Baxter, *Legal Restrictions on Exploitation of the Patent Monopoly: An Economic Analysis*, 76 *YALE L.J.* 267, 270–71 (1966) (failing to mention consumer value in listing reasons to limit the amount of subsidy for invention conferred by the patent regime).

100. *Cf.* Davis, *supra* note 10, at 264–65 (“What is special—although by no means unique—about patent rights is that they determine the legal entitlements not only of drug manufacturers, but also of drug purchasers . . . [It is] extraordinary to treat a settlement between drug manufacturers as eliminating the right of drug purchasers under the antitrust laws to a market free from collusion.”); Owens, *supra* note 15, at 1393 (“In patent settlements, the incentives of the parties are aligned against a large, unrepresented constituency – consumers . . .”).

outcome that it desires and therefore it must be vigilant in supervising settlements, if it permits them at all.

*C. A Ban on Reverse Payments Does Not Necessarily Align the Interests of Generic and Consumers*

Under a ban on reverse payments, it might appear that the interests of consumers and Generic fall into alignment, and therefore Generic may be relied upon to negotiate settlements that protect the interests of consumers.<sup>101</sup> Without a reverse payment, Brand cannot share with Generic the value Brand takes from consumers through delay, so delay harms Generic as well as consumers.<sup>102</sup> But, despite the shared preference of Generic and consumers for hastening, Generic may still settle for delay that harms consumers. The interests of Generic and consumers are aligned only in the sense that a hastening in settlement entry makes both better off.<sup>103</sup> Alignment here does not mean, however, that any settlement that makes Generic better off must also make consumers better off. Generic may be willing to agree to a settlement that consumers would never be willing to agree to if they were at the bargaining table. As described in Part 0, any amount of delay harms consumers. Indeed, in the multiple entry case even some hastening harms consumers.<sup>104</sup> But I show in Part 0 that in order to save on litigation costs Generic is willing to agree to some amount of delay in both single and multiple entry, even in the absence of a reverse payment.<sup>105</sup>

### III. PROTECTING CONSUMERS MEANS GUARANTEEING NO HARM

I now come to the main argument of this article. In this Part, I argue that the mission of antitrust to prevent harm to consumers requires that it adopt a rule that guarantees no harm to consumers.

---

101. See Davis, *supra* note 10, at 261 (“The key is to align the interests of generic drug manufacturers and drug purchasers. That can be done by banning reverse payments as per se illegal.”).

102. See *supra* note 47 and accompanying text.

103. See Hemphill, *An Aggregate Approach to Antitrust*, *supra* note 4, at 652–53 (“Ordinarily, late entry dates are bad for consumers, but also bad for the alleged infringer, whose profits are a function of the amount of time on the market, and who therefore can be expected to fight for an earlier entry date.”).

104. See *supra* Part 0.

105. See *supra* note 59 and accompanying text.

I argue that in the standard entry model such a rule must guarantee that firms cannot settle for delay.

#### A. *The Protection Standard*

The prevailing antitrust consumer value standard demands that antitrust prevent harm to consumers.<sup>106</sup> Antitrust economists operationalize it by supplying consumer value in litigation as the baseline against which to measure consumer harm in the patent settlement context. Accordingly, they appear to agree that the role of antitrust is to ban settlements that reduce consumer value relative to the value that consumers would receive under litigation.<sup>107</sup>

---

106. See, e.g., John B. Kirkwood & Robert H. Lande, *The Fundamental Goal of Antitrust: Protecting Consumers, Not Increasing Efficiency*, 84 NOTRE DAME L. REV. 191, 196 (2008) (“The antitrust laws . . . can be explained as a congressional declaration that the property right we today call ‘consumers’ surplus’ belongs to consumers . . . . [T]he antitrust laws primarily were enacted to award this property right to purchasers of goods and services, and to prevent cartels and unjustified monopolies from taking it. The ultimate objective of these laws, in short, is to protect consumers, not to increase overall efficiency.”); Steven C. Salop, *Question: What Is the Real and Proper Antitrust Welfare Standard? Answer: The True Consumer Welfare Standard*, 22 LOY. CONSUMER L. REV. 336 (2009); Shapiro, *supra* note 14, at 396 (“Antitrust enforcement . . . often uses a consumer-welfare standard rather than a total-surplus standard.”). But see Maurice E. Stucke, *Reconsidering Antitrust’s Goals*, 53 B.C. L. REV. 551, 570–77 (2012) (arguing that maximizing consumer welfare has never been the sole recognized policy of antitrust).

107. See Davis, *supra* note 10, at 263–65 (treating protection of the interest of “drug purchasers” as the purpose of antitrust policy); Elhauge & Krueger, *supra* note 14, at 296 (arguing that “a settlement is anticompetitive” if “the settlement harms . . . ex post consumer welfare” and noting that such harm tends to also result in harm to ex ante consumer welfare); Shapiro, *supra* note 14, at 395–97; Willig & Bigelow, *supra* note 13, at 678 (describing the “significant postponement of competition” as “a necessary condition for antitrust concern”); cf. Hemphill, *Paying for Delay*, *supra* note 54, at 1616 (claiming his “analysis offers industry-specific support for the proposition that *pharmaceutical* consumers do indeed have an entitlement to the average level of competition implied by litigation[.]” (emphasis in original)); Hovenkamp et al., *supra* note 14, at 1727 n.23 (characterizing the Shapiro rule as “the right basic inquiry” but adding that “[s]ocial rather than merely consumer surplus may also be the right metric”).

Carl Shapiro, has, however, recently joined coauthors in suggesting that the baseline should be consumer welfare under the best possible settlement. See Aaron Edlin et al. *The Actavis Inference*, *supra* note 14, at 609 (“Injuring consumers compared with [value under litigation] is not required to violate the antitrust laws, given that consumers are injured with respect to a reasonable alternative settlement . . . .”). I argue below that such a standard is inappropriate under a static model in

In order to apply this “protection standard,” antitrust must know something about the outcome of litigation between Brand and Generic. Otherwise, it cannot determine the baseline level of consumer value against which to evaluate settlement.<sup>108</sup> But in order to apply the protection standard, antitrust must also know something about the entry date that the parties will actually choose in settlement; otherwise, it is impossible to determine whether consumer value in settlement falls below consumer value in litigation.

### *B. The Uncertainty Corollary*

There are three levels of knowledge regarding the settlement entry date: certainty, risk, and uncertainty. In practice, uncertainty prevails. The proper way to handle it is to impose rules on entry settlements that make it impossible for them to harm consumers.

If the settlement entry date is known with certainty, consumer value in settlement may easily be predicted, and a comparison with litigation value may be made. In the absence of certainty, antitrust may determine the probability distribution of the settlement entry date and use it to determine the average effect of settlement on consumers. Here the settlement entry date is, in a sense, known, but subject to a measurable risk of inaccuracy. In this case, the protection standard becomes the command to ensure that on average settlement does not harm consumers, where the average may be adjusted, perhaps, for risk aversion.<sup>109</sup> I call this variant of the protection standard the “expected protection standard.”

This strategy breaks down, however, in the absence of information about the probability distribution of the settlement entry date. If I do not know this probability distribution, then I cannot determine the average settlement or whether it harms

---

the patent context.

108. *Cf.* Shapiro, *supra* note 14, at 397 (“[T]ypically, to compare consumer surplus under a settlement with consumer surplus from ongoing litigation requires an informed judgment as to the strength of the patent[s] at issue.”).

109. *See* MARTIN PETERSON, AN INTRODUCTION TO DECISION THEORY 64–65 (2009) (describing a consensus in the literature that when the probabilities of outcomes are known, decisions should maximize expected, or average, value).

consumers. This is a situation of uncertainty or ambiguity as opposed to one of risk.<sup>110</sup>

Although the decision theory literature contains no consensus about the way to make a decision under uncertainty,<sup>111</sup> there is broad agreement that if a dominant strategy is available, it should be chosen.<sup>112</sup> A dominant strategy under uncertainty is one for which all the possible outcomes are either to be preferred to those under other strategies or are no worse than those under other strategies.<sup>113</sup> Because under a dominant strategy I am always at least as well off as under other strategies, regardless of what happens, I do not need to know the probability of any particular outcome in order to prefer this strategy. Knowledge of the probability distribution is not required.

A dominant strategy for responding to uncertainty about the entry date under settlement is to impose a rule that ensures that there are no possible entry dates under settlement that harm consumers. Such a strategy guarantees no harm to consumers regardless which entry date the parties choose in settlement and is therefore to be preferred despite uncertainty about which settlements the parties will choose. In the standard entry model, it is a rule that makes it impossible for the parties to settle for delay.

I define the “uncertainty corollary” to the protection standard to be the requirement that in the face of uncertainty about consumer value in settlement antitrust must adopt a rule that guarantees no possibility of consumer harm.<sup>114</sup> Because a ban on settlement

---

110. See *id.* at 40, 64 (distinguishing decision under “ignorance” from that under risk).

111. See *id.* at 65 (“[T]here is virtually no agreement on how to make decisions under ignorance.”).

112. See *id.* at 41 (“The widely accepted *dominance principle* prescribes that dominated acts must not be chosen.” (emphasis in original)).

113. This defines strong dominance. See *id.* at 42. For recent attention to the concept of dominance in antitrust scholarship, see C. Scott Hemphill, *Less Restrictive Alternatives in Antitrust Law*, 116 COLUM. L. REV. 927, 943-44 (2016) (“If one action, compared to another, has greater or equal benefit and also imposes a lesser burden on competition, it is decisively better. Such alternatives offer a free lunch that we may choose without regret. These are the easy cases, in which cost-benefit analysis can be performed without needing to explore any tradeoff.”).

114. The detractors of the litigation cost rule have argued in effect for the opposite: that any regulatory regime that might preclude a gain to consumers should be avoided. See Harris et al., *supra* note 15, at 87 (arguing against a presumption against reverse payment settlements in excess of litigation cost on the ground that “the [litigation cost] standard proposed by [Edlin et al.] would condemn some

guarantees that firms will always litigate and thereby achieve litigation value for consumers, a ban on settlement guarantees no harm to consumers relative to the litigation value baseline imposed by the protection standard and therefore always satisfies the uncertainty corollary. I discuss it and other policy options that satisfy the uncertainty corollary in Part 0.

*C. The Current Approach to Entry Settlements and Uncertainty*

The current approach of antitrust to entry settlements is to embrace the expected protection standard and ignore the absence of consensus on the appropriate probability distribution to use in determining the average settlement. An embrace of the expected protection standard explains the focus of both sides of the debate over reverse payment settlements on ensuring that the litigation cost rule not ban any beneficial settlements.<sup>115</sup> Not banning any beneficial settlements, even at the cost of allowing some harmful ones, as the litigation cost rule would do, could be an effective strategy for shifting the mean settlement out of the range of delay and up to the litigation entry date. Its success depends, however, on the probability distribution of settlement entry dates after the rule is applied.

The approach of many of the advocates of the litigation cost rule to the problem of choosing a probability distribution for the settlement entry date reflects the spirit of avoidance that characterizes the current approach of antitrust to the problem. These advocates of the litigation cost rule have been careful to treat the outcome under litigation as uncertain in their model.<sup>116</sup> But

---

procompetitive settlements”); Willig & Bigelow, *supra* note 13, at 678 (“The principal lesson of this article is that it could be quite typically [and perhaps dramatically] socially counterproductive to employ a per se rule against agreements to settle patent litigation that entail net consideration paid by a patent holder to a potential entrant.”); Schildkraut, *supra* note 15, at 1067 (Reverse payment settlements “should not be condemned out of hand . . . because such settlements are not necessarily anticompetitive . . . Reverse payments may in fact accelerate entry and there is no shortcut to make that determination.”).

115. See *supra* notes 14 & 15, and accompanying text; Aaron Edlin et al., *The Actavis Inference*, *supra* note 14, at 627 (in which the litigation cost rule advocates seek to show that settlements involving payments in excess of litigation cost do not benefit consumers).

116. See, e.g., Edlin et al., *The Actavis Inference*, *supra* note 14, at 620 (assigning a probability to Brand’s success in litigation).

they have, for the most part, not incorporated uncertainty regarding the settlement entry date into their model. They have modeled the range of dates that a settlement involving a reverse payment in excess of litigation cost must choose.<sup>117</sup> They also suggest that in the absence of regulation of reverse payment settlements, the parties will always choose the greatest possible delay, meaning the maximum entry date in the settlement range, presumably because this maximizes joint profit. I critique this approach in Part 0.<sup>118</sup>

But these advocates of the litigation cost rule provide little account of the entry date that will be chosen in settlement after their rule is applied and settlements in excess of litigation cost are banned. Because settlements without a reverse payment can harm consumers, whether settling parties will actually choose such settlements after a reverse payment ban is in place determines whether a reverse payment ban meets the protection standard. Without modelling settlement dates, it is therefore impossible for the litigation cost rule advocates to argue that their rule meets the protection standard.<sup>119</sup>

Those scholars who have grappled with the problem of uncertainty regarding the entry date in settlement have ignored the existence of a dominant strategy and have instead tried to appeal to the principle of insufficient reason to identify an average settlement.<sup>120</sup> The principle of insufficient reason holds that in the absence of information about probabilities it is appropriate to assume that all possible outcomes are equally likely.<sup>121</sup> This

---

117. *Id.* at 631–34.

118. *See supra* note 62 and accompanying text.

119. These litigation cost rule advocates have recognized the vulnerability of their position arising from the existence of a settlement range that includes beneficial settlements. Edlin et al., *The Actavis Inference*, *supra* note 14, at 614 (“[T]he question is not whether feasible settlements that would improve welfare are prevented by the [litigation cost rule]. The question is whether desirable settlements that would actually be chosen in equilibrium are prevented by the [litigation cost rule].”).

120. Elhauge & Krueger have taken this approach. *See supra* note 14, at 313–23 (“Given that any settlement between  $T_{min}$  and  $T_{max}$  is possible, it makes some sense to assume that all such settlements are equally likely. Under this assumption, the middle of this settlement range equals the average expected settlement exclusion period[.]”).

121. *See* PETERSON, *supra* note 113, at 53 (“The principle of insufficient reason prescribes that if one has *no* reason to think that one state of the world is more probable than another, then all states should be assigned *equal* probability.” (emphasis in original)).

approach has justly been condemned as arbitrary.<sup>122</sup> But even if I embrace it, there is no reason to appeal to it when a dominant strategy is available. Other scholars have used the Nash Bargaining Solution to predict settlement terms. It often yields a result close to that produced by the principle of insufficient reason.<sup>123</sup> While this solution has many nice properties, necessity is not one of them.<sup>124</sup>

*D. Rejecting a Maximization Standard in the Patent Context*

A crucial assumption underpinning the uncertainty corollary is that in the patent context antitrust is not interested in increasing or maximizing consumer value, but only in preventing harm, which in the standard entry model means preventing any delay in entry relative to the litigation entry date. If antitrust were interested in maximizing consumer value, rather than just preventing its reduction, then it would allow only settlements that provide for entry as early as possible, because consumer value is decreasing in the entry date in the standard entry model.<sup>125</sup> Such a “maximization standard” would allow only the maximum possible hastening of entry.

Not all guarantees against harm maximize hastening, so under a maximization standard a guarantee against harm is not a dominant strategy. A settlement ban always fails to guarantee maximum hastening, for example, unless the litigation entry date happens to be the earliest possible entry date. All dominant

---

122. See *id.* at 55 (“[T]he problem is that it seems *completely arbitrary* to infer that all states are equally probable. Any other distribution of probabilities seems to be equally justified (that is, not at all).” (emphasis in original)).

123. Willig & Bigelow, *supra* note 13, at 665 (using the Nash bargaining solution).

124. The Nash Bargaining Solution must be the one chosen by the parties only if four axioms hold. See PETERSON, *supra* note 113, at 249–50. One of these, the symmetry axiom, assumes that the parties have equal bargaining power. See John F. Nash, *The Bargaining Problem*, 18 *ECONOMETRICA* 155, 159 (1950) (“[The symmetry assumption] expresses equality of bargaining skill.”). There is no reason to suppose that this axiom is realistic. See John Thrasher, *Uniqueness and Symmetry in Bargaining Theories of Justice*, 167 *PHIL. STUD.* 683, 684 (2014) (“[S]ymmetry is a substantive normative constraint that is added into the bargaining procedure, not an implication of standard accounts of rational choice. Introducing such a substantive constraint into the bargaining problem effectively begs the question in favor of some solutions—assuming at the outset what these bargaining theories are attempting to prove.”).

125. See *supra* note 46 and accompanying text.

strategies under a maximization standard also guarantee against harm, however, because a strategy that can only maximize consumer value cannot harm consumers relative to any baseline.

In the standard entry model, any dominant strategy under a maximization standard must effectively invalidate all patents, because patents tend to prevent immediate entry.<sup>126</sup> Under a maximization standard, antitrust therefore swallows patent law. I may not want to avoid this result, but if I do, and I want to for purposes of this article, then I must either reject a maximization standard or I must reject the standard entry model's characterization of consumer value as always decreasing in the entry date. I consider the latter option in another work.<sup>127</sup> For purposes of this article, I choose the former option. In doing so, however, I do not mean to recommend that the maximization of consumer value never be the goal of antitrust. Indeed, in general, it should be antitrust's goal.

Instead, I reject a maximization standard because the patent context is special. It is appropriate for antitrust to regard patent law as having responsibility for maximizing consumer value through the regulation of returns to innovation. Antitrust must therefore treat consumer value that results from litigation of the patent laws as the maximum possible consumer value, even when it knows that in fact greater consumer value is possible. Otherwise it usurps patent's authority to maximize consumer value in this area. This is a question of institutional deference.<sup>128</sup> In other domains, such as mergers, antitrust has primary responsibility for maximizing consumer value and it is appropriate for it to care

---

126. See Shapiro, *supra* note 14, at 396 (“[D]eclaring all extant intellectual property rights invalid could well maximize short-run consumer surplus[.]”).

127. See Ramsi A. Woodcock, *Innovation and Reverse Payments*, 43 F.S.U. L. Rev. \_\_\_ (forthcoming 2017); cf. Shapiro, *supra* note 14, at 396 (observing that accepting the implication of the standard entry model that consumer value is maximized when patent protection is eliminated would come at the “obvious expense of longer-term innovation and consumer interests”).

128. See Elhauge & Krueger, *supra* note 14, at 295 (“[I]t is best to assume that substantive patent law is optimal. Although scholars sometimes argue that current patent law upholds too many patents, or too few, some balance must be struck. Even if one believes that current patent law does not strike the correct balance, the correct solution is to reform patent law, not to allow courts in antitrust cases to second-guess patent law doctrine and try to offset it imperfectly . . . .”); Shapiro, *supra* note 14, at 396 (observing that “taken to an extreme [a maximization] approach would *not* in fact respect intellectual property rights” (emphasis in original)).

whether a given regulation makes consumers worse off not just in comparison to the status quo but in comparison to the heights that consumers can reach.<sup>129</sup>

#### IV. APPLICATION OF THE UNCERTAINTY COROLLARY TO DRUG PATENT ENTRY SETTLEMENTS

In this Part, I argue that the uncertainty corollary applies to entry settlements because antitrust has not reached a consensus regarding what probability distributions to use to describe settlement entry dates under any proposed rule. I then show that the two policy options advocated by the parties to the reverse payments debate, *laissez faire* and some form of reverse payment cap, both fail the demand of the uncertainty corollary for a guarantee against harm. I also consider some additional difficulties that arise from the application of the principle of insufficient reason. In the next Part, I consider three rules that do satisfy the uncertainty corollary: a settlement ban, a rule of reason, and an obverse payment rule.

##### *A. The Uncertainty Corollary Applies*

I adopt the premise that there is no data on settlements that might allow me to assign a probability distribution to the settlement dates made available under any particular settlement rule. I do not wish to argue that there is in fact no data, however. There is data available on the settlements chosen by firms under *laissez faire*, for example; it suggests that the parties tend to settle for the greatest possible delay.<sup>130</sup> My reason for adopting the premise is that some parties to the debate seem to believe that settlements for hastening

---

129. Accordingly, when, outside of the patent settlement context, antitrust applies a rule of reason, it quite appropriately implements a maximization standard by imposing a requirement that defendant show that there is no “less restrictive alternative” to its behavior. *See, e.g.*, 7 HERBERT J. HOVENKAMP & PHILLIP AREEDA, *ANTITRUST LAW: AN ANALYSIS OF ANTITRUST PRINCIPLES AND THEIR APPLICATION*, ¶ 1505 (3d ed. 2010). A less restrictive alternative is one that results in greater consumer value. It is to this standard that Edlin et al. mistakenly suggest that patent settlements ought to be tied. *See* Edlin et al., *supra* note 14, *The Actavis Inference*, at 609 & n. 76; *supra* note 107.

130. *See supra* note 65. This may explain the desire of some advocates of the litigation cost rule to assume that the parties always settle for the greatest possible delay. *See supra* note 62 and accompanying text.

are probable enough that a failure to preserve them will cause average settlements to involve delay and therefore to harm consumers.<sup>131</sup> There is therefore no consensus on the probability distribution to employ in determining the average settlement. It seems more likely that the factions may be induced to agree that the distribution is uncertain than on any particular distribution. It is therefore useful to consider what consequences uncertainty has for policy. I therefore apply the uncertainty corollary as a rhetorical matter without conceding that there is really insufficient information to identify a distribution. I now turn to consideration of whether *laissez faire* or a reverse payment cap satisfies the uncertainty corollary.

### B. *Laissez Faire Allows Consumer Harm*

I have shown that if there is no reverse payment cap, Brand can always pay Generic for delay until patent expiry.<sup>132</sup> The rationale for rejection of *laissez faire* and embrace of regulation of patent settlements follows immediately. Under *laissez faire*, the high point of the settlement range is patent expiry, which involves delay, and therefore consumer harm, relative to any other litigation entry date. Thus harm is always possible under *laissez faire*, in violation of the uncertainty corollary. *Laissez faire* must therefore be rejected.

### C. *A Reverse Payment Cap Allows Consumer Harm*

Capping the amount of any reverse payment fares no better. Placing a cap on the amount of a reverse payment can limit the high end of the range of possible settlements.<sup>133</sup> But the high endpoint in the range depends upon Generic's litigation costs and its rate of duopoly profit, in addition to the amount of the cap.<sup>134</sup> So long as Generic's litigation costs are non-zero, a reverse payment cap in any amount, including one that caps any payment at litigation cost, can

131. Cf. *supra* note 114 (giving references in which the detractors argue that a regulatory regime that precludes gains to consumers should be avoided).

132. See *supra* Part 0.

133. See *supra* note 60.

134. From note 60, I have  $PT + \frac{L_G + q}{D_G}$  for the capped high endpoint, which depends on Generic litigation cost  $L_G$  and duopoly profit  $D_G$ . From the same note, the high endpoint is  $T - (1 - P)H + \frac{q + L_G}{D_G}$  in the multiple generic case.

never guarantee that settlement will not harm consumers.<sup>135</sup> This is because, as I show in Part 0, Brand and Generic may treat the entry date as a settlement currency even when the reverse payment is zero. If Generic expects to pay litigation costs, it may be willing to compensate Brand for a settlement that avoids those costs, simply by agreeing to delay.<sup>136</sup>

There is, however, another kind of payment regulation that can create a guarantee against delay: a reverse payment ban plus a minimum required obverse payment from Generic to Brand. I consider this policy option in Part 0.

135. From note 60 I have  $PT + \left[\frac{L_G + q}{D_G}\right]$  for the capped high endpoint. For  $q \geq 0$ , this exceeds  $PT$  and therefore involves delay. Delay harms consumers.

In the multiple generic case, for a reverse payment cap  $q$  I found in note 60 an upper bound of  $E \leq T - (1 - P)H + \frac{q + L_G}{D_G}$ . Letting  $q = 0$  and subtracting  $PT$ , I have  $(1 - P)T \left(1 - \frac{H}{T}\right) + \frac{L_G}{D_G}$ , which is positive. So even with a reverse payment capped at zero there is delay. Because the upper bound is increasing in the payment cap  $q$ , greater caps bring even more delay. Because hastening is required to prevent consumer harm in the multiple generic case, this shows that no reverse payment cap can save consumers from harm.

I am not aware of any other statement of this point at this level of generality. It has been recognized that a litigation cost rule fails to ban some settlements that harm consumers, but some commentators have failed to give even this limited statement the prominence that it deserves. Willig and Bigelow bury it by assuming that the parties always make deals that achieve the unique Nash bargaining solution, allowing them to avoid coping with the range of possible settlement dates actually available to the parties. Willig & Bigelow, *supra* note 13, at 665. Edlin et al., *supra* note 13, at 22, recognize it in passing when they write: “the settlement is anticompetitive . . . if (but only if) the reverse payment exceeds the patent holder’s avoided litigation costs.” I take the “but only if” to be a recognition that while all settlements involving a reverse payment in excess of litigation cost are normally anticompetitive, it does not also hold that all anticompetitive settlements must involve a payment in excess of litigation cost. They make this point at greater length in Edlin et al., *The Actavis Inference*, *supra* note 14, at 631–33. It is discussed in three other places. See Davis, *supra* note 10, at 291–95; Elhauge & Krueger, *supra* note 14, at 313–19; Hemphill, *Paying for Delay*, *supra* note 54, at 1594–95 (making the point in both the single and multiple entry models).

136. Elhauge and Krueger recognize that even settlements without a reverse payment can harm consumers but conclude that this immediately demands rule of reason analysis for such settlements. See *supra* note 14, at 329 (“[P]atent settlements that exclude entry without any reverse payment are . . . usually anticompetitive. However, such settlements are not always anticompetitive, so a broader array of rebuttal would be advisable.”). This train of reasoning lacks the benefit of the uncertainty corollary. Without the uncertainty corollary, it is unclear whether the average settlement will harm consumers and case-by-case adjudication becomes necessary.

*D. Shortcomings of the Principle of Insufficient Reason as Applied*

In Part III.C., I indicate that some scholars have tried to respond to uncertainty about the settlement entry date by assuming, quite arbitrarily, that all possible entry dates under settlement are equally likely. For the benefit of those who are comfortable with the arbitrariness of the principle of insufficient reason, I wish briefly to consider a second obstacle to its application. The usefulness of the principle is that it can be applied to determine the amount of a cap to impose on reverse payments. That is, the cap can be chosen to ensure that the average settlement entry date, determined using the principle, involves no delay. I now show that applying the principle in this way is more expensive for enforcers than applying a litigation cost rule, which bans all settlements in excess of litigation cost.<sup>137</sup>

If I take the midpoint of the settlement range as the average settlement, as the principle of insufficient reason would require, then consumers are not necessarily harmed under a reverse payment cap. The midpoint of the range can fall earlier than the litigation entry date, particularly if there is no cap on any obverse payment.<sup>138</sup> To determine which reverse payment caps meet the expected protection standard by not harming consumers at the midpoint of the settlement range, it is necessary to know the maximum reverse payment cap beyond which consumers are harmed at the midpoint. This maximum depends on the litigation costs of the parties as well as Generic's duopoly profit rate and the private surplus created by monopoly.<sup>139</sup> This imposes an additional

137. See *supra* note 120 and accompanying text.

138. Placing a cap on the amount of an obverse payment limits the low end of the range of possible settlements. In note 60, I observed that Generic will settle for  $\pi \geq (PT - E)D_G - L_G$ . I now choose some  $\pi = -o$  that satisfies this condition as my maximum obverse payment. I have that Brand is willing to hasten entry if  $EM_B + (T - E)D_B + o \geq PTM_B + (1 - P)TD_B - L_B$ . Rearranging, I obtain  $E \geq PT - \left[\frac{L_B + o}{M_B - D_B}\right]$ . As  $o$  falls, the lower bound increases. A similar argument establishes this in the multiple generic case.

139. From note 60, I have  $\frac{L_G + L_B}{M_B - D_G - D_B}$  for the lower end of the range and  $\frac{L_G + q}{D_G}$  for the upper end. Solving for the  $q^*$  that equalizes them I obtain  $q^* = \frac{D_G L_B + L_G(2D_G - M_B + D_B)}{M_B - D_B - D_G}$ . Observing that  $M_B - D_B - D_G$  is the private surplus,  $S$ , created by monopoly, I have  $q^* = \frac{D_G L_B + L_G(D_G - S)}{S}$ . Because this  $q^*$  equalizes the bounds in relation to the litigation entry date, and the upper bound  $\frac{L_G + q}{D_G}$  is increasing in  $q$ , a reverse

information cost in applying the principle of insufficient reason relative to a litigation cost rule, for which only litigation cost must be determined.<sup>140</sup>

I also wish to identify an erroneous application of the principle of insufficient reason in the literature. Elhauge and Krueger appear to make the following argument. Generic's rate of profit loss with delay is always smaller than Brand's rate of gain with delay.<sup>141</sup> As a result, if Generic's litigation costs approximate Brand's,<sup>142</sup> then Generic will always be willing to agree to more delay than Brand will be willing to agree to hastening.<sup>143</sup> This effect is presumably compounded by the availability of a limited reverse payment, which permits Brand to purchase a limited amount of additional delay from Generic.<sup>144</sup> According to Elhauge and Krueger, because the range is broader for Generic, I must conclude that the midpoint exceeds the litigation entry date and therefore settlement always

payment in excess of  $q^*$  pulls the midpoint above the litigation entry date, suggesting harm to consumers; a cap below  $q^*$  pulls the midpoint below the litigation entry date, suggesting a lack of harm to consumers. This makes  $q^*$  the maximum cap beyond which consumers are harmed. A maximum cap for the multiple generic case may be obtained by a similar process. It is  $\left[PH \left[\frac{D_G + D_B}{M_B}\right] - (1 - P)(T - H) + \frac{L_B + L_G}{M_B}\right] D_G - L_G$ . It depends on more variables than the cap in the single entry case, including the litigation entry date.

The existence of a maximum cap is possible but not guaranteed. For sufficiently large  $S$ , I have  $q^* < 0$ , which implies that the upper bound is so high that even a zero cap on reverse payment cannot bring it down to the size of the lower bound. The midpoint always harms consumers. The existence of a maximum cap is possible but not guaranteed in the multiple entry case as well.

140. Both rules also require interpretation of the terms of any settlement agreement. *See infra* Part 0.

141. *See supra* Part 0.

142. *Cf. Elhauge & Krueger, supra* note 14, at 313 (assuming that the litigation costs of Brand and Generic are equal).

143. The argument of Elhauge and Krueger may be represented formally using the notation defined in note 60. In single entry, Brand's maximum hastening is  $\frac{L_B}{M_B - D_B}$ , whereas Generic's maximum delay is  $\frac{L_G}{D_G}$ . Because if monopoly guarantees a private surplus, then  $M_B - D_B > D_G$ ,  $\frac{L_B}{M_B - D_B} < \frac{L_G}{D_G}$  if  $L_B = L_G$ . *See id.* at 318 (“[E]ven with zero reverse payment and weak patent, the middle of the settlement range always exceeds both the expected litigation exclusion period and the optimal patent exclusion period. If we assume all settlements in the bargaining range are equally likely, settlements without reverse payments are usually anticompetitive for weak patents as well as strong.”).

144. *Cf. id.* at 315 (“[E]ven with zero reverse payment and a strong patent, the middle of the settlement range always exceeds . . . the expected litigation exclusion period[.]”).

harms consumers.<sup>145</sup> The problem with this argument is that it assumes that Generic will not pay Brand for hastening. This severely restricts the low end of the settlement range. I argue in Part 0 that this is not a reasonable assumption. The principle of insufficient reason does not establish the existence of consumer harm a priori.

#### V. CHOICE OF A RULE UNDER THE UNCERTAINTY COROLLARY

The uncertainty corollary requires that antitrust choose a rule that allows no settlement to harm consumers. I consider three rules that meet this requirement: a blanket ban on all patent entry settlements (a “settlement ban”), a requirement that any settlement include a (net) obverse payment from Generic to Brand in an amount large enough to make Generic unwilling to settle for delay (an “obverse payment rule”), and a rule of reason that examines settlements on a case-by-case basis and prohibits those that harm consumers. All three rules meet the requirement of the uncertainty corollary in that they purport to guarantee no harm to consumers. I argue that a settlement ban is the best of these rules.

In deciding between these rules, I take the cost of enforcement to enforcers, such as the FTC, to be a legitimate criterion, but not the cost of litigation to firms or to the court system.<sup>146</sup> Antitrust is interested exclusively in consumer value.<sup>147</sup> In the standard entry model, consumers pay neither court administration costs nor litigation costs. I have shown that, as a result, a reduction in litigation costs has no effect on consumer value in single entry<sup>148</sup>

---

145. *See id.* at 313–23 (“Any delay in entry increases the patent holder’s profits by more than it decreases the entrant’s profits . . . . Therefore, the patent holder will be less willing to accept a shorter exclusion period in order to avoid litigation costs than the entrant is willing to accept a longer exclusion period to avoid litigation costs. This will push the range of possible settlement exclusions higher.”).

146. Standard frivolous litigation models treat court filing fees, which are a proxy for court administration costs, as an item separate from each party’s litigation costs, which latter include such things as attorney fees. *Cf. MICELI, supra* note 58, at 188 (“[O]verall litigation costs . . . consist of the total filing costs plus trial costs for those cases not dropped or settled[.]”); Shapiro, *supra* note 14, at 394 (“Private benefits [of settlement] include the avoidance of litigation costs and the resolution of uncertainty. Social benefits include savings on court costs and/or reduction of congestion in the court system.”).

147. *See supra* note 1066.

148. *See supra* note 55 and accompanying text.

and actually reduces it in multiple entry.<sup>149</sup> I consider the cost of enforcement, however, because consumers benefit from enforcement and enforcers have limited resources. I assume that each of the three rules that I consider is equally effective at guaranteeing no harm to consumers, but the enforcement costs of this efficacy differ.<sup>150</sup> I assume further that it is in the interest of consumers that antitrust apply the rule that is cheapest to enforce, perhaps because a less expensive rule can be applied to more conduct, and therefore eliminate more harm.<sup>151</sup>

I do not compare the effects of the three rules on litigation rates, but some tentative observations are in order here. A settlement ban will probably reduce the number of settlements relative to the other two rules, reducing the cost of enforcing the antitrust laws against them. To the extent that it also drives up litigation rates regarding patent validity,<sup>152</sup> it creates positive externalities by subjecting to final adjudication the validity of more patents.<sup>153</sup> It also drives up litigation costs, but, as I have just observed, these can be ignored.<sup>154</sup> It may also dissuade some parties from commencing litigation at

---

149. See *supra* Part 0.

150. This means that I ignore relative error costs and therefore error costs generally. I do not consider error costs because I know nothing about, for example, the probability that a settlement ban might incorrectly treat a license as an entry settlement or that a rule of reason might misidentify a litigation entry date. In this regard my analysis is incomplete. For a brief introduction to the modelling of legal error, see MICELI, *supra* note 58, at 184.

151. For a discussion of error costs in antitrust that emphasizes the distinction between the size of the coverage area of a rule and the error cost it inflicts within its coverage area, see Ramsi A. Woodcock, *Per Se in Itself: How Bans Reduce Error in Antitrust* 12 (2016) (unpublished manuscript, available at <https://papers.ssrn.com/abstract=2896453>).

152. Cf. C. Scott Hemphill & Mark A. Lemley, *Earning Exclusivity: Generic Drug Incentives and the Hatch-Waxman Act*, 77 ANTITRUST L.J. 947, 977–78 (2011) (preventing Generic from enjoying 180-day exclusivity when it enters pursuant to a settlement could increase the amount of litigation).

153. Challenging an invalid patent confers a benefit on future users who need not themselves sue to gain access to the art. To the extent that an increase in litigation leads to more findings of invalidity, it also creates this positive externality. See Hemphill & Lemley, *supra* note 152, at 978 (“[T]he invalidation of patents is a public good[.]”).

154. See *supra* text accompanying notes 147–50.

all.<sup>155</sup> The effect of this change on consumer value takes me outside of the standard entry model and I do not consider it.

Before turning to a comparison of the three rules, and showing that a settlement ban is the best, I first provide more detail on how a settlement ban would work.

#### A. Institutional Detail Regarding a Settlement Ban

I propose a ban on all agreements that have the effect of preventing Generic from making a Paragraph IV certification<sup>156</sup> or entering the market immediately after doing so. The ban would be an instance of the per se rule against anticompetitive agreements associated with Section 1 of the Sherman Act<sup>157</sup> and its violation would lead to all the penalties normally available for a violation of a per se rule under that statute.<sup>158</sup> The rule would require that Generic, having made a Paragraph IV certification, defend itself through to final judgment if sued and Brand, having decided to sue, prosecute its suit through to final judgment unless it wishes to give up and settle for immediate entry. The rule would neither require Brand to sue nor require Generic to make a Paragraph IV certification, but it would ban any agreement that would prohibit Generic from making a certification. The rule ensures that if Brand wants Generic barred by law from the market, Brand must obtain a court order.

It has been observed that every license is a settlement of sorts.<sup>159</sup> Every agreement by Generic to pay damages is of course

---

155. *Cf. id.* at 981–84 (discussing consequences of deterring challenges through a rule depriving Generic of the right to obtain 180-day exclusivity pursuant to a settlement).

156. *See supra* Part 0.

157. 15 U.S.C. § 1 (2013); *see generally* HERBERT HOVENKAMP, FEDERAL ANTITRUST POLICY: THE LAW OF COMPETITION AND ITS PRACTICE 158–59, 279 (4th ed. 2011) (explaining that agreements intended to raise price or decrease output are illegal per se under the antitrust laws).

158. *See generally id.* at 159, 724–27 (indicating that a naked restraint is a felony under the antitrust laws and discussing the measure of monetary damages that are also available); *see also* Valley Drug Co., *supra* note 10, at 1304 (“An agreement between competitors to allocate markets is, as the district court noted, clearly anticompetitive. Such an agreement has the obvious tendency to diminish output and raise prices.”).

159. Shapiro, *supra* note 14, at 392 (“Virtually every patent license can be viewed as a settlement of a patent dispute: the royalty rate presumably reflects the two parties’ strengths or weaknesses in patent litigation in conjunction with the

also a license. A rule that bans all settlements, bans all licenses. I do not propose to ban all settlements, but only settlements that have the effect of limiting entry. My rule would not ban an agreement by Generic to pay royalties to Brand unless the royalty is structured to preclude immediate entry by Generic, perhaps by use of a very high rate for all or part of the patent term, or unless the royalty contains some other device that has the effect of limiting entry.<sup>160</sup>

Implementation of the rule would require acceptance by courts interpreting Section 1 of the Sherman Act. The Supreme Court in *Actavis* endorsed a rule of reason for reverse payment settlements.<sup>161</sup> My proposed ban was not before the Court and was not ruled out by it. Indeed, it resolves some of the concerns expressed by the majority in its opinion. The majority showed an interest in accuracy in adjudication and in minimizing enforcement costs, both of which support a ban once the uncertainty corollary is taken into account. The majority embraced a rule of reason in *Actavis* because it rightly worried that a litigation cost rule is an imperfect proxy for consumer harm and must be set aside in some cases.<sup>162</sup> It also recognized the need to avoid the cost of an inquiry into the litigation entry date by suggesting that courts treat reverse

---

licensee's ability to invent around the patent."); *In re Ciprofloxacin Hydrochloride Antitrust Litig.*, 363 F. Supp. 2d 514, 533 (E.D.N.Y. 2005) (finding this observation to undermine the rationale for any regulation of patent settlements, let alone a ban on them). Shapiro also argues that "there are invariably gains from settling a patent dispute, even ignoring the savings associated with reduced litigation costs and uncertainty." Shapiro, *supra* note 14, at 397. I show elsewhere that this is not true for entry settlements. Ramsi A. Woodcock, *Product Innovation and Settlements of Drug Patent Litigation That Limit Generic Entry* 34–37 (September 6, 2016) (unpublished manuscript, available at <https://papers.ssrn.com/abstract=2702474>).

160. See HOVENKAMP, *supra* note 153, at 269 ("Alpha may sue Beta for patent infringement and the two parties settle their dispute by an agreement that Beta may go ahead with its plans but pay Alpha a royalty. The license agreement itself is not subject to antitrust challenge, and the fact that it is a settlement cannot make it any worse."); Daniel G. Swanson and William J. Baumol, *Reasonable and Nondiscriminatory (RAND) Royalties, Standards Selection, and Control of Market Power*, 73 ANTITRUST L.J. 1, 10–15 (2005) (discussing methods of identifying unreasonable royalties as part of the project of preventing holdups in the licensing of standard essential patents).

161. *Supra* note 11, at 2237–38.

162. *Id.* at 2236 ("Where a reverse payment reflects traditional settlement considerations, such as avoided litigation costs or fair value for services, there is not the same concern that a patentee is using its monopoly profits to avoid the risk of patent invalidation or a finding of noninfringement.").

payment size as a proxy for consumer harm where possible.<sup>163</sup> Because the majority did not have the benefit of the uncertainty corollary, it could not have known that a settlement ban both does a better job than a litigation cost rule of avoiding consumer harm and, as I will discuss shortly, is no more expensive than a litigation cost rule.<sup>164</sup>

My proposed rule would not prevent settlement for immediate entry by Generic. As a result, some weak patents may settle for immediate entry, causing the average Paragraph IV outcome, including both settlement and litigation outcomes, to involve hastening. In this case a settlement ban would not achieve for consumers the value they would expect under litigation but instead would bring them greater value, at least under the standard entry model. The uncertainty corollary cares only about the absence of harm, so allowing settlement for immediate entry does not violate it, but to the extent that allowing settlement for immediate entry starts to undermine the purpose of a patent term, the result is a source of concern.<sup>165</sup> The carve-out for settlements for immediate entry is not essential to my proposed ban and may be eliminated. I include it only because I do not think it will lead to much hastening and I wish to propose a rule that deviates as little as possible from the present regime.

My proposal is nearly identical in its terms, though not in its effect, to the “earned exclusivity” proposal of Hemphill and Lemley.<sup>166</sup> The difference is that I would make violation of the rule a per se violation of Section 1 of the Sherman Act, thereby triggering strict penalties that would have the effect of banning nearly all entry settlements. Hemphill and Lemley would only strip Generic of its first-filer exclusivity by way of penalty,<sup>167</sup> but would

---

163. *Id.* at 2236–37 (“[A]n antitrust action is likely to prove more feasible administratively than [some believe] . . . [T]he size of the unexplained reverse payment can provide a workable surrogate for a patent’s weakness, all without forcing a court to conduct a detailed exploration of the validity of the patent itself.”).

164. *See infra* Part 0.

165. *See infra* note 186 and accompanying paragraph.

166. Hemphill & Lemley, *supra* note 152, at 949 (imposing a penalty unless Generic “successfully defeats the patent owner . . . , obtains a settlement that permits entry without delay, or can enter the market without delay because the patent holder does not sue for infringement.”).

167. *Id.* Because penalties under my proposal do not presuppose the existence of first-filer exclusivity, my rule also extends to settlements that would prevent Generic from making a Paragraph IV certification to begin with.

continue to allow Generic to settle for delay.<sup>168</sup> The rule meets the protection standard only if guesses by Hemphill and Lemley, regarding the settlements that Brand and Generic will choose once their rule is applied, actually hold.<sup>169</sup> Earned exclusivity is not a dominant strategy.

### B. *The Case for a Settlement Ban*

I now argue that a settlement ban is to be preferred to a rule of reason or an obverse payment rule because it is less expensive to enforce.

#### 1. In Relation to a Rule of Reason

A settlement ban is less expensive to enforce than a rule of reason because it never requires enforcers to determine the litigation entry date or the amount of litigation costs, as required under a rule of reason. The Court in *Actavis* imposed a rule of reason on reverse payment settlements.<sup>170</sup> In order to apply it, a court must check the settlement entry date against the litigation entry date to determine whether the settlement delays entry and harms consumers. This requires that the court be able to determine the litigation entry date.<sup>171</sup> The Court in *Actavis* indicated that the size of a reverse payment relative to the defendant's litigation cost might be used as a proxy for consumer harm.<sup>172</sup> This requires that the court determine litigation cost. Either way, the rule of reason

---

168. *Cf. id.* at 950 (“To be clear, we do not oppose settlements that simply divide the remaining patent term by choosing a date at which the generic firm may enter.”).

169. *Id.* at 978 (predicting that “delayed-entry settlement will *mostly* disappear” (emphasis added)).

170. *See supra* note 11.

171. *See* Aaron Edlin et al., *The Actavis Inference*, *supra* note 14, at 617 (“[T]he correct antitrust analysis must be based on what was reasonably known to the parties about patent validity and infringement at the time they entered into their settlement.”).

172. This is the effect of the Court's embrace in *Actavis* of a rule of reason combined with a presumption against reverse payments in excess of litigation cost. *See Actavis*, 133 S. Ct. at 2236–37; Aaron Edlin et al., *The Actavis Inference*, *supra* note 14, at 617–19 (rejecting the argument that under *Actavis* a court must litigate patent validity or infringement but acknowledging that sometimes a court must consider “the risk of losing the patent case” in determining whether an antitrust violation exists).

requires that enforcers determine a quantity that they need not determine in enforcing a settlement ban.

Enforcement of a settlement ban requires only identification of the existence of an agreement and interpretation of its terms to determine whether it sets a date of entry. A statutory reporting requirement<sup>173</sup> makes identification relatively easy. Interpretation may be harder if the effect of the agreement is to restrict entry, but its language does not purport to do so.<sup>174</sup> For example, an above-market license may hide an entry restriction. Regardless, imposing a rule of reason also requires engaging in these activities, in addition to determining the litigation entry date or cost. That makes it more expensive.

## 2. In Relation to an Obverse Payment Rule

An obverse payment reduces Generic's willingness to delay because it offsets the litigation cost savings that compensate Generic for delay.<sup>175</sup> The obverse payment requirement that makes

173. Medicare Prescription Drug, Improvement, and Modernization Act of 2003, Pub. L. No. 108-173 § 1112, 117 Stat. 2461 (2003) (requiring Brand and Generic to file with the FTC the text of any agreement written or oral regarding the “manufacture, marketing or sale” of a drug that is the subject of a Paragraph IV certification). An important gap in this requirement is that it does not include agreements not to file a Paragraph IV certification.

174. Cf. Fed. Trade Comm'n, *Agreements Filed with the Federal Trade Commission under the Medicare Prescription Drug, Improvement, and Modernization Act of 2003: Overview of Agreements Filed in FY 2014 2* (2016), <https://www.ftc.gov/system/files/documents/reports/agreements-filled-federal-trade-commission-under-medicare-prescription-drug-improvement/160113mmafy14rpt.pdf> (stating that for 8 of 160 Paragraph IV patent settlement agreements filed with the FTC in fiscal year 2014 the existence of a reverse payment could not be determined because “it is not clear from the face of each settlement agreement whether certain provisions act as compensation to the generic patent challenger”).

175. Consider **Error! Reference source not found.** If Generic makes a payment equal to its litigation cost, then its settlement line will shift down to become coextensive with its litigation line ( $v_G^{set}$  shifts down to equal  $v_G^{lit}$ ). This pushes the maximum delay to which Generic will agree (labeled “max”) to the left until it hits the litigation entry date (marked “expected entry”). Thus Generic will not be willing to accept any delay.

I note that Generic will continue to be willing to settle for hastening; the minimum entry date is determined by Brand's profit lines and not Generic's. If Generic's litigation cost payment goes to Brand, then Brand's settlement line,  $v_B^{set}$ , will rise, pushing the minimum entry date to which Brand will agree (marked “min”) to the left. Thus an obverse payment will make Brand willing to accept a greater hastening of entry.

Generic unwilling to delay, without discouraging Generic from any amount of hastening, is similar to a litigation cost rule, but instead of prohibiting Brand from making payments in excess of Brand's litigation cost, it requires Generic to spend an amount equal to Generic's litigation cost.<sup>176</sup>

Depending on the circumstances of the settlements to which it is applied, an obverse payment ban is sometimes equivalent to a settlement ban and sometimes more expensive to enforce than one, but never less expensive. As a result, it is more costly on average than a settlement ban. In single entry, an obverse payment rule requires a determination of litigation costs in addition to the terms of the settlement. This makes the rule slightly more expensive than a ban, which only requires interpretation of the agreement.

In the multiple entry case Generic is indifferent, or very nearly so,<sup>177</sup> between any two settlements for entry more than 180 days before patent expiry. As a result, Generic may either be made willing to settle for any date greater than 180 days before patent

176. I use the notation defined in note 60. The entry date Generic will accept must satisfy  $(T - E)D_G + \pi \geq (1 - P)TD_G - L_G$ , which rearranges to  $-(PT - E)D_G - L_G \leq \pi$ , from which it is clear that for an  $E$  that is just equal to the litigation entry date  $PT$ ,  $L_G \geq -\pi$ . For any higher  $E$  to be precluded,  $-\pi$  must equal  $L_G$ .

This does not hold in the multiple entry case. In that case, an obverse payment requirement is ineffective at limiting entry to dates less than  $T - H$ . See *infra* note 178. For entry dates greater than  $T - H$ , Generic's entry date is constrained by  $(T - E)D_G + \pi \geq (1 - P)HD_G - L_G$ , which rearranges to

$$[(1 - P)H - (T - E)]D_G - L_G \leq \pi. \quad (1)$$

Rewritten as an equality, (1) gives the obverse payment required to preclude settlements for dates greater than  $E$ . To find the obverse payment that prevents harm to consumers, I need to know the threshold for consumer harm. It is determined by  $M_cE + (T - E)D_c \geq PTM_c + (1 - P)(HD_c + (T - H)F_c)$ , where  $F_c$  is consumer value under competition. This rearranges to  $E \leq PT \left[ \frac{F_c - M_c}{D_c - M_c} \right] - [PH + (T - H)] \left[ \frac{F_c - D_c}{D_c - M_c} \right]$ . This gives the range of entry dates that do not harm consumers. The maximum date is given by rewriting it as an equality. To find the obverse payment that precludes settlements for dates above this maximum, I substitute this equality into (1), treating (1) as an equality. It is clear that calculating the amount of the obverse payment requires knowledge of the litigation entry date  $PT$  as well as a number of other variables.

177. If there is a positive interest rate, then Generic will not be completely indifferent. Generic will place a higher value on its 180 days of exclusivity if it enjoys them sooner rather than later. If the interest rate is small, then for very weak patents Generic may not be willing to agree to delay until patent expiry. Cf. Hemphill, *Paying for Delay*, *supra* note 54, at 1593 (“[A] generic firm might prefer [delay] so long as [any] increase in projected profits [from delay] exceeds the discount from the delay in their receipt.”).

expiry or precluded from settling for any of them.<sup>178</sup> If the threshold date beyond which consumers are harmed falls within this period, an obverse payment rule will not be able to preclude only entry dates that harm consumers. In such a situation, an obverse payment rule that meets the uncertainty corollary by precluding all settlements that could harm consumers must have the effect of banning all settlements and therefore cannot be distinguished in effect from an outright settlement ban.<sup>179</sup>

An obverse payment rule may, however, be used to prevent delay relative to dates within 180 days of patent expiry. Because in multiple entry some amount of hastening is required for avoidance of harm to consumers, an obverse payment rule must prevent delay relative to an entry date that is in advance of the litigation entry date. This means that the range of litigation entry dates for which an obverse payment rule is possible is only a fraction of the 180 days before patent expiry. It seems reasonable to assume that most patents are not so strong as to have litigation entry dates so close to patent expiry. Even if most are, there is an additional problem.

Even when feasible, an obverse payment rule is very expensive to administer in the multiple entry case. For maximum entry dates less than 180 days before patent expiry, knowledge of the litigation entry date, monopoly, duopoly, and competition value for consumers and Generic, as well as Generic's litigation cost, are all required to determine the minimum amount of the obverse payment required to avoid harm to consumers in multiple entry.<sup>180</sup> This makes an obverse payment rule as expensive as a rule of reason. Because multiple entry could be more common than single entry,<sup>181</sup> these final two objections are particularly important. They show that an obverse payment rule is just a settlement ban over most patent strengths and too expensive over the rest of them. I conclude that a

---

178. From note 60, I have that for  $E \leq T - H$ , Generic is willing to settle if  $\pi \geq -PHD_G - L_G$ , which is independent of  $E$ . So if  $\pi$  meets this condition then any  $E \leq T - H$  is acceptable to Generic. If  $\pi$  does not meet this condition, then no  $E$  is acceptable.

179. Cf. *supra* note 176 (providing an algebraic description of the operation of an obverse payment rule).

180. See *supra* note 176.

181. See Edlin et al., *The Actavis Inference*, *supra* note 14, at 621 ("In practice, in many or even most cases, the assumption that further generic entry will occur following a settlement and the 180-day exclusivity period is empirically correct."); Kobayashi et al., *supra* note 16, at 91 ("The single-entrant model does not account for key institutional features of the Hatch-Waxman Act . . . that render the post-invalidation duopoly assumption unrealistic when there are multiple entrants.").

settlement ban is a better means of complying with the uncertainty corollary.

I wish to highlight a final objection, which applies both to an obverse payment rule and a rule of reason. Both rules permit settlements that hasten entry. A rule of reason would use case-by-case analysis to cull only settlements that delay entry.<sup>182</sup> An obverse payment rule would render Generic unwilling to settle for delay, but still willing to accept hastening.<sup>183</sup> Although I have said that the protection standard as applied to the standard entry model has no objection to hastening because it does not harm consumers, I have also pointed out that hastening, if taken to an extreme, would have the effect of eliminating patent protection, which is not a desirable result.<sup>184</sup> Because a settlement ban ensures that there is neither hastening nor delay,<sup>185</sup> it raises less of a concern for the safety of patent law than do the other two rules. I discuss this problem in greater detail in another work.<sup>186</sup>

#### CONCLUSION

Antitrust's mission is to prevent harm to consumers. In the patent context, this must be understood to mean harm relative to the level of consumer welfare that patent law would achieve through application of its rules by the courts. It follows that a failure to regulate patent litigation settlements, in the hope that this will result in settlements that improve upon the outcome that would otherwise obtain under litigation, is misguided. Antitrust's job is to prevent harmful settlements, not to allow beneficial settlements.

I have shown that when they are uncertain about the entry date upon which drug makers will settle, policymakers must limit allowed settlement entry dates to those that guarantee no harm to

---

182. See, e.g., *Nat'l Soc. of Prof'l Eng'rs v. United States*, 435 U.S. 679, 688 (1978) ("[Rule of reason analysis] focuses directly on the challenged restraint's impact on competitive conditions.").

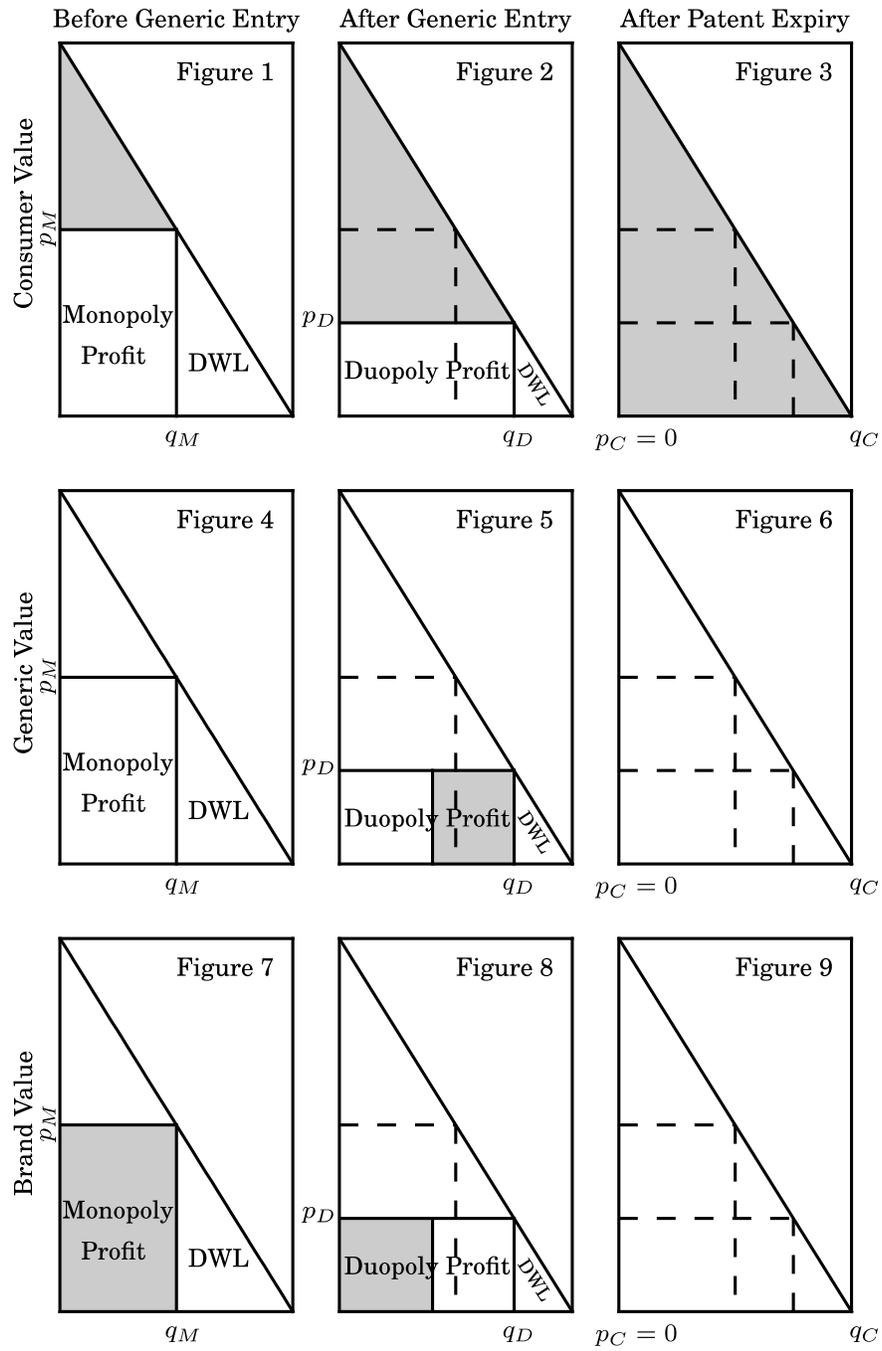
183. See *supra* note 175.

184. See *supra* Part 0.

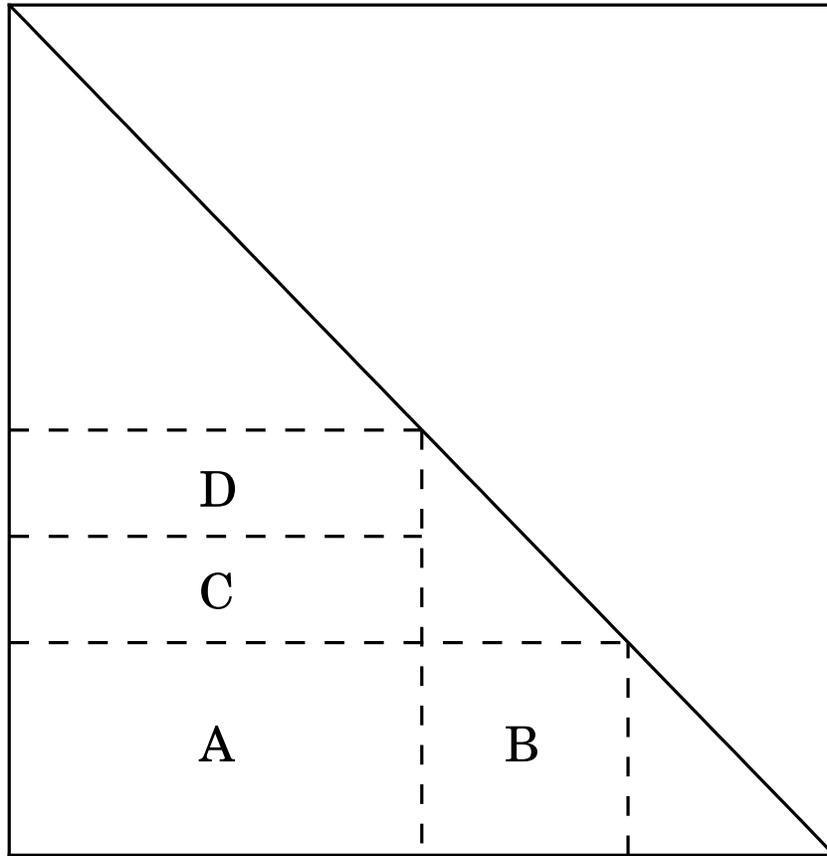
185. For a way in which my proposed implementation might cause a settlement ban to allow some hastening, see *supra* note 165 and accompanying text.

186. See Woodcock, *supra* note 127.

consumers. I have shown, as well, that banning all settlements that fix a date of entry is the best way to achieve that. The alternative of a cap on the size of any “reverse payment” that Brand may make to Generic allows harmful settlement entry dates. Other alternatives, such as a rule requiring Generic to make a payment to Brand, or a rule of reason, are either unworkable or more expensive to enforce. These results hold both when only a single generic may enter the market before patent expiry and when multiple generics may eventually enter and drive prices down to competitive levels before patent expiry.



*Figures 1 to 9 on the preceding page show the value to consumers, Generic, and Brand (rows 1, 2 and 3, respectively) before Generic entry, after it but before patent expiry, and after patent expiry (columns 1, 2, and 3, respectively). The vertical axis in each figure is price and the horizontal is quantity. Each gray area represents the value for the party associated with the row in which the figure appears. The diagonal in each figure represents demand. The letters  $p$  and  $q$  represent the prevailing price and quantity levels, respectively. The subscript  $M$  stands for monopoly, which prevails before Generic entry. The subscript  $D$  stands for duopoly, which prevails after Generic entry, but before patent expiry. The subscript  $C$  stands for competition, which prevails after patent expiry.  $DWL$  stands for deadweight loss. The figures are discussed in Part I.B.1.*

Figure 1<sup>187</sup>

*This figure and Figure 11 are a pair. They are explained in footnote 50. The vertical axis in both figures is price and the horizontal is quantity. The diagonal in both figures represents demand.*

---

187. This figure and Figure 2 are inspired by the division of static value used in Vincenzo Denicolò, *Do Patents Over-Compensate Innovators?*, 22 *ECON. POL'Y* 679, 686–87 (2007) and also found in Richard Gilbert & Carl Shapiro, *Optimal Patent Length and Breadth*, 34 *RAND J. ECON.* 106, 107 (1990).

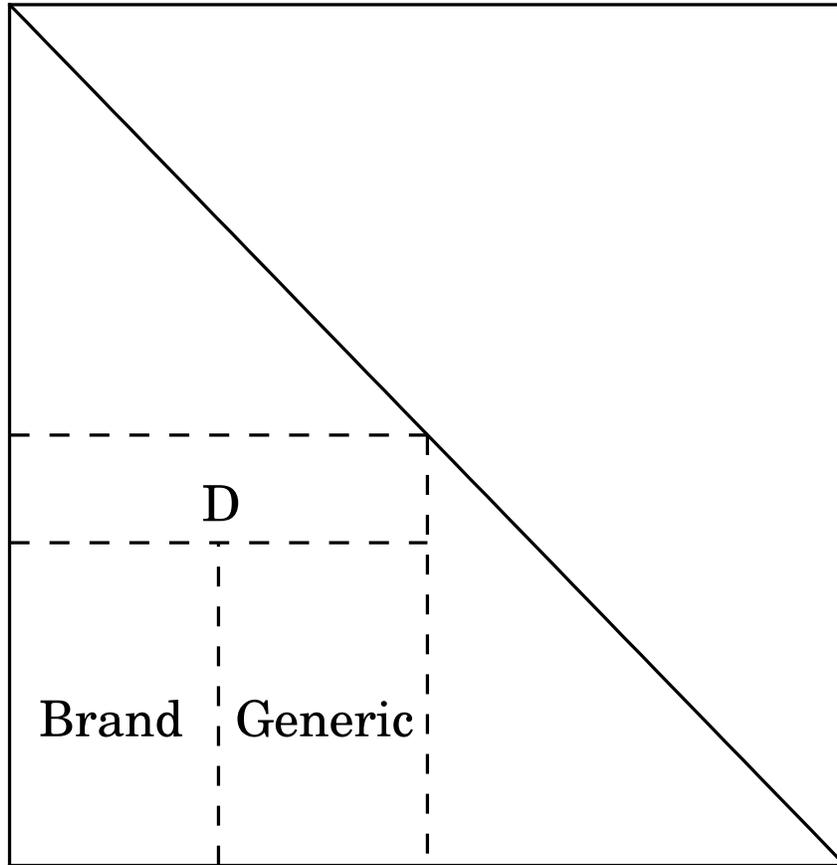


Figure 2

*This figure and Figure 10 are a pair. They are explained in footnote 50. The vertical axis in both figures is price and the horizontal is quantity. The diagonal in both figures represents demand.*

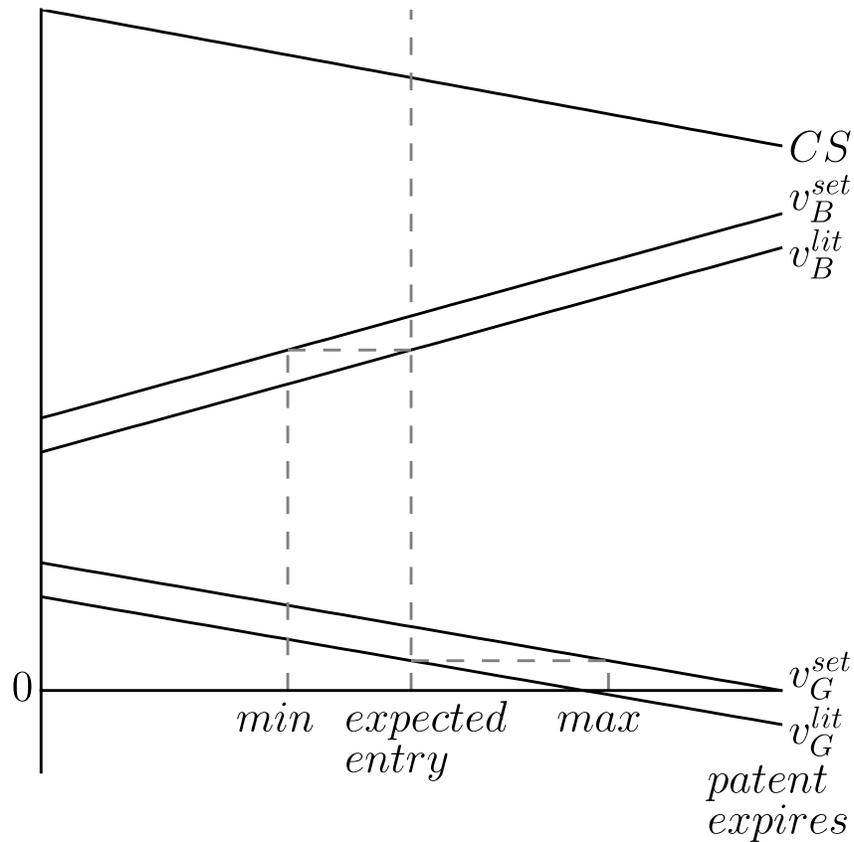


Figure 12

*This figure is discussed in Parts I.B and I.C. The vertical axis represents value to consumers, Brand, or Generic. The horizontal axis represents time of market entry by Generic. CS and v refer to consumer value and private firm value, respectively. The subscripts G and B refer to Generic and Brand, respectively, and those of set and lit to settlement and litigation, respectively. Thus, for example,  $v_G^{set}$  is Generic's value in settlement. Expected entry is an arbitrarily-chosen litigation entry date. Min is the earliest time of entry for which Brand will settle, given that litigation entry date. Max is the latest time of entry for which Generic will settle, given that litigation entry date.*

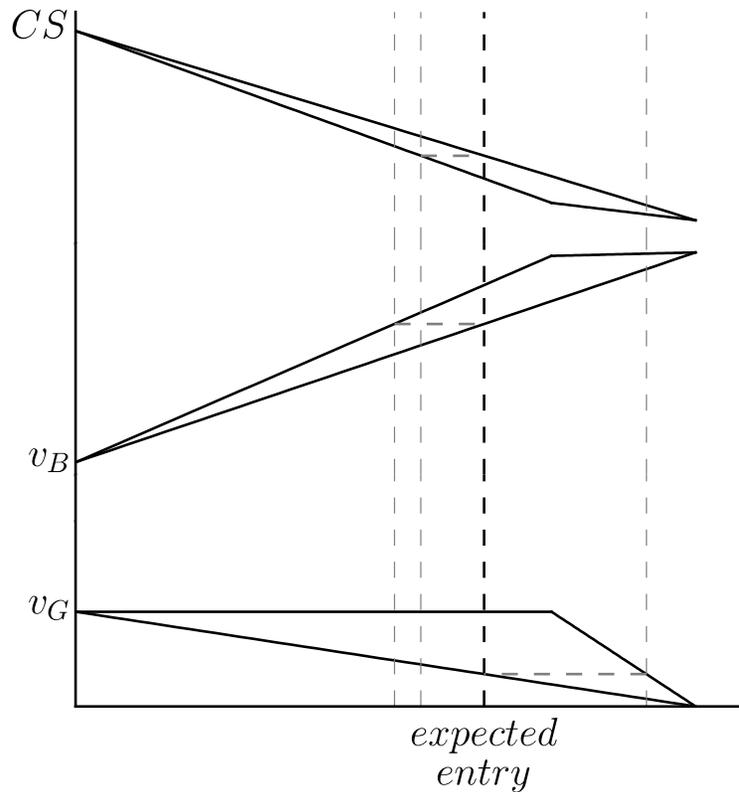


Figure 13

*This figure is discussed in Part I.D. The vertical axis represents value to consumers, Brand, or Generic. The horizontal axis represents time of market entry by Generic.  $CS$  and  $v$  refer to consumer value and private firm value, respectively.  $v_B$  is Brand's value and  $v_G$  is Generic's value. The kinked lines represent value in settlement for the party indicated in the corresponding label; the straight lines represent value in litigation. The Generic and Brand litigation value lines are drawn for the case of zero litigation cost. Expected entry is an arbitrarily-chosen litigation entry date. The left-most vertical dashed line is the earliest time of entry for which Brand will settle, given that litigation entry date. The second vertical dashed line from the left is the latest time of entry under settlement for which, given that litigation entry date, consumers are not harmed by settlement. The right-most vertical dashed line is the latest time of entry for which Generic will settle, given that litigation entry date.*