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I am Fiona Scott Morton, Theodore Nierenberg Professor of Economics at the Yale School of Management, where I teach courses in the area of competitive strategy and conduct research into empirical industrial organization. I am also a Visiting Professor at the University of Edinburgh and a Research Associate at the National Bureau of Economic Research. From 2011 to 2012, I held the position of Deputy Assistant Attorney General for Economic Analysis in the Antitrust Division of the U.S. Department of Justice. During this period, issues involving standards and standard-essential patents were an important part of the Antitrust Division's work, which included reviews of Google's acquisition of Motorola Mobility and the sale of Nortel's patent portfolio. I have published more than 20 articles in peer-reviewed journals, including articles on patenting and innovation.

A properly functioning patent system should promote innovation by aligning the private rewards of a patent holder with the social contribution generated by their patented invention. In my testimony today, I will explain how the availability of exclusion orders from the U.S. International Trade Commission ("ITC") in cases in which an injunction would not be granted by Federal courts runs contrary to the public interest by allowing patent assertion entities ("PAEs") to forum-shop and earn supracompetitive royalties. This distortion of the incentives to invest in new technologies and products harms the American economy through higher prices, inefficient levels of innovation, and disincentives to invest in useful standards.

I. Standard Essential Patents and F/RAND Commitments

Compatibility standards are ubiquitous in today's economy, especially in high-tech industries that have many different firms manufacturing complementary products and components that need to work together. Standard setting can create enormous benefits, but there are also potential risks associated with the collective action inherent in standard setting organizations ("SSOs"). To prevent their members from anticompetitvely endowing themselves with market power, SSOs have adopted rules that companies who own intellectual property necessary to implement the standard offer licenses to their standard-essential patents ("SEPs") on fair, reasonable, and non-discriminatory ("F/RAND") terms.

Competition enforcement agencies agree that "fair and reasonable" should mean the royalty that the parties would have settled upon in a hypothetical ex ante negotiation that took place before the technology had been incorporated into a standard and before potential licensees had committed to implementing that standard.[1] The F/RAND licensing rules embody a quid pro quo: the patent owner benefits by having its patented technology included in a widely adopted

[1] The U.S. Department of Justice recently approved revisions to IEEE's IPR policy, which states that a "'[r]easonable rate' shall mean appropriate compensation to the patent holder … excluding the value, if any, resulting from the inclusion of that Essential Patent Claim's technology in the IEEE Standard." IEEE, "IEEE-SA Standards Board Bylaws," March 2015, Section 6.1, available at <https://standards.ieee.org/develop/policies/bylaws/sb_bylaws.pdf>; Letter from Renata B. Hesse, U.S. Department of Justice, to Michael A. Lindsay, February 2, 2015, p. 11, available at <http://www.justice.gov/sites/default/files/atr/legacy/2015/02/02/311470.pdf>. *See also* U.S. Federal Trade Commission, "The Evolving IP Marketplace: Aligning Patent Notice and Remedies with Competition," March 2011, pp. 22-23, available at <https://www ftc.gov/sites/default/files/documents/reports/evolving-ip-marketplace-aligning-patent-notice-and-remedies-competition-report-federal-trade/110307patentreport.pdf> ("A definition of RAND based on the ex ante value of the patented technology at the time the standard is chosen is necessary for consumers to benefit from competition among technologies to be incorporated into the standard.").

standard and in exchange agrees not to exercise the market power inherent in technology necessary for a widely adopted standard. Enforcement of these F/RAND commitments by public authorities is important to protect the integrity of efforts to develop and commercialize standards and to encourage investment in complementary products.

II. The Outsize Threat Imposed by Exclusion Orders on Complex Standard-Compliant Products

Today's high-tech products face very different investment incentives and risks than a product that relies on a single patented invention. The current system, including the ability of a patent holder to seek an exclusion order from the ITC, was designed with a single-patent product in mind such that the value of the product and the value contributed by the patented technology are highly correlated. For example, a product that performs a single function, such as a bottle opener, might have a single patent that reads on its design. In this case, the ability of the patent holder to obtain an exclusion order against an infringing manufacturer of bottle openers could give the patent holder the ability to negotiate for the economic contribution of his patent, which is well captured by the value of the product threatened with exclusion.

A smartphone, on the other hand, embodies dozens of standards and over 250,000 patents.[2] Any given patent that reads on a smartphone will likely comprise a very small piece of its value. Consider, for example, a dispute over a $600 smartphone in which a patent holder demands a royalty of $0.50 and the manufacturer offers a royalty of $0.02. Though the both parties would agree that the reasonable royalty is less than $1, the manufacturer stands to lose the full $600 value of its smartphone, as well as incurring harm to its reputation and goodwill loss from its product being missing from stores, if the patent owner obtains an exclusion order. Threatened with this disproportionate loss, the manufacturer may agree to the $0.50 royalty or something even higher and it may do so even if it believes a court would eventually assign a very low royalty rate.

The ITC cannot award monetary damages, which can be scaled to the level of the harm or infringement. Its only recourse is to issue an exclusion order, exposing manufacturers of complex products to outsize threats. This threat is especially acute when the patents at issue are SEPs subject to F/RAND commitments. By definition, an SEP cannot be designed around without sacrificing compliance with the standard. An exclusion order undermines the basic promise inherent in the F/RAND commitment – to facilitate widespread utilization of standards by agreeing to license all interested manufacturers at a rate that would have been negotiated before the technology was incorporated in the standard (i.e., at a time when an exclusion order would not pose a threat).

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[2] For example, a smartphone embodies not only the various generations of standards for communicating with the cellular base stations (e.g., GSM, UMTS, LTE), but also standards for other types of wireless communication (e.g., Wi-Fi, Bluetooth, NFC), memory chips (e.g., SD cards, eMMC cards), positioning technologies (e.g., GPS), audio and video capabilities (e.g., MPEG, MP3), content transfer protocols (e.g., SMS and MMS text messaging, SMTP and POP e-mail specifications, URL and HTTP Internet protocols), and device ports (e.g., USB). For the number of patents reading on smartphones, see RPX, Amendment No. 1 to Form S-1, September 12, 2011, p. 59, available at <http://files.shareholder.com/downloads/ABEA-5XYKB4/1872252854x0xS1193125-11-245781/1509432/filing.pdf>.

The threat of an inappropriately granted exclusion order creates an extortion-like environment and forces implementers to pay more than the ex ante economic value of the patented technology. Consquently, the ITC is a very popular venue for patent holders who want to avoid their F/RAND commitments and garner a higher royalty than they could receive under current laws in Federal court. SEPs fare significantly better when they are asserted before the ITC, with a 49% win rate, than when they are litigated in Federal court, with only a 28% win rate.[3] The growing role of PAEs exacerbates this issue. The total number of patent cases filed grew from 2,472 in 2010 to 5,411 in 2013, and the proportion of these cases filed by non-practicing entities grew from 30% to 67%.[4] The 2015 figures are similar, with 5,219 patent cases filed, 69% by non-practicing entities.[5] PAEs account for roughly 90% of these patent infringement actions brought by non-practicing entities.[6]

Unlike the ITC, Federal courts offer full monetary damages to most injured parties. They can also award injunctions but, following the Supreme Court's 2006 decision in *eBay*,[7] do so only in limited circumstances when monetary damages are insufficient to compensate the patent holder for the alleged infringement. A F/RAND commitment is a promise to license, and hence an acknowledgment that monetary compensation is an adequate remedy. Judge Posner succinctly summarized this point in his order dismissing patent litigation between Motorola and Apple:

> To begin with Motorola's injunctive claim, I don't see how, given FRAND, I would be justified in enjoining Apple from infringing the '898 unless Apple refuses to pay a royalty that meets the FRAND requirement. By committing to license its patents on FRAND terms, Motorola committed to license the '898 to anyone willing to pay a FRAND royalty and thus implicitly acknowledged that a royalty is adequate compensation for a license to use that patent.[8]

The ability of the ITC to issue exclusion orders is important when the party accused of infringement is operating abroad and not subject to the jurisdiction of U.S. court system. For implementers that can be sued in Federal court for damages and reasonable royalties, the ITC is a duplicative venue that operates under a different standard for injunctive relief and allows SEP owners to engage in anticompetitive holdup.

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[3] RPX, "Standard Essential Patents: How Do They Fare," 2014, Table 1.1, p. 9, available at <https://www.rpxcorp.com/wp-content/uploads/2014/01/Standard-Essential-Patents-How-Do-They-Fare.pdf>. These numbers are calculated on a defendant-patent basis, so each patent asserted against each defendant counts as one observation. On a unique patent basis, the patent holder win rates are 33% at the ITC and 19% in Federal court.

[4] Fiona M. Scott Morton and Carl Shapiro, "Strategic Patent Acquisitions," *Antitrust Law Journal*, Vol. 79, No. 2, 2014, pp. 463-499 at Figure 1.

[5] RPX, "2015 NPE Activity: Highlights," March 21, 2016, Chart 1, p. 4, available at <https://www.rpxcorp.com/wp-content/uploads/sites/2/2016/01/RPX-2015-NPE-Activity-Highlights-FinalZ.pdf>.

[6] RPX, "2013 NPE Litigation Report," May 6, 2014, Chart 59, p. 39, available at <https://www.rpxcorp.com/wp-content/uploads/sites/2/2015/03/RPX-2013-NPE-Litigation-Report.pdf>; RPX, "2014 NPE Litigation Report," March 12, 2015, Chart 17, p. 12, available at <https://www rpxcorp.com/wp-content/uploads/sites/2/2015/03/RPX_Litigation-Report-2014_FNL_040615.pdf>.

[7] *eBay Inc. v. MercExchange LLC*, 547 U.S. 388 (2006).

[8] *Apple, Inc. v. Motorola, Inc.*, 869 F.Supp.2d 901, 913-14 (2012). On appeal, the Federal Circuit agreed that Motorola should not receive an injunction, stating: "A patentee subject to FRAND commitments may have difficulty establishing irreparable harm." *Apple Inc. v. Motorola, Inc.*, 757 F.3d 1286, 1332 (2014). The Federal Circuit left open the possibility that an injunction may be warranted if the infringer refuses to pay a F/RAND rate.

III. The Need for Reform to Combat Economic Harm

Granting an exclusion order when the implementer is participating in a process that will yield appropriate money damages runs contrary to the basic purpose and rationale of F/RAND commitments and to the public interest. When SEP owners hold up implementers for above-F/RAND rates, it raises the price that consumers pay for standard-compliant products, reduces innovation, and slows the adoption and development of standards.

The role of exclusion orders in facilitating this anticompetitive conduct has been explained to the ITC by the U.S. Federal Trade Commission:

> [A] royalty negotiation that occurs under threat of an exclusion order may be weighted heavily in favor of the patentee in a way that is in tension with the RAND commitment.[9]

The U.S. Department of Justice and U.S. Patent and Trademark Office have also urged the ITC to be cautious about issuing exclusion orders:

> A decision maker could conclude that the holder of a F/RAND-encumbered, standards-essential patent had attempted to use an exclusion order to pressure an implementer of a standard to accept more onerous licensing terms than the patent holder would be entitled to receive consistent with the F/RAND commitment—in essence concluding that the patent holder had sought to reclaim some of its enhanced market power over firms that relied on the assurance that F/RAND-encumbered patents included in the standard would be available on reasonable licensing terms under the SDO's policy.[10]

Despite these urgings, the ITC awarded an exclusion order based on SEP infringment in 2013,[11] which was subsequently overturned by the U.S. Trade Representative ("USTR") out of concern about SEP holders "gaining undue leverage."[12] However, the USTR does not categorically state that exclusion orders based on SEPs will be disapproved and the ITC does not appear to have accepted the economic logic behind the decision.

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[9] Third Party United States Federal Trade Commission's Statement on the Public Interest, *In the Matter of Certain Gaming and Entertainment Consoles, Related Software, and Components Thereof*, Inv. No. 337-TA-752, p. 3 (June 6, 2012), available at <www ftc.gov/os/2012/06/1206ftcgamingconsole.pdf>; *see also* Third Party United States Federal Trade Commission's Statement on the Public Interest, *In the Matter of Certain Wireless Communication Devices, Portable Music and Data Processing Devices, Computers and Components Thereof*, Inv. No. 337-TA-745 (June 6, 2012), available at <www.ftc.gov/os/2012/06/1206ftcwirelesscom.pdf>.

[10] U.S. Department of Justice and U.S. Patent and Trademark Office, "Policy Statement on Remedies for Standards-Essential Patents Subject to Voluntary F/RAND Commitments," January 8, 2013, p. 6, available at <http://www.justice.gov/sites/default/files/atr/legacy/2014/09/18/290994.pdf>.

[11] Commission Opinion, *In the Matter of Certain Electronic Devices, Including Wireless Communication Devices, Portable Music and Data Processing Devices, and Tablet Computer*s, Inv. No. 337-TA-794 (July 5, 2013).

[12] Letter from Michael B. G. Froman to ITC, "RE: Disapproval of the U.S. International Trade Commission's Determination in the Matter of Certain Electronic Devices, Including Wireless Communication Devices, Portable Music and Data Processing Devices, and Tablet Computers, Investigation No. 337-TA-794," August 3, 2013, p. 2, available at <https://ustr.gov/sites/default/files/08032013%20Letter_1.PDF>. Such disapprovals by the USTR are extremely rare and happen on a case-by-case basis. This was the first veto since 1987.

Recently, one of the ITC's administrative law judges expressed his belief that the "hypothetical risk of holdup … is not a threat … in [the telecommunications] industry"[13] and that "[t]here is now even more reason to give little weight to the concerns voiced by the FTC and DOJ/PTO in these letters."[14] This view appears to be based on a belief that anticompetitive holdup occurs only after an exclusion order is granted.

> In addition to the scrutiny from the Federal Agencies that reduce the chances of hold-up, the fact that any respondent subject to hold-up would still have a legal remedy makes it unlikely that IDC, or any party so situated would engage in hold-up, even after obtaining an exclusion or cease and desist order.[15]

However, the mere threat of an eventual exclusion order gives the patent holder the leverage to extract inefficiently high, above-F/RAND, royalty rates during settlement negotiations. A patent holder that has already obtained an exclusion order has even more power to increase its profits through a higher royalty. The quote above provides no reason why such a patent holder would turn down these additional profits.

This administrative law judge also states that absent an exclusion order from the ITC, the implementer would have "a safe haven, where they are free to avoid their own obligations under the agreements, can manufacture potentially infringing goods without license or consequence, [and] can seek to invalidate the IPR in question[.]"[16] This statement entirely ignores the remedies available to SEP owners through the Federal courts.

There is no sound economic reason why an exclusion order is needed to adequately compensate an SEP owner who is involved in a dispute with a willing licensee over validity, infringement, and reasonable royalties.[17] If the SEP owner's infringement claim succeeds, it will receive a reasonable royalty calibrated to reward the inventive activity with an appropriate return. Moreover, the royalty will reflect the court's determination that the asserted patent is valid and infringed. This may result in a "certainty premium" that could raise the court-determined F/RAND royalty above the level that would be freely negotiated for patents of uncertain enforceability, giving the potential licensee the incentive to settle prior to litigation for an ex ante F/RAND rate. The royalty may also include interest to compensate the patent holder for any delay in receiving its payments.

Reform is needed to avoid harm to the American economy from the ITC's current role as a policy outlier and duplicative venue taken advantage of by PAEs. The reform should encompass

[13] Initial Determination on Violation of Section 337 and Recommended Determination on Remedy and Bond, *In the Matter of Certain Wireless Devices with 3G and/or 4G Capabilities and Components Thereof*, Inv. No. 337-TA-868, p. 123 (June 13, 2014).

[14] Initial Determination on Remand, *In the Matter of Certain 3G Mobile Handsets and Components Thereof*, Inv. No. 337-TA-613, p. 61 (April 27, 2015).

[15] *Id.* at p. 62.

[16] Initial Determination on Violation of Section 337 and Recommended Determination on Remedy and Bond, *In the Matter of Certain Wireless Devices with 3G and/or 4G Capabilities and Components Thereof*, Inv. No. 337-TA-868, pp. 125-126 (June 13, 2014). The Commission as a whole did not weigh in on this issue with relation to the case at hand.

[17] A F/RAND commitment explicitly obligates the SEP owner to license all implementers of the standard, so a court-awarded reasonable royalty would generally provide adequate compensation. However, exclusion orders may be appropriate if the alleged infringer is unwilling to accept a reasonable license.

standards for issuing exclusion orders similar to the Supreme Court's guidance in *eBay* in order to eliminate the loophole created by having different rules at the ITC. Following *eBay*'s model would allow the ITC to grant appropriate exclusion orders, such as in instances when an implementer is failing to participate in a process that will lead to appropriate money damages. Note that this is not the situation in recent ITC cases featuring defendants that are large, established American corporations like Dell and Apple. In general, it is not productive to have two duplicative venues with different rules, as this encourages PAEs to forum-shop and find the location that will allow them to threaten exclusion. Reform is necessary to protect American industry and consumers, promote the development and adoption of standards, and encourage efficient levels of innovation.