

THE LICENSING FUNCTION OF PATENT INTERMEDIARIES

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ABSTRACT

The contemporary patent marketplace is a complex ecosystem comprised of innovators and manufacturers who are often connected by a varied group of intermediaries. While there are a variety of intermediary business models—such as patent assertion entities and defensive aggregators—each facilitates a variant of a similar licensing transaction, connecting a set of patents held by a patent owner with a product or service offered by a prospective licensee. One explanation for the prevalence of intermediaries is that they engage in practices tantamount to arbitrage, acquiring patents and then licensing them at a profit because they enjoy greater success in patent litigation than patent holders would on their own. This paper advances an additional explanation: some intermediaries may serve a function analogous to a platform trading in non-exclusive licenses, overcoming search and valuation costs to facilitate licensing.

*This paper focuses on the use of two contract terms in intermediaries' dealings with technology market participants: revenue sharing in patent acquisition and non-exclusive licensing. The Federal Trade Commission's Patent Entity Activity Study reported that intermediaries used both of these terms. Building on those findings, this paper argues that intermediaries that use both provisions may, under some conditions, operate in a manner analogous to a two-sided platform. First, this paper examines how participants in a technology market would value non-exclusive licenses granted *ex post*, after the licensed product is already on the market. The paper argues that—in addition to the avoidance of litigation costs—the reduction of uncertainty can also drive licensee demand. Next, the paper proposes that use of revenue sharing allows patent holders to experience network effects from the number of prospective licensees accessed through the intermediary, which may make the intermediary more attractive*

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than licensing unilaterally. Finally, this paper argues that the conduct of a patent licensing intermediary using these contract features can be analogized to the practices of other licensing intermediaries such as performing rights organizations and patent pools. These observations suggest that one explanation for the success of some intermediary models—as well as one aspect of their conduct that may influence competition in technology markets—is their ability to connect patent holders and prospective licensees with a greater number of potential trading partners than they would otherwise be able to connect with on their own.

I. INTRODUCTION

Patent rights offer inventors the possibility of a financial return on their investments in innovation. Some inventors commercialize their patented inventions themselves, taking advantage of their right to exclude to enjoy marketplace advantages over their rivals. As an alternative, many other patent owners attempt to monetize their patents through trade in technology markets, using a variety of transactions ranging from licensing to outright patent sales.¹ Patent owners can also have different approaches to licensing, spanning from partnering with manufacturers practicing open innovation to commercialize their inventions to enforcing patents to collect royalties years after products have entered the marketplace.²

In many instances, private intermediaries have arisen to facilitate patent licensing transactions. These intermediaries have taken a variety of forms. For example, the FTC's report on the Evolving IP Marketplace ("2011 Report") describes a number of "evolving patent assertion business models."³ These include "patent enforcement and licensing companies" that acquire patent rights from patent holders and license them to prospective licensees.⁴ The 2011 Report also describes "defensive buying funds," or defensive aggregators, who are engaged by manufacturers and other

¹ See, e.g., FED. TRADE COMM'N, THE EVOLVING IP MARKETPLACE: ALIGNING PATENT NOTICE AND REMEDIES WITH COMPETITION 31–72 (2011) [hereinafter 2011 FTC REPORT]; Edith Ramirez & Lisa Kimmel, *A Competition Policy Perspective on Patent Law: The Federal Trade Commission's Report on the Evolving IP Marketplace*, ANTITRUST SOURCE, Aug. 2011, at 2–4.

² 2011 FTC REPORT, *supra* note 1, at 31–72.

³ *Id.* at 62–63. Professors Andrei Hagiu and David Yoffie also describe a number of different intermediary models. See generally Andrei Hagiu & David B. Yoffie, *The New Patent Intermediaries: Platforms, Defensive Aggregators, and Super-Aggregators*, 27 J. ECON. PERSPS., no. 1, 2013, at 45.

⁴ See 2011 FTC REPORT, *supra* note 1, at 60.

prospective licensees to acquire licenses from patent holders.⁵ The report also notes “patent aggregators” that license patent portfolios assembled from multiple patent holders and that often also partner with investors who acquire both an interest in future royalties as well as a license to the portfolios.⁶

There are a variety of perspectives on the impact that these intermediaries have on technology markets. Some commentators take the view that these intermediaries may facilitate liquidity in technology markets, supporting the incentive function of patents by allowing patent holders to obtain royalties from prospective licensees.⁷ Other commentators take the opposite view, arguing that these intermediaries capitalize upon—rather than mitigate—failures in technology markets, engaging in rent-seeking behavior at the expense of prospective licensees.⁸

One explanation for the presence of intermediaries is that they enjoy advantages in patent litigation and are thus able to enjoy a bargaining position in licensing negotiations superior to that which patent holders could achieve on their own.⁹ Because they are not operating companies, intermediaries may bear lower discovery costs and experience fewer business disruptions due to litigation than the firms from which they acquire patent rights.¹⁰ Similarly, intermediaries would not suffer reputational harms from being seen as an aggressive litigant and would not be subject to countersuit.¹¹ As a result, they could engage in a form of arbitrage, acquiring patents and then licensing them for royalties greater than their prior owner could obtain.¹²

A. *Intermediaries as Licensing Platforms*

While litigation advantages may account for the success of some intermediaries, another possibility is that the intermediaries provide a benefit by helping parties consummate licenses. While these intermediaries may litigate, their success is based on the value of the licenses they facilitate. Intermediaries may help patent owners and prospective licensees

⁵ See *id.* at 66; Hagi and Yoffie, *supra* note 3, at 56 (describing “defensive aggregators”).

⁶ See 2011 FTC REPORT, *supra* note 1, at 65; Hagi and Yoffie, *supra* note 3, at 58 (describing “super-aggregators”).

⁷ 2011 FTC REPORT, *supra* note 1, at 69 n.98.

⁸ See *id.* at 53, 71.

⁹ See Erica S. Mintzer & Suzanne Munck, *The Joint U.S. Department of Justice and Federal Trade Commission Workshop on Patent Assertion Entity Activities—“Follow the Money”*, 79 ANTITRUST L.J. 423, 426 (2014).

¹⁰ See *id.*

¹¹ See *id.*

¹² See Hagi & Yoffie, *supra* note 3, at 52.

find each other. They may also help the parties agree on the value of a license. Both of these tasks often pose challenges for parties attempting to license patents on their own.

Patent licensing transactions are frustrated by several challenges. Patents often have unclear scope because the boundaries of the protected content are defined by written claims that are inherently subject to the imprecise nature of language.¹³ Patents have uncertain validity because they can be invalidated by any literature in the prior art—including literature that was not appreciated by the Patent Office when it granted the patent.¹⁴ Patents licenses are very difficult to value; as novel and unique property, patents lack comparables.¹⁵ In addition, firms looking to consummate licensing transactions face high search costs because patent owners have a difficult time finding prospective licensees using their claimed technology and prospective licensees have a difficult time identifying patents relevant to their products.¹⁶ These sources of uncertainty compound another issue common to all technology development: the commercial success of an invention is not known before commercialization actually takes place.¹⁷

Intermediaries may play a role in overcoming these obstacles. In many other markets, intermediaries have arisen to facilitate transactions that would otherwise be frustrated by market inefficiency.¹⁸ The economic analysis of two-sided platforms suggests that such platforms may be successful when the customers that they connect experience network effects from the possibility of trading with one another.¹⁹ Both patent holders and prospective licensees may experience such effects because patent holders value access to a broad royalty base while licensees value broad freedom to operate. This may explain why some patent holders trade through intermediaries, as opposed to licensing their patents themselves. For example, a patent holder may value trade with a patent assertion entity with the industry knowledge needed to find a diverse set of prospective licensees, just as a manufacturer may value trade with a defensive aggregator who has the market understanding needed to identify and engage with holders of patents relevant to the manufacturer's products.

¹³ See Mark A. Lemley & Carl Shapiro, *Probabilistic Patents*, 19 J. ECON. PERSPS., no. 2, 2005, at 75, 76.

¹⁴ See *id.* at 77.

¹⁵ Hagiu & Yoffie, *supra* note 3, at 46–47; see also 2011 FTC REPORT, *supra* note 1, at 57–58 (noting patent remedies as a motivating factor for *ex post* licensing transactions).

¹⁶ *E.g.*, 2011 FTC REPORT, *supra* note 1, at 54–57; Hagiu & Yoffie, *supra* note 3, at 47.

¹⁷ See Lemley & Shapiro, *supra* note 13, at 81.

¹⁸ See Hagiu & Yoffie, *supra* note 3, at 45.

¹⁹ See *infra* Part III.A.

Not all patent intermediaries operate as two-sided platforms. Some intermediaries may capitalize upon the costs of litigation, filing suit solely to collect a litigation-avoidance settlement.²⁰ Intermediaries that do this may also have an incentive to engage with as many prospective licensees as possible. Unlike the case of an intermediary that operates as a two-sided platform, however, this incentive is not a result of network effects experienced by its customers. Instead, it is simply a result of the fact that maximizing the number of lawsuits filed will increase the number of litigation-avoidance settlements that can be collected. Asserting patents to obtain litigation-avoidance settlements capitalizes upon the willingness of defendants to avoid litigation.²¹ By capturing this willingness in settlement payments, intermediaries may obtain royalties that exceed the value that prospective licensees would place on licenses to their patents.²² In contrast, an intermediary that operates as a platform would facilitate the negotiation of a royalty that would reflect the value that both a patent holder and a prospective licensee would attach to a license.

Despite their differences, many intermediaries facilitate similar licensing transactions. For example, patent enforcement and licensing companies appear optimized to obtain the highest payment to patent holders, while defensive aggregators appear optimized to secure the cheapest licenses for prospective licensees.²³ Nevertheless, they all have one feature in common: they bridge the gap between patent holders and prospective licensees. At the core of their transactions is a group of patents held by the former that likely read upon a product or service offered by the latter. When such a pairing of patent and product exists, the patent holder possesses a legal entitlement against the prospective licensee's infringement.²⁴ A license agreement removes this entitlement.²⁵ Both parties can benefit from a license: the patent holder obtains a royalty payment and the prospective licensee obtains a release from further liability.²⁶ This is irrespective of whether the license is facilitated by an intermediary that is an agent of the patent seller or the prospective licensee.

²⁰ See *infra* Part III.D.

²¹ See Hagiu & Yoffie, *supra* note 3, at 53.

²² See *id.*

²³ See 2011 FTC REPORT, *supra* note 1, at 60–66.

²⁴ The patent law grants inventors legal rights in their inventions. See 35 U.S.C. §§ 271, 281 (2012). Under the framework laid out by Judge Guido Calabresi and Douglas Melamed, these rights operate as an entitlement not to be infringed that is protected by either a property or liability rule, depending on the availability of injunctive relief. See Guido Calabresi & A. Douglas Melamed, *Property Rules, Liability Rules, and Inalienability: One View of the Cathedral*, 85 HARV. L. REV. 1089, 1090–92 (1972).

²⁵ *Id.* at 1092.

²⁶ See *infra* Part II.A.

Intermediaries that operate as platforms may allow both parties to enjoy these benefits.

B. Overview of This Paper

This paper focuses on intermediaries that facilitate *ex post* licensing. It proposes that one advantage some patent intermediaries may offer relative to licensing through bilateral negotiation is the ability to connect multiple patent owners and prospective licensees with one another. As discussed in the remainder of this section, several practices observed in the Federal Trade Commission's recent Report on its Patent Assertion Entity Study (the "2016 Report") are consistent with this licensing function.²⁷ For example, the Report notes that the entities almost always traded in non-exclusive licenses made *ex post*, without technology transfer. The 2016 Report also notes the frequent use of revenue sharing agreements between patent assertion entities and the patent holders from which they acquired their patents.

Part II of this paper examines how participants in a technology market would value non-exclusive *ex post* licenses such as those observed in the 2016 Report. It proposes that such licenses represent an agreement to extinguish the patent holder's entitlement against infringement in consideration of a royalty paid by the prospective licensee. Negotiating in the shadow of court-ordered remedies, parties negotiate a payment that reflects the probability of validity and infringement, the expected court-awarded reasonable royalty award, and the avoidance of litigation costs.²⁸ While the desire to avoid litigation costs could drive licensee demand in many cases, so too could the desire to resolve uncertainty regarding potential liability.

Part III addresses how patent intermediaries can serve as platforms connecting patent holders with prospective licensees. It proposes that the use of revenue sharing allows patent holders to experience network effects from the number of prospective licensees accessed through the intermediary. A patent holder trading with an intermediary granting non-exclusive licenses would value its ability to grant as many licenses as possible: doing so would increase its royalty base while not diminishing the value of any granted license. Conversely, a prospective licensee would value an intermediary providing licenses to as many patents as possible; provided that the patents were relevant to its products, doing so would

²⁷ Fed. Trade Comm'n, Patent Assertion Entity Activity: An FTC Study (2016) [hereinafter 2016 FTC Report].

²⁸ See 2011 FTC REPORT, supra note 1, at 138 ("Patent remedies also play a central role in *ex post* patent transactions by establishing the legal shadow in which negotiations occur.").

increase its freedom to operate. As a result, both parties would value being able to transact with as many opposite parties as possible, yielding indirect network effects upon which intermediaries may be able to capitalize.

Finally, Part IV observes that the conduct of some patent intermediaries using revenue sharing and non-exclusive licensing can be analogized to the practices of other of licensing intermediaries such as performing rights organizations and patent pools. Each licenses rights on behalf of multiple rights holders, granting licenses to many users and distributing resulting royalties back to the rights holders. Considering the existing analysis of intermediaries on technology market competition, this section also proposes that patent licensing intermediaries may influence competition between patent holders who would have otherwise competed as rival licensors had they not licensed their patents through common intermediaries.

C. Findings in the Federal Trade Commission's Patent Assertion Entity Study

The Federal Trade Commission's 2016 Report contributes to the understanding of intermediary practices. The report describes the inner workings of twenty-two firms that operated as patent assertion entities, which it defined as "businesses that acquire patents from third parties and seek to generate revenue by asserting them against alleged infringers."²⁹ A key finding of the 2016 Report is that the twenty-two firms studied used only two different business models: a Portfolio model focused on negotiating licenses to relatively large patent portfolios in consideration or relatively large royalties and a Litigation model focused on entering into a relatively large number of low-value licenses made to settle litigation.³⁰ Firms using the Portfolio model licensed large patent portfolios, "often containing hundreds or thousands of patents" and with royalties "typically in the millions of dollars."³¹ Firms using the Litigation model "typically sued potential licenses," and then entered into license agreements "covering small portfolios."³² The 2016 Report finds that, "given the relatively low dollar amount of the licenses, the behavior of Litigation PAEs [Patent Assertion Entities] is consistent with nuisance litigation."³³

In addition to its key findings, the 2016 Report provides a breadth of detail into how the twenty-two firms performed their intermediary

²⁹ See 2016 FTC REPORT, *supra* note 27, at 1. The report describes conduct taking place between 2009 and 2014. *Id.* at 3.

³⁰ *Id.*

³¹ *Id.*

³² *Id.* at 4.

³³ *Id.*

function and even describes the patent acquisition agreements they entered into with patent holders³⁴ and the terms used in their licenses.³⁵ Beyond the twenty-two studied firms, these findings shed light on the nature of market demand for intermediary services more generally: they provide examples of the arrangements that both patent holders and prospective licensees agreed to consummate with the intermediaries.

The 2016 Report found that patents related to information and communication technologies played a prominent role in the activities of the firms studied.³⁶ Information and communication technologies are recognized to be a technically complex field and a crowded field of art.³⁷ Products in these fields may comprise numerous components, often manufactured by independent firms.³⁸ Such complex products may infringe hundreds, if not thousands of patents.³⁹ As a result, manufacturers of such products often face uncertainty regarding the extent of their patent infringement liability to third parties. This may present an opportunity for intermediaries to identify relevant patents and facilitate the negotiation of licenses that grant manufacturers desired certainty regarding their freedom to operate. On the other hand, however, such uncertainty may also present patent holders with a pathway for opportunistic conduct.

The 2016 Report also notes the frequent grant of non-exclusive licenses by intermediaries.⁴⁰ This is significant because the right to exclude is a central component of the patent grant. In contrast to non-exclusive licenses, an exclusive license confers the licensee with standing to enforce

³⁴ See *id.* at 48–49 (describing “the use of revenue sharing in . . . patent acquisition agreements” by Litigation PAEs).

³⁵ *Id.* at 85–88 (describing “License Term Characteristics”).

³⁶ The report explains that 88 percent of the patents held by the firms fell into the “Computer & Communications” and “Other Electrical & Electronic” categories used by the National Bureau of Economic Research in its patent citation data, which are based upon the U.S. Patent and Trademark Office patent classification system. *Id.* at 124 (“For all patents reported in the FTC’s study: Eighty-eight percent related to the Computers & Communications or Other Electrical & Electronic patent technology categories.”); *id.* at 128–29 (describing methodology); Bronwyn H. Hall, Adam B. Jaffe & Manuel Trajtenberg, *The NBER Patent Citations Data File: Lessons, Insights and Methodological Tools* 12–13 (Nat’l Bureau of Econ. Research, Working Paper No. 8498, 2001) (describing categorization methodology).

³⁷ 2011 FTC REPORT, *supra* note 1, at 90.

³⁸ *Id.*

³⁹ See *id.* at 163 (“IT products, such as personal computers and cell phones, are covered by thousands of patents.”).

⁴⁰ See 2016 FTC REPORT, *supra* note 27, at 85 (“Reported data did not indicate that Study PAEs granted exclusive licenses to their patents; instead, Study PAE licenses generally granted non-exclusive rights.”).

the patents to exclude rivals from the market for products embodying the licensed patents. This exclusivity offers value to a prospective licensee through the potential of enhancing its returns in relevant product markets. A non-exclusive license offers the licensee no such benefits.

The use of non-exclusive licensing is even more significant when coupled with *ex post* licensing. Building upon the FTC's prior research, the 2016 Report notes that patent assertion entities are understood to engage in *ex post* licensing—that is, licensing that takes place after the prospective licensee has already developed and offered its product for sale.⁴¹ Because such licensing takes place after the licensed product is already on the market, it involves no technology transfer.⁴² This is in contrast to *ex ante* licensing, which takes place before commercialization using license agreements often containing additional terms providing for the exchange of know-how or other trade secrets.⁴³ Access to such technology transfer is one component of value that an *ex ante* license confers that an *ex post* license lacks.

A non-exclusive *ex post* license provides the licensee with neither technology transfer nor marketplace exclusivity. As a result, such licenses confer only one form of value: the value of being released from the patent owner's claim of infringement.⁴⁴ This raises the question of whether prospective licensees attach any value to such a release beyond the avoidance of patent infringement litigation. On the one hand, the 2016 Report indicates that the Litigation model almost always filed litigation prior to consummating a license agreement and concludes that the model frequently obtained low value settlements, suggesting licensing motivated

⁴¹ See *id.* at 1 (“In acquiring and then asserting patents, PAEs target individuals and businesses that already use (at least allegedly) the patented technology. PAE activity therefore results in what often are referred to as *ex post* patent transactions because any patent license or settlement occurs after someone has developed or marketed the product at issue.”). *Ex post* licensing transactions take place after the licensed product has already been developed or commercialized. See 2011 FTC REPORT, *supra* note 1, at 50 (“In many cases, the licensee or purchaser already uses the patented technology when approached by the patent owner. What it lacks is a patent license to use the technology. These patent transactions occur *ex post*, after a firm has invested in creating, developing or commercializing the patented technology. It needs the *ex post* license to avoid liability even if it invented the technology independent of the patentee because patent infringement is a strict liability offense.”).

⁴² 2011 FTC REPORT, *supra* note 1, at 52–53.

⁴³ *Id.* at 33.

⁴⁴ See *id.* at 52 (“A manufacturer’s royalty payment . . . obtains only the avoidance of infringement litigation, not the benefit of the technology itself.”).

by litigation avoidance.⁴⁵ On the other hand, the 2016 Report indicates that the Portfolio model frequently negotiated licenses independent of litigation, suggesting an alternative basis for licensee demand.⁴⁶ Similarly, the 2011 Report notes that defensive aggregators are recognized to proactively seek out licenses on behalf of manufacturing firms, which also suggests that there is demand among such firms for non-exclusive *ex post* licenses.⁴⁷

In addition, the 2016 Report notes the frequent use of revenue sharing agreements between firms using the Litigation model and patent holders. In contrast to the observations of the 2016 Report, prior literature frequently described patent assertion entities as acquiring patents outright and asserting them independently from the patent holder.⁴⁸ The 2016 Report describes intermediaries that, instead of paying the patent holder a fixed sum to acquire its patents, enter into a contract agreeing to pay a percentage of any royalties obtained from licensing.⁴⁹ This use of revenue sharing has

⁴⁵ See 2016 FTC REPORT, *supra* note 27, at 83 (“Ninety-three percent of Litigation PAE licenses followed settlement of ongoing patent litigation.”), 43 (“[T]he behavior of Litigation PAEs is consistent with nuisance litigation.”).

⁴⁶ *Id.* at 83 n.234 (“By contrast, only 29% of Portfolio PAE licenses followed litigation.”).

⁴⁷ See 2011 FTC REPORT, *supra* note 1, at 66; Hagi and Yoffie, *supra* note 3, at 56.

⁴⁸ See, e.g., 2011 FTC REPORT, *supra* note 1, at 60 (“For the most part, PAEs purchase patents, and then sell or license them as assets”); Hagi & Yoffie, *supra* note 3, at 52 (describing “arbitrage opportunities available to nonpracticing entities”), 62 (“In many cases, nonpracticing entities make lump-sum payments to inventors in exchange for control of their patents *before* any litigation occurs”).

⁴⁹ See 2016 FTC REPORT, *supra* note 27, at 48–49 (“With one exception, each Litigation PAE reported the use of revenue sharing in at least some of its patent acquisition agreements. Approximately half of the Litigation PAEs used revenue-sharing agreements exclusively.” (footnotes omitted)). In addition to revenue sharing, a number of firms did not acquire title to the patents that they asserted at all, instead merely acquiring an exclusive license conferring standing to enforce the rights. *Id.* at 49 (“[S]ix of the Litigation PAEs reported acquiring the rights to some patents through an exclusive license; in those cases, the patent owner retained ownership of the patents but granted the PAE enough rights to enforce the patents on its own against potential infringers.”). In both models of acquisition, the entities had an ongoing contractual relationship with the prior patent owner while they engaged in their licensing activity, who themselves had an ongoing interest in the success of the endeavor. See *id.* (“These agreements kept many patent sellers engaged in the PAEs’ assertion activity. In fact, some Litigation PAEs referred to patent sellers as their partners or clients. Under some agreements, patent sellers agreed to assist with litigation, such as by making inventors available to testify”).

an impact on the incentives of patent holders when dealing with intermediaries.⁵⁰

When a patent holder enters into a revenue sharing agreement with an intermediary, it has a continuing interest in the success of the intermediary's licensing activities. In contrast, if the patent holder sells its patents outright, it would be indifferent to the intermediary's success because its compensation would be fixed. As a result of this continuing interest, the patent holder's interest would align with that of the intermediary: both parties would benefit from the intermediary obtaining the maximum royalty from its licensing endeavors. In addition, when selecting an intermediary with which to trade, patent holders would value intermediaries on their perceived ability to successfully license their patents, because the patent holders' compensation would not be guaranteed.

II. *EX POST* LICENSING IN THE SHADOW OF LITIGATION

Patent intermediaries can be distinguished from many platforms in other markets because one set of customers appear to be compelled to interact with the intermediary. This is because prospective licensees often interact with the intermediary either under the threat of litigation or after being sued. In this regard, their decision to enter into a patent license differs from a decision to enter into many other forms of negotiated agreements. Nevertheless, as this section considers, *ex post* licensing can be analyzed as a technology market transaction notwithstanding the presence of litigation.

A non-exclusive *ex post* license is a voluntary transaction made to extinguish an entitlement assigned to the patent owner.⁵¹ It is the patent owner's legal entitlement that is the source of the prospective licensee's obligation to pay royalties to the patent holder. Absent an *ex post* license, a patent holder could enforce its entitlement in court to obtain a reasonable royalty. The prospective licensee may have already incurred financial liability to the patent owner at the time that the license is negotiated by selling an infringing product without knowledge of the patent owner's patents.⁵² An *ex post* license is a negotiated payment to release that financial liability. It is negotiated by both parties to avoid the costs and uncertainty of

⁵⁰ An intermediary that uses revenue sharing may operate in a manner similar to a two-sided platform, as opposed to as a reseller engaged in arbitrage. Rather than acquiring patents and then attempting to profit by obtaining royalties greater than the acquisition price, it extracts its compensation as a share of any revenues received from successfully consummating agreements with licensees. *See, e.g.*, Marc Rysman, *The Economics of Two-Sided Markets*, 23 J. ECON. PERSPS., no. 3, 2009, at 125, 126; Andrei Hagiu & Julian Wright, *Marketplace or Reseller?* 2 (Harvard Bus. Sch. Working Paper No. 13-092, 2014).

⁵¹ *See* Calabresi & Melamed, *supra* note 24, at 1092.

⁵² *See* 2011 FTC REPORT, *supra* note 1, at 54.

a court adjudication of infringement, validity and damages. As discussed below, its valuation reflects both the value of the underlying entitlement as well as the value of certainty and litigation avoidance.

A. The Source of Demand for Ex Post Licensees

The patent system grants inventors an entitlement against infringement as a means to ensure that inventors have adequate financial incentive to invest in innovation. In the absence of patent protection, innovations are subject to free riding because they are public goods.⁵³ Once an innovation is created, there is no way to prevent others from copying it and it costs nothing for them to do so.⁵⁴ Absent legal protection, an innovators' competitors could copy its innovation at no cost and create competitive products, lowering prices such that the innovator could not recoup its investment in research and development.⁵⁵ To ameliorate this concern, the patent system grants inventors a set of rights, which often includes the right to exclude others through seeking injunctive relief in the courts.⁵⁶ In the shadow of an injunction, the patent holder and prospective licensee may negotiate a royalty rate which would both allow the implementer to profitably produce infringing goods and would allow the patent owner to recover profits greater than it would earn from producing the goods itself.⁵⁷

In practice, however, many *ex post* licenses are not negotiated around a potential injunction. That is because—in addition to the right to exclude—the patent holder enjoys a right to receive monetary damages from those that infringe a patent.⁵⁸ Most patent intermediaries do not manufacture products themselves. This limits the remedies that they are likely to obtain for infringement because a patent owner that does not practice the patent itself is frequently unable to establish that it meets the

⁵³ See FED. TRADE COMM'N, TO PROMOTE INNOVATION: THE PROPER BALANCE OF COMPETITION AND PATENT LAW AND POLICY ch. 2 at 4 (2003) [hereinafter 2003 FTC REPORT]; OECD POLICY ROUNDTABLES: COMPETITION, PATENTS AND INNOVATION 189, 190 (2007) [hereinafter OECD 2007].

⁵⁴ See 2003 FTC REPORT, *supra* note 53, at ch. 2 at 4.

⁵⁵ OECD 2007, *supra* note 53, at 190.

⁵⁶ See 35 U.S.C. § 154 (2012); *Paltex Corp. v. Mossinghoff*, 758 F.2d 594, 599 (Fed. Cir. 1985). This use of property rights to allow innovators to internalize the positive externalities created by their inventions is consistent with the use that Professor Ronald Coase proposed with respect to pollution and adopted in some environmental regulation contexts. R.H. Coase, *The Problem of Social Cost*, 3 J.L. & ECON. 1, 8 (1960); see also W. Kip Viscusi, John M. Vernon & Joseph E. Harrington, Jr., *ECONOMICS OF REGULATION AND ANTITRUST* 704 (3rd ed.2001).

⁵⁷ See, e.g., Mark A. Lemley, *Contracting Around Liability Rules*, 100 CAL. L. REV. 463, 468 (2012).

⁵⁸ See 35 U.S.C. § 284.

equitable requirements to be entitled to injunctive relief.⁵⁹ In such cases, it can only recover damages in the amount of a reasonable royalty.⁶⁰

Therefore, for many intermediaries, the patent grant operates as an entitlement to a reasonable royalty protected by a liability rule.⁶¹ If the patent owner were to enforce its entitlement in court, the court would grant it a royalty that should approximate the royalty that it would have been able to negotiate.⁶² As a result, the expected royalty that a court would grant

⁵⁹ See, e.g., *eBay Inc. v. MercExchange, LLC*, 547 U.S. 388 (2006); see also Ben Depoorter, *Property Rules, Liability Rules and Patent Market Failure*, 1 ERASMUS L. REV., no. 4, 2008, at 59, 63; Lemley, *supra* note 57, at 472.

⁶⁰ A patent holder is entitled to damages measured as either lost profits or as a reasonable royalty. See, e.g., *Minco, Inc. v. Combustion Eng'g, Inc.*, 95 F.3d 1109, 1119 (Fed. Cir. 1996) (“The Patent Act permits damages awards to encompass both lost profits and a reasonable royalty on that portion of an infringer’s sales not included in the lost profit calculation.”). If the patent holder does not compete with the infringer in a product market, then it is not entitled to lost profits. *Id.* (noting that a patent holder would not be entitled to lost profits if, “[f]or instance, a patent owner [does] not operate in the specific geographical area covered by the infringer or [does] not have . . . the manufacturing or marketing capacity to make the infringer’s sales” and that “the patentee would still be entitled to a reasonable royalty on each of those sales”). Therefore, a patent holder that does not produce a product at all would only be entitled to damages in the amount of a reasonable royalty.

⁶¹ For non-practicing patent holders, bargaining for a patent license departs from Coase’s model because a manufacturer negotiating for a license is merely contracting to avoid the imposition of a court-determined valuation and the costs of obtaining said valuation—not exclusion from the market. See Lemley, *supra* note 57, at 472; see also Ian Ayres & Eric Talley, *Solomonic Bargaining: Dividing a Legal Entitlement To Facilitate Cosian Trade*, 104 YALE L.J. 1027 (1995); James E. Krier & Stewart J. Schwab, *Property Rules and Liability Rules: The Cathedral in Another Light*, 70 N.Y.U. L. REV. 440 (1995); Robert P. Merges, *Of Property Rules, Coase, and Intellectual Property*, 94 COLUM. L. REV. 2655, 2655 (1994) (“[A] property rule is a legal entitlement that can only be infringed after bargaining with the entitlement holder. The holder thus sets the price for infringing *ex ante*. Under a liability rule, by contrast, one may infringe first, and a tribunal will determine the appropriate compensation in an *ex post* proceeding.”). Commentators have observed that non-practicing patent holders negotiate settlements with significant frequency and that such contracting has also been observed in a number of markets for other intellectual property licenses protected by liability rules. See Lemley, *supra* note 57, at 476.

⁶² One standard for measuring remedies is “the royalty upon which the parties would have agreed had they successfully negotiated an agreement just before infringement began.” *Lucent Techs., Inc. v. Gateway, Inc.*, 580 F.3d 1301, 1324 (Fed. Cir. 2009). Such a hypothetical negotiation assumes that the asserted patent is valid and infringed. *Id.* at 1325. In contrast, a negotiated license may include a discount to reflect the probability of liability.

provides both the patent holder and the prospective licensee with a benchmark for valuing the entitlement. The expectation would reflect both the expectation regarding the size of the damage award, as well as a discount for the probability of a finding of liability.⁶³ If it is likely that patent would be found invalid or not infringed, both parties would discount the risk-adjusted expected royalty. Therefore, even if a patent is very likely invalid, there should be a value that a prospective licensee would attach to an *ex post* license, albeit a very low one reflecting the low probability of liability.⁶⁴

In addition to the value of the underlying entitlement, both the patent owner and the prospective licensee would derive value from an *ex post* license by avoiding the cost and uncertainty of a court proceeding to determine a reasonable royalty.⁶⁵ Taking a license would minimize the risks flowing from unpredictable outcomes of the litigation process.⁶⁶ In addition, the parties would derive value from avoiding its high costs.

Although patent owners typically receive monetary compensation from an *ex post* license, both parties to the license could receive value from the transaction. Despite the fact that it may be a defendant in a lawsuit, a prospective licensee may derive value from an *ex post* license because it provides certainty regarding its liability to the patent holder.⁶⁷ A patent

⁶³ See Michael P. Akemann, John A. Blair & David J. Teece, *Patent Enforcement in an Uncertain World: Widespread Infringement and the Paradox of Value for Patented Technologies* 11 (Tusher Ctr. for the Mgmt. of Intellectual Capital, Working Paper No. 6, 2016) (explaining how parties to a license negotiation make a “certainty adjustment” to discount an anticipated reasonable royalty for the probability of a finding of validity, infringement, and enforceability).

⁶⁴ This is evidenced in part by the presence of defensive aggregators, whose customers pay them to obtain licenses for “patents that *might* threaten subscribers.” Hagi & Yoffie, *supra* note 3, at 56.

⁶⁵ Cases have recognized that values paid in settlement of litigation often reflect the value of avoiding litigation. In 1889, the Supreme Court recognized that “many considerations . . . may induce the payment” of a “sum in settlement of a claim for an alleged infringement,” and that “[t]he avoidance of the risk and expense of litigation will always be a potential motive for a settlement.” *Rude v. Westcott*, 130 U.S. 152, 164 (1898); *see also Panduit Corp. v. Stahl Bros. Fibre Works, Inc.*, 575 F.2d 1152, 1164 n.11 (6th Cir. 1978) (“License fees negotiated in the face of a threat of high litigation costs ‘may be strongly influenced by a desire to avoid full litigation.’” (quoting *Tights, Inc. v. Kayser-Roth Corp.*, 442 F. Supp. 159, 166 (M.D.N.C. 1977))).

⁶⁶ One concern regarding the use of liability rules is the court’s inability to accurately assess damages. Lemley, *supra* note 57, at 466 (“The essential insight is that court determinations of damages carry a risk of error: the court might value the property at more or less than it is really worth.”).

⁶⁷ *See id.* at 472 (“[P]atent and copyright owners who contract to settle a liability rule case are resolving uncertainty as to liability as well as damages.”).

owner is permitted to recover damages for six years of past infringement.⁶⁸ A prospective licensee would value knowing its license costs prior to investing in producing a product for six years. This could allow the prospective licensee to know with greater certainty whether producing a product would be profitable, prior to incurring the hazard of a loss after the liability was incurred.⁶⁹

B. The Impact of Litigation on Ex Post License Negotiation

If the parties are unable to reach agreement on the value of an *ex post* license through negotiation, the patent holder may resort to litigation to enforce its rights. The litigation process provides both parties with more information regarding patent validity and infringement and the likely damage award. This additional information may narrow their range of disagreement, facilitating license negotiation. In the event that the parties cannot reach a negotiated outcome before trial, the court will ultimately determine liability and provide an appropriate award.

In addition, although litigation resolves uncertainty, it is very costly. The costs that it imposes on both parties may—particularly for disputes involving individual patents—rival the expected value of a license. In such cases, both parties may make strategic use of the influence of litigation costs on the value the other side attaches to negotiating a license. As such, a patent holder's use of litigation can serve different roles in facilitating licensing, including reducing uncertainty and increasing licensees' willingness to pay for a license.

1. The Use of Litigation to Resolve Uncertainty

Prior to litigation, parties have considerable uncertainty and asymmetric information regarding the underlying facts that will be taken into account by the factfinder adjudicating their dispute. The litigation process can close these information gaps through a number of incremental steps. There are several points where the court may issue an opinion on discrete issues including claim construction and specific questions of validity and infringement.⁷⁰ The parties produce confidential information on a rolling basis through discovery. The parties are often required to explain their contentions regarding validity, infringement and remedies through interrogatories and expert reports.⁷¹ As a result, the gap between the

⁶⁸ 35 U.S.C. § 286 (2012).

⁶⁹ 2011 FTC REPORT, *supra* note 1, at 53.

⁷⁰ *See, e.g.*, FED. R. CIV. P. 12(b), 56.

⁷¹ Several jurisdictions explicitly require litigants to disclose their contentions regarding validity and infringement early in discovery. *See, e.g.*, N.D. CAL. PATENT L.R. 3-1, 3-3. In other jurisdictions, the federal rules allow parties to pose contention interrogatories directed towards these issues. *See* FED. R. CIV. P. 33. The

parties' appreciation of the expected outcome should narrow as the litigation process continues. Ultimately, the court will reach a decision on liability and damages at the conclusion of the process.

The validity of any asserted patent claim is uncertain.⁷² Although a patent enjoys a presumption of validity, a defendant can overcome this presumption at trial. Often, this is done through the identification of prior patents, literature or products that were not available to the patent examiner when the patent application was being considered. If defendants are willing to engage in extensive search for such prior art, they frequently are able to uncover additional materials that were not available to the examiner.⁷³ When these materials are produced and explained in discovery, the parties are better able to evaluate patent validity.

There is also uncertainty over whether infringement has occurred. There are two components to the infringement inquiry.⁷⁴ First, the court construes the claims in a claim construction order, examining both the

federal rules also require disclosure of expert opinions through reports submitted during the course of discovery. *See* FED. R. CIV. P. 26(a)(2)(D).

⁷² Validity is determined on a claim-by-claim basis. *See* 35 U.S.C. § 253. Patents often contain many claims, each of a slightly different scope. *See, e.g.*, 35 U.S.C. § 112(b) (“The specification shall conclude with one or more claims . . . distinctly claiming the subject matter which the inventor . . . regards as the invention.”); 35 U.S.C. § 112(d) (“[A] claim in dependent form shall . . . specify a further limitation of the subject matter claimed”); *Clearstream Wastewater Systems, Inc. v. Hydro-Action, Inc.*, 206 F.3d 1440, 1446 (Fed. Cir. 2000) (“[I]t is presumed that different words used in different claims result in a difference in meaning and scope for each of the claims.”). It may be the case that the broader claims may be invalidated by the prior art while the narrower claims remain valid. Often, a patent applicant will include both broad and narrow claims in an attempt to secure the broadest patent protection available, with the expectation that some of the broader claims may be invalidated by unappreciated prior art. Therefore, the uncertainty is not whether the patent itself is wholly invalid but, rather, what will be the scope of its valid claims.

⁷³ Litigation tends to develop a factual record for the factfinder that is more robust than that considered by the patent office. *See Microsoft Corp. v. i4i Ltd. P’ship*, 564 U.S. 91, 111 (2011) (“[I]f the PTO did not have all material facts before it, its considered judgment may lose significant force.”); *Blonder-Tongue Labs., Inc. v. Univ. of Ill. Found.*, 402 U.S. 313, 331 n.21 (1971) (patent validity is “apt for litigation” and, “because of the intrinsic nature of the subject, the first decision can be quite wrong, or derived from an insufficient record or presentation” (citations omitted)).

⁷⁴ *See, e.g., Advanced Steel Recovery, LLC v. X-Body Equipment, Inc.*, 808 F.3d 1313, 1316–17 (Fed. Cir. 2015) (“Determining infringement requires two steps: construing the claims and comparing the properly construed claims to the accused product.” (citing *Abbott Labs. v. Sandoz, Inc.*, 566 F.3d 1282, 1288 (Fed. Cir. 2009))).

intrinsic record of the patent, including its written specification and prosecution history, as well as relevant extrinsic evidence offered by the parties.⁷⁵ The court's decision on claim construction often resolves all ambiguity regarding the scope of the claims, which often derives from the inherent ambiguity of language. In addition, some courts have local patent rules which provide a process where parties exchange their contentions and evidence on claim construction prior to the issuance of the decision, often narrowing the scope of disagreement in advance.⁷⁶ Once the claims are construed, the court considers infringement by comparing the claims to the accused product.⁷⁷ There may be multiple accused products at issue in a case, and the infringement of particular products may vary depending on which claims are found valid. The parties may not be able to reach agreement on the result of this analysis *ex ante* because, in many cases, it is only the prospective licensee which possesses full information regarding the attributes of its product. This information asymmetry is reduced during the course of discovery, as the accused infringer is required to produce information regarding the attributes of its products.⁷⁸

Finally, there is considerable uncertainty regarding the amount of the damages that the court will award. A large amount of this uncertainty stems from the Federal Circuit's reasonable royalty jurisprudence, which acknowledges that "there may be more than one reliable method for estimating a reasonable royalty" and that the "record [at trial] may support a range of 'reasonable' royalties."⁷⁹ In addition, there are two sources of information asymmetries: the patent owner is in possession of prior license agreements which inform the reasonable royalty rate⁸⁰ and the prospective licensee is in possession of information regarding the profitability of its accused products.

⁷⁵ *Teva Pharm. USA, Inc. v. Sandoz, Inc.*, 135 S.Ct. 831, 833 (2015); *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312 (Fed. Cir. 2005); *Markman v. Westview Instruments*, 52 F.3d 967, 979 (Fed. Cir. 1995).

⁷⁶ *See, e.g.*, N.D. CAL. PATENT L.R. 4 *et seq.*

⁷⁷ *PC Connector Sols. LLC v. SmartDisk Corp.*, 406 F.3d 1359, 1364 (Fed. Cir. 2005); *Power Mosfet Techs., LLC v. Siemens AG*, 378 F.3d 1396, 1407 (Fed. Cir. 2004) (explaining that the infringement inquiry "requires a comparison of the properly construed claim to the accused device").

⁷⁸ Several jurisdictions have local patent rules that explicitly require the defendant to produce technical information that informs whether its accused products infringe the asserted patents. *See, e.g.*, N.D. CAL. PATENT L.R. 3-4 ("[T]he party opposing a claim of patent infringement shall produce . . . documentation sufficient to show the operation of any aspects or elements of an Accused Instrumentality identified by the patent claimant . . .").

⁷⁹ *Apple Inc. v. Motorola, Inc.*, 757 F.3d 1286, 1315 (Fed. Cir. 2014).

⁸⁰ *See Georgia-Pacific Corp. v. U.S. Plywood Corp.*, 318 F. Supp. 1116, 1120 (S.D.N.Y. 1970).

2. The Impact of Litigation Costs

Patent litigation is costly. In addition to reducing uncertainty and information asymmetries, litigation imposes costs upon both patent holders and prospective licensees that influences the value that they attach to *ex post* licenses. One recent survey indicated that a patent litigation with \$1,000,000 in controversy—the smallest amount studied—would cost each party \$600,000 to \$700,000 in legal fees to adjudicate through trial.⁸¹ When the cost of adjudication approaches the amount in controversy, parties' licensing behavior is necessarily influenced by a desire to minimize litigation costs.

Prospective licensees can engage in opportunistic behavior when they perceive that the patent holder's expected risk-adjusted royalty would be less than its cost of filing litigation. In such cases, the prospective licensee may refrain from seeking a license because it would anticipate that the patent holder would not bring suit to collect a royalty. This may be even more likely in the event that the prospective licensee perceives that it would be difficult or costly for the patent holder to detect its infringement. In particular—because its expected liability upon a finding of infringement would approximate the royalty obtained through negotiation—a prospective licensee may have little disincentive to engage in such holdout.⁸²

Patent holders can also engage in opportunistic behavior when they assert a patent whose license value to the prospective licensee may be below the cost of litigation. Litigation costs inflate the prospective licensee's willingness to pay for a patent license. The patent system effectively imposes a cost on parties accused with patent infringement, due to their obligation to satisfy the procedural rules of the court system. The system assigns these costs on defendants in any case in which the patent owner can articulate a claim of infringement that is colorable enough to survive a motion to dismiss.⁸³ Since the standard for surviving a motion to dismiss is lower than the standard for establishing liability at trial, it may be easier for a patent owner to impose these costs than to obtain a judgment against the prospective licensee.⁸⁴ Once a patent owner files such a suit, the prospective

⁸¹ See AM. INTELLECTUAL PROP. LAW ASS'N, REPORT OF THE ECONOMIC SURVEY 35 (2013); Colleen V. Chien, *Holding Up and Holding Out*, 21 MICH. TELECOMM. & TECH. L. REV. 1, 25–26 (2014).

⁸² See *Panduit Corp. v. Stahl Bros. Fibre Works, Inc.*, 575 F.2d 1152, 1158 (6th Cir. 1978) (“[T]he infringer would have nothing to lose, and everything to gain if he could count on paying only the normal, routine royalty non-infringers might have paid.”).

⁸³ See *Bell Atl. Corp. v. Twombly*, 550 U.S. 554, 558–59 (2007) (noting the high costs of discovery imposed upon defendants in complex litigation).

⁸⁴ See *Ashcroft v. Iqbal*, 556 U.S. 662 (2009) (holding that a complaint that is plausible on its face may survive a motion to dismiss).

licensee must either bear these costs or negotiate a license. A patent holder would often be able to exploit these costs by offering a license priced just below the cost of defending the lawsuit. The price paid for such a license would reflect litigation cost avoidance and not either party's expected risk-adjusted royalty.

III. PLATFORMS IN TECHNOLOGY MARKETS

Consummating a properly-valued *ex post* license has the potential to create value for both patent holders, who receive a royalty, and prospective licensees, who receive a release of current or future liability. Nevertheless, such transactions may be frustrated by high transaction costs. These include the costs to locate relevant patent owners or prospective licensees due to failure of patent notice.⁸⁵ They also include the costs of valuing the license—particularly if disagreements are resolved through litigation.⁸⁶ Intermediaries may serve a role in overcoming these obstacles to *ex post* licensing.

Intermediaries in technology markets may serve an analogous role to platforms in other markets. Two-sided platforms connect two groups of customers to facilitate transactions that would not occur absent the platform.⁸⁷ Common examples are newspapers, which interact with both readers and advertisers; operating systems, which bring together end users and complimentary application providers; and payment cards, which broker transactions between merchants and consumers.⁸⁸ Similarly, patent intermediaries may connect patent holders with prospective licensees.

Indeed, prior literature has recognized that some patent intermediaries operate as two-sided platforms. These include patent auctions and on-line marketplaces connecting patent sellers with prospective purchasers.⁸⁹ Both broker the outright sale and purchase of patents. This literature has, however, also noted that such platforms have tended to be commercial failures.⁹⁰ In contrast to these platforms, *ex post* licensing intermediaries trade in license rights and not in patents themselves.

The analysis of platforms in two-sided markets can inform the analysis of patent intermediaries in technology markets. Two-sided

⁸⁵ See 2011 FTC REPORT, *supra* note 1, at ch. 3.

⁸⁶ See *supra* Part II.

⁸⁷ OECD POLICY ROUNDTABLES: TWO-SIDED MARKETS 23, 23 (2009) [hereinafter OECD 2009].

⁸⁸ *Id.*

⁸⁹ Hagiu & Yoffie, *supra* note 3, at 53–56 (describing Yet2, Tynax, and Ocean Tomo).

⁹⁰ *Id.* at 53 (describing these platforms as “A Failed Solution”).

platforms can be successful when transaction costs prevent parties from negotiating licenses on their own but the platforms are capable of overcoming the costs.⁹¹ Platforms are able to overcome these costs when they stand between two distinct groups of customers that each enjoy indirect network effects from having access to the other.⁹² An indirect network effect is an externality that a party enjoys due to the opportunity to trade with customers on the other side of a market.⁹³ For example, advertisers benefit from the number of readers of a newspaper and a credit card holder benefits from the number of merchants that honor the card.⁹⁴ In both examples, each opposite party presents an opportunity for a beneficial transaction.

A. *Indirect Network Effects*

Intermediaries that facilitate *ex post* licensing may have aspects of a two-sided platform because both patent holders and prospective licensees could experience indirect network effects in *ex post* licensing. As explained below, patent owners benefit from dealing with a platform that can reach the most licensees as they will enjoy a larger royalty base. Likewise, licensees benefit from a platform that gives them access to the most patent holders as they will enjoy the broadest freedom to operate.

Patent owners can experience network effects when they engage in non-exclusive licensing. This is because the grant of a non-exclusive license to one party does not diminish its value to other parties. A non-exclusive license is merely a release from a claim of infringement and does not confer

⁹¹ See Jean-Charles Rochet & Jean Tirole, *Two-Sided Markets: A Progress Report*, RAND J. ECON. 8–9 (2006).

⁹² See David S. Evans & Richard Schmalensee, *The Industrial Organization of Markets with Two-Sided Platforms*, 3 COMPETITION POL'Y INT'L 151, 154 (2007) (“Generally, one can think of two-sided platforms as arising in situations in which there are externalities and in which transactions costs, broadly considered, prevent the two sides from solving this externality directly.”); Rysman, *supra* note 50, at 125 (“Broadly speaking, a two-sided market is one in which 1) two sets of agents interact through an intermediary or platform, and 2) the decisions of each set of agents affects the outcomes of the other set of agents, typically through an externality.”). In addition to this property, the literature has advanced a number of analyses to determine whether a market is two-sided. See generally, e.g., Lapo Filistrucchi, *How Many Markets Are Two-Sided?*, CPI ANTITRUST CHRON., July 2010, at 1 (reviewing the literature).

⁹³ See Joseph Farrell & Paul Klemperer, *Coordination and Lock-In: Competition with Switching Costs and Network Effects*, 3 HANDBOOK INDUS. ORG. 1970, 1974 (2007).

⁹⁴ OECD 2009, *supra* note 87, at 26.

the licensee with any marketplace exclusivity.⁹⁵ Once a patent holder grants a non-exclusive license, the value of that license is not diminished by the subsequent grant of additional licenses because their grant will not impact competition in the licensee's product market.⁹⁶ Therefore, granting additional non-exclusive licenses will serve only to increase the patent holder's royalty base. In the case of pervasive infringement, maximizing the number of licenses granted would increase the amount of the prospective royalty base captured.

Prospective licensees also experience network effects from the number of patent owners that they can access through platforms. A platform that would provide access to as many relevant patent owners as possible would allow the patent owners to obtain maximum freedom to operate. This is most pronounced in complex technologies, such as information and communications technology. In these technology fields, new products may infringe upon hundreds, or even thousands, of patent claims.⁹⁷ It is often not feasible for firms developing new products to determine, prior to finalizing product design, the identity and owner of patents which their new product may infringe.⁹⁸ To reduce the risk of unforeseen liability, manufacturers often desire freedom to operate—that is, the knowledge that they are licensed from all patent owners with patents relevant to their product.⁹⁹ In complex technologies, there may be hundreds of such patent holders and a manufacturer would value securing a license from as many of those parties as possible.

Both patent owners and prospective licensees experience these network effects because each group derives value from consummating a license agreement—provided that the agreement matches relevant products and relevant patents. As previously noted, there can be considerable

⁹⁵ A non-exclusive patent license is recognized to be nothing more than a covenant by the patent holder not to sue. *See De Forest Radio Tel. & Tel. Co. v. United States*, 273 U.S. 236, 242 (1927) (“As a license passes no interest in the monopoly, it has been described as a mere waiver of the right to sue by the patentee.” (quoting *Henry v. A.B. Dick Co.*, 224 U.S. 1 (1912))); *TransCore, LP v. Elec. Transaction Consultants Corp.*, 563 F.3d 1271, 1275–76 (Fed. Cir. 2009) (citing authorities); *Spindelfabrik Suessen-Schurr Stahlecker & Grill GmbH v. Schubert & Salzer Maschinenfabrik Aktiengesellschaft*, 829 F.2d 1075, 1081 (Fed. Cir. 1987) (“[A] patent license agreement is in essence nothing more than a promise by the licensor not to sue the licensee.”).

⁹⁶ *See* U.S. DEP'T OF JUSTICE & FED. TRADE COMM'N, ANTITRUST GUIDELINES FOR THE LICENSING OF INTELLECTUAL PROPERTY 19 (2017) (a “non-exclusive license normally does not diminish competition that would occur in its absence.”) [hereinafter 2017 GUIDELINES].

⁹⁷ *See* 2011 FTC REPORT, *supra* note 1, at 56.

⁹⁸ *See id.* at 77–78.

⁹⁹ *See id.* at 54.

uncertainty regarding the scope of a patent. However, so long as there is a nonzero likelihood that a patent reads upon a product, both licensor and licensee would obtain value from resolving that uncertainty with a royalty payment that reflects the likelihood of liability.¹⁰⁰ Conversely, there would be no value created by an attempt to license patents claiming technologies completely unrelated to a licensee's products. Therefore, each group would value a platform that provides access to enough members of the opposite group to ensure that a relevant match can be made.

Different patent intermediaries may exploit these network effects in different ways. Patent assertion entities may negotiate with a large number of prospective licensees on behalf of individual patent holders. Defensive aggregators may offer their manufacturing members the prospect of licenses from a number of different patent holders. Aggregators may enter into agreements with both patent holders and prospective licensees, offering each access to many of the other. In each case, the intermediary offers parties greater scope than they would be able to achieve on their own.

B. Mechanisms for Connecting Patent Holders and Prospective Licensees

In order to create value for both parties, a patent intermediary must first facilitate the identification and pairing of relevant patents and products—a process which is recognized to be costly and difficult for many parties acting unilaterally.¹⁰¹ Prospective licensees may face difficulties searching for patents relevant to their products because of the difficulty of searching electronic patent databases for technical concepts which may be described by varying language, particularly in crowded technical fields with many patents.¹⁰² Similarly, it may be difficult for patent owners to identify products that embody their patents, particularly if the patent features are embodied in source code or are otherwise difficult to reverse engineer.¹⁰³

Intermediaries could serve a role in overcoming these challenges by serving as matchmakers. In other markets, matchmakers such as on-line marketplaces and dating services create value by helping parties find each other to transact.¹⁰⁴ Similarly, patent intermediaries could create value by

¹⁰⁰ This royalty payment could be very low if the expected probability of liability is low, as noted above. *Supra* Part II.A.

¹⁰¹ See Hagiu & Yoffie, *supra* note 3, at 47.

¹⁰² See 2011 FTC REPORT, *supra* note 1, at 90–92.

¹⁰³ See Hagiu & Yoffie, *supra* note 3, at 47.

¹⁰⁴ See Evans & Schmalensee, *supra* note 92, at 155, 158 (“The fundamental role of a two-sided platform in the economy is to enable parties to realize gains from trade or other interactions by reducing the transaction costs of finding each other and interacting. Two-sided platforms do this by matchmaking, building audiences, and minimizing costs.”).

matching relevant patents and products and facilitating the valuation and negotiation of a license between their owners. They could identify matches through a variety of means, leveraging both relationships with patent owners and prospective licensees, as well as industry and technical knowledge.

It is possible that patent aggregators could achieve an effect similar to matchmaking by aggregating patents into larger portfolios.¹⁰⁵ If a portfolio is sufficiently large, parties may determine that it is likely to contain patents that read on the products of the prospective licensee.¹⁰⁶ The parties may mutually agree on a valuation of the portfolio that reflects the probability that—had the intermediary performed a thorough analysis considering all of the constituent patents—a number of its patents would be valid and infringed by the licensed products.¹⁰⁷

Intermediaries can offer patent owners and prospective licensees connections with counterparts that they would not be able to reach on their own. For example, a lone inventor may lack the industry knowledge to identify all of the manufacturers utilizing its patented invention and the inventor may lack the resources and contacts needed to begin negotiations with those manufacturers once they are identified. Intermediaries can use a variety of mechanisms to connect with prospective licensees. Sometimes this is done through contract. For example, a defensive aggregator has contracts in place to negotiate on behalf of a number of prospective licensees. In many other cases, the intermediary may deal with prospective licensees through arms-length negotiation—often done in the shadow of litigation. In such cases, the scope of an intermediary's reach is determined by its capacity to find prospective licensees and to credibly initiate litigation. It can leverage relationships and industry knowledge to search for potential licensees. It can also leverage both relationships and financing mechanisms to provide access to necessary

¹⁰⁵ Symmetrically, a defensive aggregator could negotiate a broad license covering the products produced by all of its members.

¹⁰⁶ See Akemann, Blair & Teece, *supra* note 63, at 7 (“licensees typically wish to extend the license to all potentially relevant patents in the licensor’s portfolio and all of the licensee’s potentially relevant products”).

¹⁰⁷ This matchmaking effect is an additional reason that parties may license patents as part of portfolios, in addition to the reduction in contracting costs and potential for portfolio effects that doing so may provide. See *id.* at 6 (“it is generally not practical to try to negotiate licenses on a product-by-product (or service-by-service), patent-by-patent, country-by-country basis as the transaction costs would be prohibitive”); Hagiu & Yoffie, *supra* note 3, at 47 (“Potential buyers or licensees may not place much value on a given patent sold by itself unless it compliments a portfolio that they already own.”). Nevertheless, the aggregation of patents into portfolios may impact technology market competition if the patents are not also available for license individually. See, *infra*, text accompanying notes 145 - 147.

legal representation. In many cases, an intermediary deals with both patent holders and prospective licensees that are both either innovators or manufacturers with little legal sophistication of their own; it can effect reach by providing licensing strategy, access to legal representation and financing, and search capabilities that these firms may lack themselves.

In practice, intermediaries use a mixture of both contract and arms-length negotiation to connect with patent holders and prospective licensees. The 2016 Report, for example, describes patent assertion entities using Litigation business models which connect with patent holders through contract and negotiate with prospective licensees.¹⁰⁸ In contrast, defensive aggregators contract with licensees and negotiate on their behalf with patent holders.¹⁰⁹ And, as the 2011 Report describes, patent aggregators may contract with both patent owners and licensees.¹¹⁰

C. Platform Fees

Platforms obtain their revenues from fees charged to the customers that they connect.¹¹¹ A patent intermediary operating as a platform could similarly obtain revenues from patent holders and prospective licensees. It could use revenue sharing as a mechanism for charging a participation fee to patent holders. When contracting with a patent owner the intermediary could commit to pay the patent owner a percentage share of its revenues from licensing; the revenues that the platform retains are its fee. Similarly, an intermediary could use license pricing as a means of charging a fee to a prospective licensee. When negotiating a license amount with a prospective licensee, the intermediary's reservation value could be either raised or lowered, effectively either charging a fee or offering a discount to the prospective licensee.

The price that a platform charges both sets of its customers can impact the volume of transactions.¹¹² A platform can tailor the relative size of the prices charged to each set of customers to capture the indirect network effects experienced by each.¹¹³ If customers on one side of the platform experience strong network effects from the presence of customers on the other side, the platform may charge the former a high fee to participate and subsidize its services to the latter to increase their participation. For example, newspapers may offer online content to readers

¹⁰⁸ See 2016 FTC REPORT, *supra* note 27, at 47–50.

¹⁰⁹ See 2011 FTC REPORT, *supra* note 1, at 66; Hagiu & Yoffie, *supra* note 3, at 56.

¹¹⁰ See 2011 FTC REPORT, *supra* note 1, at 65.

¹¹¹ See Evans & Schmalensee, *supra* note 92, at 159.

¹¹² OECD 2009, *supra* note 87, at 29.

¹¹³ *Id.*

for free and earn their revenue from selling impressions to advertisers.¹¹⁴ Similarly, credit cards may offer cardholders a rewards program to participate, while charging merchants a fee for each transaction.¹¹⁵ If a patent intermediary functioned as such a platform, it could also use its price structure to influence participation by patent holders and prospective licensees.

This raises the possibility that patent intermediaries could use participation fees to capitalize upon the network externalities experienced by their customers. For example, intermediaries that secure licenses on behalf of patent owners could skew prices to take advantage of the fact that patent owners would maximize their royalties by having a large number of licensees.¹¹⁶ Provided that the intermediary provides the patent owner with access to a sufficient volume of prospective licensees, the patent owner may be willing to pay a considerably high fee in consideration for access to the platform. In such cases, the intermediary may actually offer licenses to prospective licensees at a discount in order to increase their participation.¹¹⁷

This may operate as a relatively lower settlement offer during license negotiations. Such intermediaries could conceivably make licenses available at rates lower than patent owners would demand in settlement negotiation in order to obtain quick settlements—and avoid protracted and costly disputes over valuation—increasing the quantity of licenses sold.

D. Distinguishing Between Intermediaries Operating as Platforms and Intermediaries Engaged in Litigation-Avoidance Arbitrage

Not all patent intermediaries serve the matchmaking function of a platform. While some may do so, facilitating licensing by overcoming transaction costs, others may engage in practices that extract rents based upon those same transaction costs. This is similar to the dual role that patent litigation can serve: it can be both a means of facilitating licensing transactions by overcoming uncertainty and information asymmetries and as a means of extracting payments motivated by litigation cost avoidance. Intermediaries which use litigation to perform the latter function may

¹¹⁴ *Id.*

¹¹⁵ *Id.*

¹¹⁶ *Id.* at 32.

¹¹⁷ Participation in this context involves negotiation for a settlement. If the intermediary could not accept a royalty payment below a prospective licensee's reservation values due to its own costs and the need to provide competitive returns to patent owners, then the prospective licensee would not accept a negotiated license and would instead engage in protracted litigation that would provide no royalties absent court-ordered remedies.

operate in a manner superficially similar to two-sided platforms—securing large volumes of licenses for a number of patent holders—yet do not create or realize value in the same manner.

Intermediaries could use litigation as a means of increasing demand for licenses. By pricing licenses below the cost of defending a lawsuit, an intermediary could obtain a payment for each lawsuit filed, irrespective of the size of the royalty that it would otherwise be entitled to from each defendant.¹¹⁸ As noted above, this is possible because the substantive standard for pleading a complaint—and thus imposing litigation costs on a defendant—is lower than the standard for establishing liability at trial. A patent holder exploiting this strategy would benefit from litigating against the largest number of defendants as possible; rather than obtaining license payments reflecting the value of its underlying entitlement it obtains payments reflecting the number of distinct parties upon which it can impose litigation costs.¹¹⁹ If the intermediary enjoys economies of scale with respect to litigation, then it may be profit maximizing for it to file the maximum number of lawsuits.

The scale economies of litigation can be pronounced because an intermediary's costs of litigating against additional parties is relatively low. When the same patents are asserted against different defendants, there are a number of common issues of fact.¹²⁰ Some common issues are patent validity, including the scope of the prior art and claim construction, and some aspects relevant to damages including the licensor's licensing history with respect to the patent.¹²¹ Because of these common issues, litigants can experience significant scale economies by joining additional parties in their litigation efforts.

These scale economies are even stronger when there are common issues regarding infringement. Often, accused devices from different manufacturers may employ identical technology. This can happen when an

¹¹⁸ See *supra* Part II.B.2.

¹¹⁹ For example, one manner in which a patent holder may accomplish this would be to assert its patent against multiple downstream users or resellers of a product as opposed to bringing a single action against the manufacturer of the product.

¹²⁰ Courts often recognize these common issues of fact when consolidating infringement suits with the same patents but different defendants. See Robert A. Matthews, Jr., 6 ANNOTATED PATENT DIGEST § 39:128 (2017) (“Where the same patent is asserted in multiple infringement actions, issues of validity of the patent and discovery from the inventors are generally common to each action regardless of the defendant. Hence, where the same patent is at issue, consolidation, of at least pretrial matters, often will be appropriate.”).

¹²¹ See *Georgia-Pacific Corp. v. U.S. Plywood Corp.*, 318 F. Supp. 1116, 1120 (S.D.N.Y. 1970).

entire industry adopts standardized technology¹²² or when the technology of one producer is incorporated into downstream goods and services of many end users.¹²³ When this is the case, the plaintiff need only establish the technical aspects of its infringement case once, and then may replicate this effort in each subsequent case.

An intermediary with a model focused on capturing litigation avoidance payments may provide patent holders with royalty payments just the same as other intermediaries. However, the resulting license transactions do not confer the same benefits to prospective licensees as licenses that reflect the negotiated value of extinguishing the patent holder's entitlement. Such intermediaries do not create value by helping parties overcome transaction costs preventing licensing transactions, but rather monetize the transaction costs themselves.

IV. PATENT INTERMEDIARIES AND COMPETITION IN TECHNOLOGY MARKETS

When they acquire patents from multiple sources, patent intermediaries can influence technology market competition between patent holders. In the absence of an intermediary, the patent holders would compete with each other to license their patents to prospective licensees. When licensing through a common intermediary, however, the intermediary may coordinate their licensing practices, possibly distorting market competition between technologies.¹²⁴

When a patent intermediary operates as a platform bringing together patent holders and prospective licensees, its licensing model bears many similarities to the models employed by other licensing intermediaries including performing rights organizations (PROs) such as ASCAP and BMI, patent pools such as MPEG LA, and patent exchanges such as IPXI

¹²² See *Fujitsu Ltd. v. Netgear Inc.*, 620 F.3d 1321, 1327 (Fed. Cir. 2010) (finding that reliance upon an industry standard to prove infringement of products that indisputably satisfy the standard “can alleviate the need for highly technical fact-finding such as the review of complicated source code”).

¹²³ See *Tegic Commc'ns Corp. v. Bd. of Regents of the Univ. of Tex. Sys.*, 458 F.3d 1335, 1343 (Fed. Cir. 2006) (noting that the customer suit exception, which gives preferential treatment to a manufacture's action to resolve infringement charges against its customers, promotes “efficiency and judicial economy”).

¹²⁴ Similarly, a defensive aggregator may raise concerns if its members either collectively refuse to deal with patent holders or otherwise exercise group buying power. For example, in *Cascades Computer Innovation LLC v. RPX Corp.*, the Northern District of California credited a claim that the downstream licensees of a defensive aggregator collectively refused to deal with a patent owner outside of the offer made through the platform. See *Cascades Comput. Innovation LLC v. RPX Corp.*, No. 12-CV-01143, 2013 WL 316023, at *12 (N.D. Cal. Jan. 24, 2013).

Holdings. Although the intermediaries vary in how rights are packaged and royalties distributed, each employs a fundamentally similar model based upon acquiring the rights to license intellectual property, granting non-exclusive licenses to downstream users, and subsequently distributing the royalties back to the rights holders.

Performing rights organizations such as ASCAP and BMI arose in the early twentieth century as clearinghouses for copyright holders to license their copyrighted works for public performance.¹²⁵ The PROs acquire the rights to sublicense their works from copyright holders, then grant licenses to prospective licensees and distribute the royalties back to the copyright holders.¹²⁶ In many cases, this is done through the issuance of blanket licenses covering all of the PROs' rights available for license.¹²⁷

Similarly, patent pools are often created by a group of patent holders that decide to collectively license their respective patents to each other and to third parties.¹²⁸ Frequently, the pools are created as independent firms which manage licensing and the distribution of royalties to their members. The patent holders will often either assign their patents to the pool outright or grant it a license with the right to sublicense to prospective licensees.¹²⁹

In addition, IPXI Holdings, LLC (IPXI) was a financial exchange designed to facilitate patent licensing based upon "market-based principles."¹³⁰ The exchange traded in "unit license rights" that served as licenses to specific patents in its inventories.¹³¹ To create these rights, IPXI would acquire exclusive licenses from patent holders.¹³² It would then grant

¹²⁵ See *Broad. Music, Inc. v. Columbia Broad. Sys., Inc.*, 441 U.S. 1, 4–5 (1979).

¹²⁶ *Id.* at 5.

¹²⁷ *Id.*

¹²⁸ U.S. DEP'T OF JUSTICE & FED. TRADE COMM'N, ANTITRUST ENFORCEMENT AND INTELLECTUAL PROPERTY RIGHTS: PROMOTING INNOVATION AND COMPETITION (2007) [hereinafter 2007 DOJ & FTC REPORT].

¹²⁹ 2017 GUIDELINES, *supra* note 96, at 32 (considering, in Example 9, two "manufacturers [who] assign several of their patents to a separate corporation wholly owned by the two firms"); Robert P. Merges, *Contracting into Liability Rules: Intellectual Property Rights and Collective Rights Organizations*, 84 CAL. L. REV. 1293, 1340 (1996) ("In a patent pool, multiple patent holders assign or license their individual rights to a central entity, which in turn exploits the collective rights by licensing, manufacturing, or both.").

¹³⁰ See Letter from William J. Baer, Assistant Attorney Gen., Antitrust Div., U.S. Dep't of Justice, to Garrard R. Beeny, Sullivan & Cromwell LLP 1 (Mar. 26, 2013) [hereinafter IPXI Letter].

¹³¹ *Id.* at 2.

¹³² *Id.* at 1–2.

non-exclusive licenses to prospective licensees through the unit license rights.¹³³

The Federal Trade Commission (FTC) and Department of Justice (DOJ) have expressed that many licensing platforms can promote efficient licensing of intellectual property. The FTC and DOJ guidance on patent pools, for example, states that pools may “create substantial transaction efficiencies” and “reduce the transaction costs of multiple licensing negotiations.”¹³⁴ The DOJ has similarly asserted that “performing rights societies are ... valuable in reducing the costs that would be associated with multiple transactions and with enforcement,” and that, absent the platform, the costs of “negotiating a license would exceed the value.”¹³⁵ The DOJ also explained that the IPXI exchange “has the potential to facilitate more efficient licensing” by “obviating the need for costly bilateral negotiations” and “reducing the time and expense of acquiring and disseminating all the pooled patents to potential licensees...”¹³⁶

Nevertheless, the agencies have articulated concerns regarding the distortive effect of platforms on competition between licensors. Rather than competing with one another for the inclusion of their intellectual property in downstream products, rights holders may coordinate their licensing through the platform. As such, these platforms can be used as vehicles for collusion between rival licensors.¹³⁷ The effect on competition has raised concerns when the rights holder enters into an exclusive licensing arrangement with the platform and when the platform licenses substitute patents.

When platforms enter into exclusive arrangements with rights holders they can prevent them from licensing their rights outside of the platform. Thus, the only way that their licenses are available to prospective licensees is through the platform. In such a situation, prospective licensees who do not agree to the terms offered by the platform have no alternative means of acquiring a license.¹³⁸ A patent intermediary may enter into a number of types of exclusive agreements with patent holders that provide the patent holder with an interest in their revenues.¹³⁹ If a platform acquired patents pursuant to a revenue sharing agreement, for example, the prior patent holder would no longer be able to license the patents on its own

¹³³ *Id.* at 2.

¹³⁴ 2007 DOJ & FTC REPORT, *supra* note 128, at 57.

¹³⁵ Brief for the United States as Amicus Curiae at 20–21, *Broad. Music, Inc. v. Columbia Broad. Sys., Inc.*, 441 U.S. 1, (1979) (No. 77-1578).

¹³⁶ IPXI Letter, *supra* note 130, at 6–7.

¹³⁷ See 2017 GUIDELINES, *supra* note 96, at 30.

¹³⁸ 2007 DOJ & FTC REPORT, *supra* note 128, at 79–80.

¹³⁹ Similar arrangements may also exist between the downstream licensees of a defensive aggregator and the platform. See *Cascades Comput. Innovation LLC v. RPX Corp.*, No. 12-CV-01143, 2013 WL 316023, at *12 (N.D. Cal. Jan. 24, 2013).

although that patent holder would retain an economic interest in the platform's licensing activity. Although patent acquisition agreements are vertical in nature, they may have an impact on horizontal competition between patent holders if multiple patent holders enter into exclusive arrangements with the same platform.¹⁴⁰

Antitrust authorities have raised concerns regarding exclusive licensor relationships in a number of licensing platform contexts and have found that allowing the licensor to license independently of the platform can sometimes ameliorate many of the competitive concerns. The DOJ has entered into consent agreements with both ASCAP and BMI requiring the PROs to allow rights holders to license independently of the platform.¹⁴¹ The FTC challenged the conduct of the Summit-VISX pool, in part, because each member had the right to prevent the other member from licensing its patents outside of the pool.¹⁴² In the IPXI review letter, the DOJ observed that "having the option to license independently of a pool can mitigate the effects of potential market power."¹⁴³ Similarly, the FTC and DOJ offered guidance in the patent pool context that "allowing independent licensing outside the pool ... permits innovators ... to compete with the pool."¹⁴⁴

The FTC and DOJ have also raised concerns when platforms that do not permit independent licensing by rights holders require licensees to take portfolio licenses. The DOJ has entered into consent decrees with both

¹⁴⁰ The 2017 Guidelines explained that vertical arrangements "may harm competition among entities in a horizontal relationship at either the level of the licensor or the licensees," including if the restraint "facilitates coordination among entities in a horizontal relationship to raise prices or reduce output." 2017 GUIDELINES, *supra* note 96, at 20. Considering copyright holders' relationship with the SESAC licensing agent, the Southern District of New York observed that, although such agreements were "fairly classified" as vertical, they "can also fairly be viewed as [a form of agreement among] potential competitors in the licensing of the rights to the same works" with a "significant horizontal dimension, alongside a vertical one." *Meredith Corp. v. SESAC LLC*, 1 F. Supp. 3d 180, 205–06 (S.D.N.Y. 2014). Similarly, the Northern District of California has allowed a claim that the agreements between a defensive aggregator and its licensees were vertical elements of a hub-and-spoke conspiracy to survive a motion to dismiss. *Cascades Comput. Innovation*, 2013 WL 316023, at *10.

¹⁴¹ Brief for the United States as Amicus Curiae, *supra* note 135, at 3–5.

¹⁴² See Fed. Trade Comm'n, Analysis of Proposed Consent Order To Aid Public Comment, In the Matter of Summit Technology, Inc. and VISX, Inc. 2 (1998).

¹⁴³ IPXI Letter, *supra* note 130, at 9–10. IPXI proposed to obtain exclusive licenses from patent holders. *Id.* Although IPXI proposed to offer individual patents for a la carte licenses, the DOJ questioned whether the arrangement would provide incentives for any patent holder to agree to such a license. *Id.* at 10. See also *Meredith Corp.*, 1 F. Supp. 3d at 214 (noting evidence that a PRO offered "no economically feasible" option to license rights independently).

¹⁴⁴ 2007 DOJ & FTC REPORT, *supra* note 128, at 80.

ASCAP and BMI which require them to allow rights holders to independently license their works as a condition for the PROs granting of blanket licenses.¹⁴⁵ The DOJ and FTC noted that a patent pool's "refusal to license less than all of [its] intellectual property will not raise competitive concerns, provided that the licensors retain the ability to license their patents individually..."¹⁴⁶ Without such a safeguard, licensees may be "required to purchase access to more technology than they need."¹⁴⁷

The FTC and DOJ have also expressed concern when licensing platforms license substitute patents.¹⁴⁸ Substitute patents cover technologies that compete with each other and that implementers would choose between, in contrast to complimentary patents that cover technologies that perform different functions and that would be used together to produce the licensed product.¹⁴⁹ Because substitute patents cover competing technologies, jointly licensing substitute patents could diminish competition between the technologies.¹⁵⁰

When patent holders own substitute patents, their use of a common licensing platform could serve as a means of facilitating collusion. The FTC and DOJ have warned that the joint marketing of patent rights can present the opportunity for collective price setting or other anticompetitive coordinated licensing practices.¹⁵¹ Even if an intermediary acquires and licenses patents from different patent owners separately, the use of a common intermediary could diminish competition between the patent holders who would have licensed their patents unilaterally absent the intermediary.

The DOJ's guidance regarding the IPXI exchange is instructive. The DOJ raised concerns with the potential for the exchange to serve as a licensing agent on behalf of holders of competitive patents.¹⁵² The DOJ observed that the exchange could use its role setting licensing terms to set accommodating terms for competing licensors.¹⁵³ The DOJ noted that because the exchange and the patent holder shared in licensing revenue, both stood to profit from reducing competition between competing

¹⁴⁵ Brief for the United States as Amicus Curiae, *supra* note 135, at 3–5.

¹⁴⁶ 2007 DOJ & FTC REPORT, *supra* note 128, at 84.

¹⁴⁷ *Id.*

¹⁴⁸ *See, e.g., id.* at 76–77.

¹⁴⁹ *Id.* at 77.

¹⁵⁰ *See id.* at 77; IPXI Letter, *supra* note 130, at 8. For example, when evaluating patent pooling arrangements, the FTC and DOJ consider the extent to which the patents licensed by the pool are substitutes for this reason. 2007 DOJ & FTC REPORT, *supra* note 128, at 77.

¹⁵¹ *See id.* at 28.

¹⁵² IPXI Letter, *supra* note 130, at 11.

¹⁵³ *Id.*

patents.¹⁵⁴ In addition, the DOJ noted that the exchange could facilitate the exchange of information related to license terms and price between different patent holders.¹⁵⁵

The same principles of competition analysis that inform the analysis of other licensing intermediaries should be applicable to patent licensing intermediaries. Some patent intermediaries may operate as platforms connecting multiple patent holders with prospective licensees. While doing so may facilitate market liquidity, it also runs the risk of diminishing competition between firms that would otherwise be rival patent licensors.

V. CONCLUSION

The Federal Trade Commission's Report on its study of Patent Assertion Entity Activity provides novel detail regarding the interactions entities have with patent holders and with prospective licensees. In so doing it provides a glimpse of the types of transactions that occur in the contemporary patent marketplace. Its observations should foster continued analysis of the role that intermediaries play.

For example, the 2016 Report's description of the practices of entities using a Litigation business model illustrates a demand for their services among patent holders. Litigation entities tended to trade in relatively small patent portfolios comprising less than ten—and frequently fewer than five patents.¹⁵⁶ Prior literature suggests that transactions in such small portfolios are the ones most hindered by the transaction costs of licensing.¹⁵⁷ To the extent that intermediaries may overcome these costs to increase liquidity in small patent portfolios, they may open technology markets to a broader range of patent licensors.

This paper argues that intermediaries acquiring patents through revenue sharing agreements and licensing them non-exclusively may be able to be analyzed as platforms capitalizing upon network effects to overcome the transaction costs of licensing. However, the paper also

¹⁵⁴ *Id.*

¹⁵⁵ *Id.* at 11–12.

¹⁵⁶ See 2016 FTC REPORT, *supra* note 27, at 83 (“[M]ore than 75% of Litigation PAE licenses included between one and five patents, and more than 90% included fewer than ten patents.”).

¹⁵⁷ Hagiu and Yoffie observe that these inefficiencies may lead to a technology market that is predominated by transactions involving many patents between large companies and where transactions involving small inventors are rare. Hagiu & Yoffie, *supra* note 3, at 45, 47 (noting the impact of complementarities and portfolio effects in patent transactions). Hagiu and Yoffie also note that patent value is subject to strong portfolio effects such that the value of an individual patent is disproportionately lower than the value of a patent in a portfolio of complementary patents. *Id.*

acknowledges that some intermediaries may engage in superficially similar conduct that captures litigation avoidance payments and does not generate value for licensees. One manner in which the two models are distinguished is by how licenses are valued. The value to a licensee of a non-exclusive license includes both reducing uncertainty regarding potential liability and avoiding litigation costs. When the desire to avoid litigation costs is the predominant component of license value, an intermediary's conduct may be consistent with rent-seeking behavior. Although the 2016 Report concludes that the entities practicing the Litigation business model appeared to obtain revenues consistent with the settlement of nuisance litigation, theory suggests that other intermediaries could facilitate licensing based upon the value of the patent holders' entitlements.¹⁵⁸

As this example shows, principles of competition should continue to inform the analysis of intermediaries and their role in technology markets. For example, from the perspective of a patent holder, an intermediary that provides a royalty stream obtained from litigation avoidance settlements may be indistinguishable from one that provides a royalty reflecting the value licensees derive from its patents. In effect, both intermediaries may agree to acquire small portfolios and offer comparable revenue sharing in consideration. Nevertheless, the intermediary providing a value-based royalty approach may provide prospective licensees with greater value relative to the royalties that they pay. Ultimately, competition between intermediaries to provide the greatest returns to the patent holder would determine which model is successful. Models based upon capturing litigation avoidance payments may be more attractive if manufacturers perceive their risk-adjusted royalty payments as low.

Similarly, principles of competition should continue to inform the analysis of how intermediaries influence competition between patent holders. For example, the 2016 Report observed that some patent assertion entities made use of multiple affiliates to license patents from multiple patent holders, with each affiliate separately licensing patents acquired from a single patent holder.¹⁵⁹ Others licensed large patent portfolios aggregated

¹⁵⁸ See 2016 FTC REPORT, *supra* note 27, at 43 (“[T]he behavior of Litigation PAEs is consistent with nuisance litigation.”).

¹⁵⁹ See *id.* at 48 (“Litigation PAEs typically conducted business in the following manner. First, the Litigation PAE established an Affiliate After creating an Affiliate, a Litigation PAE would generally acquire a small portfolio of patents The Affiliate would hold only the small portfolio of patents acquired by the Litigation PAE in that single transaction. Litigation PAEs did not aggregate patents acquired through multiple transactions into individual Affiliates.”), 84 (“When Responding PAEs had multiple Affiliates, typically an Affiliate—and not the Responding PAE—held the patents in question and entered into the patent license with the licensee. Most often, the license was therefore only between that Affiliate

from multiple patent holders.¹⁶⁰ In both cases, the entities operated as an alternative to the multiple patent holders each licensing their patents independently. When evaluating the competitive impact of patent intermediary behavior, the impact of such joint licensing conduct on technology market competition should be taken into account.

patent holder and the licensee and extended only to patents held by the Affiliate”), 51 (“Larger Litigation PAEs also used the Affiliate model, scaling up by creating more Affiliates to hold portfolios as they were acquired, instead of aggregating patents into larger portfolios. This structure may reflect how Litigation PAEs paid for the patents they acquired. As noted already, Litigation PAEs frequently entered into revenue sharing agreements with patent sellers, agreeing to pay the sellers a percentage of the revenues that the PAE would obtain through licensing as consideration for the patents. The use of separate LLCs to own and assert patents acquired from separate sellers would make it easier for PAEs to segregate revenue for sharing with each patent seller.”).

¹⁶⁰ *See id.* at 46 (“Other Portfolio PAEs acquired smaller numbers of patents per transaction and aggregated them into larger portfolios. . . . Portfolio PAEs then organized acquired patents into one or more portfolios . . . and offered these portfolios for licensing.”).