



Summary

Title: Flipping the paradigm of weak patent rights: From theories to evidence

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Abstract

In recent years, an increasingly negative attitude towards intellectual property rights (IPRs), particularly patents, has emerged. Critics claim that they hinder the development and diffusion of critical technologies needed to address global crises, such as the Covid-19 pandemic and climate change. This has led to efforts to weaken patent rights and challenge the current design of the IP system. This article examines the two primary methods of such efforts: first, by analysing the popular first-mover advantage theory and demonstrating its insufficiency as a substitute for patent protection; and second, by addressing more incremental and – at first glance – subtle policy proposals aimed at weakening the patent system, particularly in the ICT and cellular connectivity sector. The article discusses three recent policy proposals: (i) the adoption of royalty-free (RF) licensing for standard essential patents (SEPs), (ii) calls to impose a limitation on the grant of injunctive relief masked behind a proportionality principle, and (iii) criticisms towards patent transfers and dynamic markets for technologies. This article will show that these changes, which appear to be small, may represent a serious threat to the pillars of the existing patent and licensing system. Additionally, the importance of a balanced licensing framework in the context of the Internet of Things (IoT) is examined, together with the recent EU Commission proposed framework for the licensing of SEPs. The article concludes by emphasising the vital role of a strong patent system in promoting research and development (R&D), spurring innovation, and comprehensively addressing the challenges of our time.

Keywords: Patents, innovation, patent transfers, markets for technology, injunctions, cellular standardisation, first mover advantage, SEPs, FRAND, IP waiver, compulsory licensing, IoT, IPRs, SMEs.

Summary

1. A climate of scepticism towards patents

In today's information and knowledge society, intellectual property (IP) plays a crucial role alongside material goods.¹ Patents are a form of IP right that are instrumental in promoting innovative technologies by granting temporary exclusivity rights to inventors.² These rights enable innovators to monetize their inventions, prevent imitation, collaborate, and foster further innovation.³ As a result, patents are often viewed as the legal foundation of innovation.⁴ However, recent global challenges, such as the Covid-19 pandemic, climate change, and increased geopolitical tensions, have sparked intense debate surrounding the effectiveness of intellectual property rights (IPRs) in technology diffusion for the public good.

Due to this criticism, a negative climate towards IP – and particularly patents – has gained momentum. Critics have called for a weakening of IPRs, particularly in the context of Covid-19 vaccines.⁵ Recently, some have also proposed extending the compulsory licensing doctrine developed for life-saving vaccines to green technologies. Such calls are based on the premise that patents may hinder the adoption of environmentally friendly solutions needed to tackle climate change.⁶ These calls indicate a tendency among patent sceptics to call for emergency exceptions to IPR protections, claiming free and automatic access for an increasing number of technology applications.⁷

In the past decade, such a trend has occurred both directly, by pressuring patent owners to give up their IP rights by means of “hard law” – for example, imposing compulsory licensing or patent waivers – but also indirectly through “soft law” – by means of guidelines, declarations, codes of conduct, and advocacy efforts.⁸ In this regard, some have also argued

¹ Cate, E. and Hill, N "Intangible asset market value study?." *les Nouvelles-Journal of the Licensing Executives Society* 52, no. 4 (2017); Ruta, C. S. (2022). The benefits of a strong IPR Policy in Europe: EU IP action plan and the view of innovative start-ups. Available here <https://www.4ipcouncil.com/research/benefits-strong-ipr-policy-europe-eu-ip-action-plan-and-view-innovative-start-ups>.

² A patent grants a temporary exclusivity right over inventions that are new, inventive, and industrially applicable: <https://www.wipo.int/patents/en/>

³ See 4ipcouncil, 4 Reasons to Patent: <https://www.4ipcouncil.com/4smes/4-reasons-patent>

⁴ OECD PATENTS AND INNOVATION: TRENDS AND POLICY CHALLENGES, 2004: available at <https://www.oecd.org/science/inno/24508541.pdf>.

⁵ Dabbico, P. (2022). IP Role In COVID Times: Compulsory Licensing, IP Waivers, And Other Initiatives. *LES Nouvelles - September 2022*, Licensing Executives Society International; Ohlhausen, M. K., Patent Rights in a Climate of IPRs scepticism, *Harvard Journal of Law & Technology*, Volume 30, Number 1 Fall 2016.

⁶ Fair, R. (2009). Does climate change justify compulsory licensing of green technology. *Int'l L. & Mgmt. Rev.*, 6, 21.

⁷ United Nations Secretary-General, António Guterres openly suggested a removal of patent “constraints” for renewable energy technologies: <https://www.un.org/sg/en/content/sg/statement/2022-05-18/secretary-generals-video-message-the-launch-of-the-world-meteorological-organization%E2%80%99s-state-of-the-global-climate-2021-report-scroll-down-for-languages>.

⁸ Barnett, J. M. (2020). *Innovators, Firms, and Markets: The Organizational Logic of Intellectual Property*. Oxford University Press; Petit, N. (2014). 'Stealth Licensing'-Or Antitrust Law and Trade Regulation Squeezing

that market mechanisms – other than IPRs – such as the primacy of prompt market access (i.e., the first mover advantage), are sufficient for innovators to succeed in the market.⁹

There have also been several proposals to redesign certain aspects of the patent system. These proposals include (i) the introduction of mandatory royalty-free (RF) licenses for patented technologies, (ii) limiting the grounds and circumstances upon which a patent owner can obtain an injunction, and (iii) restricting technology markets. Such proposals risk discouraging innovation by removing incentives and ultimately destabilising the virtuous cycle of innovation which has been fostered by the smoothly operating patent system.

This paper analyses some of the abovementioned efforts aimed at weakening patent rights, showing that, when presented with empirical evidence, these policies and advocacy efforts are rather weak. Specifically, Section 2 aims to expose the weaknesses of the first-mover advantage theory. Section 3 examines some recent efforts to undermine the patent system such as: (1) proposals for an RF licensing system for SEPs, (2) attempts to restrict the availability of injunctions in case of patent infringement, and (3) proposals to tighten patent transfers and technology markets. Section 4 examines the crucial role that licensing plays in the Internet of things (IOT). Finally, section 5 concludes the paper by emphasizing the importance of patents to innovation and technology development and adoption.

2. The myth of the first mover advantage

The basis for weakening patent rights is supported by several rather superficial arguments. Perhaps, the most prominent among these is the theory of the first mover advantage, often cited as a substitute for patent protection. The theory is based on the logical premise that the firm that first introduces a new technology to the market will have an advantage over other competing firms.¹⁰ Advocates of the theory suggest that this supposed advantage is sufficient to reward firms for their investments and innovative endeavours, and thus, renders patent protection redundant. However, the theory has several inherent flaws based on several misguided assumptions.

The primary flaw in the theory of the first-mover advantage is the presumption that any initial advantage acquired, will last indefinitely. This idea is based on the unrealistic view that the market is a static environment, not subject to change where later market entrants can never catch up.¹¹ This ignores the fact that without patent protection, later market entrants can imitate the technology of the first market entrant, without expending significant resources in research and development (R&D). In reality, the first market entrant can only obtain and maintain a competitive advantage if the technology in question is afforded strong

Patent Rights. European Competition Journal, 9(3), 2013, p. 21. Moreover, see the Fair Standard Alliance's advocacy on this subject: <https://fair-standards.org/resources/position-papers/>.

⁹ Boldrin, M., & Levine, D. K. (2013). The case against patents. *Journal of Economic Perspectives*, 27(1), 3-22.

¹⁰ Suarez, F. and Lanzolla, G. 'The Half-Truth of First-Mover Advantage' (2005) 83 *Harvard Business Review* 121, 127; Lieberman, M.B. and Montgomery, D.B. 'First-Mover Advantages' (1988) 9 *Strategic Management Journal* 41-58.

¹¹ Cohn, C 'When To Be A First-Mover And When To Wait' *Forbes*, 21 October 2015. Available at <https://www.forbes.com/sites/chuckcohn/2015/10/21/when-to-be-a-first->

patent protection or maintained as a trade secret.¹² The first-mover advantage theory also ignores the reality that there are significant costs borne by the first market entrant.¹³ These costs arise not only from R&D but also from gathering market data and defending their advantage from new entrants.

Finally, the first mover advantage theory overlooks the fact that other factors, such as market conditions and technology development, have a significant impact on a firm's success.¹⁴ The introduction of disruptive technologies can materially alter the market, causing established players (including the first-mover) to lose their advantage. This is especially the case if the ability to recover investments in R&D is diminished because of a weakened patent system.¹⁵ In markets that experience slow evolution, first-mover advantages are unlikely to be obtained. The first market entrant is likely to incur sales and operating losses whilst the market develops. This suggests that, absent adequate patent protection, only firms with substantial financial reserves can withstand losses for as long as necessary to obtain substantial first-mover advantages. The knock-on effect of this would see a reduction in R&D investments and innovative output, ultimately leading to a stall in technological evolution.¹⁶

Despite its shortcomings, the theory of the first-mover advantage is supported by several, high-profile success stories. These include Sony with its Walkman in 1979, and eBay in 1995. Some argue these examples prove that being first to market is sufficient to gain dominance and maintain a monopoly over a specific technology. Thus, removing the need for patent protection.¹⁷ Trimming patent duration, or abolishing them altogether is justified based on the perceived strengths of the first-mover advantage theory, especially in the information and communications technology (ICT) sector.¹⁸

In practice, IP plays a strong role in ensuring R&D investments can be recovered, and that first-mover firms survive. For example, rather than its first-mover status, Sony's Walkman success is largely attributable to its strategy of combining existing in-house IP and deploying an effective marketing campaign supported by significant financial resources. Indeed, it is important to highlight that for every successful first-mover, there are many others that ultimately fail. One example is the case of WANG Laboratories. The company, once dominant in automation and word processing, declined rapidly because of its decision not to pursue

¹² Ho-Chang Chae, 'First Mover (Dis)advantages in IT Investment in the Digital Age: Empirical Study of Mobile Banking' (2019) ICIS 2019 Proceedings 27. See also, Michael B Abramowicz and John F Duffy 'Intellectual Property for Market Experimentation' (2008) 83 New York University Law Review 337.

¹³ Steve Blank 'Here's Why The First-Mover Advantage Is Extremely Overrated' (2010) Business Insider, 19 October 2010. Available at <https://www.businessinsider.com/steve-blank-first-mover-advantage-overrated-2010-10?r=US&IR=T> (accessed 2 February 2023).

¹⁴ Blank (n 26).

¹⁵ AT&T and Netscape are examples of companies capsized by the rapid churning of technology and markets., Bohlmann, J.D. et al., 'Deconstructing the Pioneer's Advantage: Examining Vintage Effects and Consumer Valuations of Quality and Variety' (2002) 48 Management Science 1175–1195

¹⁶ Marianna Mazzucato, 'From Market Fixing to Market-Creating: A New Framework for Innovation Policy' (2016) 23 Industry and Innovation 140.

¹⁷ Boldrin and Levine (n 9).

¹⁸ Michele Boldrin and David K Levine Against Intellectual Monopoly (Cambridge University Press 2008).

patent prosecution to protect its investments. The lack of IP protection enabled competitors to free-ride on its innovations and produce competing products at a lower marginal cost.¹⁹

There is strong academic evidence supporting the notion that patents have a rewarding factor attached to them, underlining the importance of their inclusion in the innovation policy toolbox. Patents can defend against competition and provide owners a temporary monopoly, which can be used to extract a monetary reward to recover innovative investments. The benefits provided by patents can be enjoyed by enterprises of all sizes, including start-ups and small and medium sized enterprises (SMEs). Three key advantages of patenting include: (i) reducing information asymmetry between companies and potential investors, (ii) providing a source of income via royalties from licensing agreements, and (iii) serving as collateral for securing loans.²⁰ Additionally, patents play a significant role throughout the lifecycle of a company. They can be used not only to secure financial backing but also in cross-licensing negotiations and can significantly add to a company's stock value.²¹ Studies have shown that SMEs are more dependent on patents to generate income compared to larger corporations. Approximately 50% of SMEs patent their technologies with the aim of earning royalties from licenses.²²

Among the strongest arguments that exposes the flaws in the first-mover advantage theory is its application to the area of SEPs. Cellular standards (2G-5G) are developed following a group effort from stakeholders in the telecommunications sector. On average, it takes a decade to complete each iteration of a standard.²³ A relatively small number of companies devote significant resources to R&D related to standardisation, long before the standard is finalised and launched. Following the release of the standard, these companies recoup their investments by concluding licensing agreements on fair, reasonable, and non-discriminatory (FRAND) terms. The interoperability requirement which is inherent to standardisation makes the achievement of first-mover advantages even less likely than would usually be the case. Interoperability demands communication, co-operation, and information exchange between different devices from different manufacturers. Therefore, as cooperation between firms is a key component in developing standards, entering the market first is unlikely to benefit a particular corporation.

¹⁹ Earnie Smith 'The Great Failure of Wang Laboratories, the David to IBM's Goliath' (Vice, 21 February 2017). Available at <https://www.vice.com/en/article/vvxby3/the-great-failure-of-wang-laboratories-the-david-to-ibms-goliath> (accessed 2 February 2023).

²⁰ Marcus Holgersson, 'Patent Management in Entrepreneurial SMEs: A Literature Review and an Empirical Study of Innovation Appropriation, Patent Propensity, and Motives' (2013) 43 R&D Management 21–36; see also 4iP Council 'Interactive Guide "4 Reasons to Patent"' Available at <https://www.4ipcouncil.com/4smes/4-reasons-patent> (accessed 7 February 2023).

²¹ Richard Gilbert, 'A World Without Intellectual Property? A Review of Michele Boldrin and David Levine Against Intellectual Monopoly' (2011) 49 Journal of Economic Literature 421–432

²² The study deploys an international survey conducted by the European Patent Office (EPO), see Gaétan de Rassenfosse, 'How SMEs Exploit their Intellectual Property Assets: Evidence from Survey Data' (2012) 39 Small Business Economics p 466.

²³ In Georgios Effraimidis and Kirti Gupta '5G Standards and the Stark Divide Between Innovators and Implementers' (2022). Available at <https://www.4ipcouncil.com/research/5g-standards-and-stark-divide-between-innovators-and-implementer> (accessed 6 March 2023).

Whilst the logic of the first-mover advantage theory is appealing, it is fraught with pitfalls when examined against empirical evidence. Meanwhile, patents have demonstrated themselves to be a useful tool in encourage innovation by rewarding companies and encouraging them to continue investments in R&D.

3. Recent efforts to weaken the patent system

As discussed, calls to weaken the patent system continue to grow. Most of these efforts are fashioned to appear as minor alterations aimed at specific aspects of the patent system. However, these efforts could undermine the very foundations of the patent system. Primary targets of these efforts include: (i) the FRAND framework, (ii) limiting the availability of injunctions and (iii) restricting markets for technologies.

a. Mandatory RF Licensing

The FRAND framework has a proven track record of balancing the rights and interests of SEP owners, and those who implement the technology for the use and benefit of industry and consumers.²⁴ Therefore, any policy intervention which interferes with this balance risks harming the interests of one party or the other. Despite this risk, there are proposals to change the FRAND framework. One such proposal is to ‘preserve the royalty free standards ecosystem,’ a reference to RF standards such as Bluetooth and USB.²⁵ However, given that these RF standards were introduced in the mid-late 90s, it seems outdated to draw a comparison between them and modern telecommunications standards. There is substantial evidence illustrating the difference between RF standards, and modern ICT standards. One study assessed the number of standardised technologies incorporated into a laptop computer.²⁶ They found that 75% of the identified standards were developed under the FRAND framework, with the remainder being developed under an RF model. The findings emphasised the importance of the FRAND framework in modern SEP licensing in the ICT sector.

Proponents of mandatory RF licensing contend that patent owners would remain incentivised to invest in R&D due to the large marketplace that would develop from rapid adoption of RF technology.²⁷ This ignores the reality that most innovators who participate in standards development do not manufacture products. Therefore, they would be unable to benefit from the market regardless of how expansive it becomes.²⁸

By patenting their technologies, innovators are displaying their standardised technologies to the public. This allows for fast diffusion into the market. FRAND licensing

²⁴ European Commission Communication, ICT Standardisation Priorities for the Digital Single Market, 26 May 2016.

²⁵ Jorge L Contreras et al., ‘Preserving the Royalty-Free Standards Ecosystem’ (2022). Available on SSRN <https://papers.ssrn.com/abstract=4235647> (accessed 25 February 2023).

²⁶ Barnett (n 8).

²⁷ Fair Standard Alliance position paper (2023). Available at <https://fair-standards.org/2023/01/18/the-value-of-royalty-free-standards-2/> (accessed 5 January 2023).

²⁸ Barnett (n 8).

allows for fast adoption of technologies whilst simultaneously rewarding innovators for their multi-billion-euro R&D investments. Unlike RF models, the FRAND framework can reward all companies regardless of business model, including those that participate solely in developing standardised technology.

Another purported benefit of RF models is that they improve consumer welfare while still encouraging innovation. The idea is that because producers are not paying royalty fees, consumer prices decrease.²⁹ This theory is predicated on the assumption that savings from licensing fees paid by manufacturers are passed on to consumers, something which is not necessarily the case. Furthermore, even if any price drop were to occur, it would likely be negligible and short-lived. Moreover, any short-term benefit gained would be greatly outweighed by the long-term negative effects on innovation and standards development. Companies would be discouraged to invest in R&D because they would no longer be able to collect compensation in the form of licence royalties. This would ultimately harm consumers as the availability of new, cutting-edge technology would decrease.

SEP owners have often been accused of collecting excessive royalties for the use of their patented innovations.³⁰ These claims are propagated despite substantial evidence suggesting that such behaviour does not occur. For example, the estimated aggregate royalty on mobile phones was 2% of handset revenues in 2020.³¹ Given that cellular connectivity is such a crucial aspect of modern smart phones, the relatively small portion of revenue illustrates that SEP owners do not charge exorbitant licensing fees.

RF models have also been touted as enabling faster technology adoption, and removing barriers to market entry, particularly for start-ups and SMEs.³² This belief is founded on the misguided presumption that, absent licensing revenues, there would be no reduction in R&D investment. However, if firms are unable to recoup their investments in R&D through licencing revenues, they will not be incentivised to invest in R&D. The effect of this would see a reduction in standards adoption and technology dissemination. Indeed, examining the adoption rate of mobile communications standards since their introduction in the late 1990s, one can see persistent growth in subscriptions with the total number reaching 8.6 billion by 2021.³³ This shows there are no significant restrictions in the cellular market for either consumers or manufacturers.

A final argument repeatedly raised to support RF models is that they prevent the occurrence of patent ‘hold-up.’ The theory of ‘hold-up’ suggests that patent owners (e.g. an owner of cellular SEPs) uses their strong bargaining power to negotiate exorbitant royalty fees from standard implementers by threatening them with injunctions.³⁴ This theory has seen

²⁹ Fair Standards Alliance (n 40).

³⁰ Mark A Lemley and Carl Shapiro, ‘Patent Holdup and Royalty Stacking’ (2007) 85 Texas Law Review 1991.

³¹ Keith Mallinson ‘Modest SEP Royalties on Smartphones Have Declined, and Licensing Is Stabilizing’ (2021). Available at <https://www.rcrwireless.com/20210903/analyst-angle/modest-sep-royalties-on-smartphones-have-declined-and-licensing-is-stabilizing> (accessed 4 February 2023).

³² Fair Standards Alliance (n 40).

³³ Statista ‘Number of Mobile (cellular) Subscriptions Worldwide from 1993 to 2021’ (2023). Available at <https://www.statista.com/statistics/262950/global-mobile-subscriptions-since-1993/> (accessed 16 November 2022).

³⁴ Fair Standards Alliance (n 40)

increasing popularity in recent decades, despite a lack of empirical evidence to support it.³⁵ Indeed, the article that initially proposed the theory has been widely criticised.³⁶

Conversely, there has been growing concerns over ‘hold-out’ behaviour. Hold-out refers to circumstances where users of SEPs (implementers) are unwilling to pay royalties to patent owners by frustrating negotiations in an effort to reduce or avoid FRAND royalty rates.³⁷ Given that hold-up has not been substantiated, and hold-out behaviour poses a real risk, imposing an RF licensing model appears unjustifiable. Regardless, the CJEU has proposed a framework to mitigate the risk of hold-up behaviour.³⁸ Under its framework, a national court may refuse to grant an injunction to an SEP owner if that SEP owner is deemed ‘unwilling’ under several criteria.³⁹ As such, there seems to be no logic in introducing a RF model to tackle an unproven issue.

Time and again, FRAND frameworks have proven themselves to foster the development of innovative standards, enabling the dissemination of ICT technologies, especially multiple cellular standards such as 2G-5G. Therefore, it is important to preserve the delicate balance struck by the FRAND regime.

b. Limiting injunctions

Other recent efforts aimed at diluting patent rights include a campaign to limit the availability of injunctions.⁴⁰ Supporters of such a move advocate for a re-evaluation of the principle of proportionality as it pertains to remedies, including injunctions.⁴¹ Proportionality is a key principle in patent litigation proceedings which requires a judge to consider the damage caused by the infringing party against the potential damage the grant of an injunction would cause. Factors a judge should consider include the gravity of the infringing behaviour, the impact of injunctive relief on both parties, and the public good. The principle of proportionality restricts the opportunities for abusive litigation practices.⁴² Efforts to tighten

³⁵ Layne-Farrar, A. ‘Patent Holdup and Royalty Stacking: Theory and Evidence, Where do We Stand after 15 Years of History?’ (2014), OECD Directorate for Financial and Enterprise Affairs, Competition Committee, Paris. Available at [https://one.oecd.org/document/DAF/COMP/WD\(2014\)84/en/pdf](https://one.oecd.org/document/DAF/COMP/WD(2014)84/en/pdf) (accessed 4 May 2023); Alexander Galetovic and Stephen Haber, ‘The Fallacies of Patent-Holdup Theory’ (2017) 13 Journal of Competition Law and Economics 1–44; Alexander Galetovic et al., ‘An Empirical Examination of Patent Holdup’ (2015) 11 Journal of Competition Law & Economics 549–578; or COMPASS LEXECON (2022). Available at <https://www.compasslexecon.com/patent-holdout-explains-why-patent-holdup-is-still-on-the-table-in-memoriam-of-alexander-galetovic/> (accessed 1 June 2023).

³⁶ J Gregory Sidak, ‘Holdup, Royalty Stacking, and the Presumption of Injunctive Relief for Patent Infringement: A Reply to Lemley and Shapiro’ (2007) 92 Minnesota Law Review 92, 714; Devlin Hartline and Matthew Barblan, ‘Debunking the Royalty Stacking Theory: Real-World Evidence From the Mobile Wireless Industry’ (2016) J Gregory Sidak, ‘Is Patent Holdup a Hoax?’ (2018) 3 The Criterion Journal on Innovation 401.

³⁷ Layne-Farrar, A. ‘Why Patent Holdout is not just a Fancy Name for Plain Old Patent Infringement’ (2016), CPI North America Column, 2, 1–4; Richard A Epstein and Kayvan B Noroozi, ‘Why Incentives for “Patent Holdout” Threaten to Dismantle FRAND, and why it Matters’ (2017) 32 Berkeley Technology Law Journal 1381–1432..

³⁸ Huawei v ZTE (Case No. C170/13), 16 July 2015.

³⁹ 4iPCouncil National Court Guidance Available at <https://caselaw.4ipcouncil.com/guidance-national-courts>

⁴⁰ eBay Inc. v MercExchange, L.L.C., 547U.S. 388 (2006).

⁴¹ Agreement on Trade-Related Aspects of Intellectual Property Rights Remedies, Art 46.

⁴² Lea Tochtermann, ‘Injunctions in European Patent Law’ (2019) 11 Zeitschrift für Geistiges Eigentum: ZGE= Intellectual Property Journal: IPJ257–278.

Available at https://www.4ipcouncil.com/application/files/3115/5784/6445/L_Tochtermann_Injunctions_in_European_Patent_Law.pdf (accessed 23 April 2023).

the principle seek to mask a wider goal of limiting the availability of injunctions.⁴³ These efforts are most intense in cases involving complex end products such as cars or those that incorporate multiple standardised technologies.

The early 2000s saw a renewed debate on the issue of property rules versus liability rules in IP.⁴⁴ The property rule argues that since the primary focus in property law is the right to exclude, injunctions are an appropriate remedy to protect IP.⁴⁵ Meanwhile, the liability rule perspective suggests that damages are an adequate remedy for IP infringement.⁴⁶ The revitalisation of this debate is indicative of a growing desire to weaken patent rights. Moves to restrict the availability of injunctions in favour of compensatory damages inherently limits patent owners' abilities to enforce their rights, ultimately reducing the value of patents.⁴⁷

Evidence of increasing support for the liability rule can be seen in antitrust actions on both sides of the Atlantic. In the US, between 2003 and 2017, the Federal Trade Commission (FTC) and the US Patent and Trademarks Office (USPTO) voiced concerns about SEP owners using the threat of injunction to extract excessive royalties from implementers. Meanwhile, the European Commission (EC) has also expressed similar concerns and has taken enforcement actions against SEP owners who sought injunctions.⁴⁸

Courts have also made interventions regarding the availability of injunctions for patent infringement. In *eBay v Merc Exchange*, the US Supreme court introduced a strict, four-step test, which must be satisfied before an injunction will be granted in infringement cases. This ruling made it substantially more difficult for SEP owners to obtain an injunction. The ruling illustrates a shift from a property rule to a liability rule in US patent litigation. Some view the strict nature of the US approach as imposing a *de facto* compulsory license with compensatory damages the primary remedy available to the patent owner.⁴⁹

Standards developments organisations have also launched initiatives which sought to restrict the availability of injunctions. In 2015, the Institute of Electrical and Electronic Engineers-Standards Association's (IEEE-SA) implemented a limitation to injunctive relief in its IPR policy. This effectively prevented all SEP owing participants from enforcing their

⁴³ IP2Innovate letter to the Commissioner for Internal Market, Thierry Breton. Available at https://ip2innovate.eu/swfiles/files/FINAL-Industry-Letter-on-proportionality-guidelines_150120.pdf.

⁴⁴ Guido Calabresi and A Douglas Melamed, 'Property Rules, Liability Rules, And Inalienability: One View Of The Cathedral' (1972), in *Modern Understandings of Liberty and Property*, 139–178, Routledge.

⁴⁵ Richard A Epstein, 'Takings, Exclusivity and Speech: The Legacy of *PruneYard v Robins*' (1997) 64 *The University of Chicago Law Review* 21–56.

⁴⁶ C Bradford Biddle et al., *Patent Remedies and Complex Products: Toward a Global Consensus* (Cambridge University Press 2019).

⁴⁷ Jorge L Contreras et al., 'Litigation of Standards-Essential Patents in Europe: A comparative analysis' (2017) 32 *Berkeley Technology Law Journal* 1457–1488.

⁴⁸ Yann Ménière and Nikolaus Thumm, 'Fair, Reasonable and Non-Discriminatory (FRAND) Licensing Terms' (JRC Science and Policy Report, European Commission, 2015). Available at <https://publications.jrc.ec.europa.eu/repository/handle/JRC96258> (accessed 3 November 2022); COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE COUNCIL AND THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE, European Commission (2017). Available at <https://ec.europa.eu/docsroom/documents/26583> (accessed 29 November 2022); and, See Commission Decision of 29 April 2014 (Case AT.39939—Samsung—Enforcement of UMTS standard essential patents), 2014 OJ (C 350).

⁴⁹ Neal Solomon, 'Analysis of the "Four-Factor Test" in Patent Cases Post-eBay' (2010). Available at SSRN 623978.

rights.⁵⁰ This effectively created a *de facto* compulsory license for SEPs and encouraged hold-out practices among implementers, making participation in IEEE-SA standard development processes less attractive for SEP owners.⁵¹ Indeed, the IEEE-SA became so unattractive, that SEP owners began to abstain from contributing their technologies to IEEE-SA standards. Eventually, as so many SEP owners abstained from engaging in standards development, the IEEE-SA made alterations to its IPR policy.⁵² This case shows that efforts to restrict patent rights by limiting access to injunctions can have an adverse effect on standards development.

Regarding legislative actions designed to limit the availability of injunctions, the 2021 German patent Act introduced a ‘proportionality clause’ which mandated the application of a proportionality test in infringement cases.⁵³ The clause is applicable if a court suspects that the grant of an injunction would cause disproportionate hardship to an infringer and/or a third party.

The EC has also made policy interventions, and in 2023 it launched its proposal for an SEP Regulation with the aim of facilitating SEP licensing.⁵⁴ The Regulation makes several proposals including that: (i) SEP owners should agree an aggregate royalty rate for each standard, (ii) essential and potentially essential patents should be registered in a database established within the EU Intellectual Property Office (EUIPO), and (iii) parties participate in a FRAND determination procedure before commencing litigation in national courts or the Unified Patent Court (UPC).⁵⁵ Such measures would significantly limit SEP owners access to injunctive relief and SEP owners might only be able to obtain an injunction after enduring significant costs and lengthy delays in comparison to the current system. The proposed regulation has been criticized for several reasons. It imposes a substantial burden on the EUIPO, an office that has limited experience with patents. Secondly, it is argued that the regulation would place a substantial hardship on SEP owners.⁵⁶

⁵⁰ IEEE, IEEE-SA STANDARDS BOARD BYLAWS § 6.1 at 16 (2017). Available at https://standards.ieee.org/wp-content/uploads/import/documents/other/sb_bylaws.pdf (accessed 21 February 2023).

⁵¹ Alden Abbott, ‘IEEE Patent Policy Change Would Undermine Property Rights and Innovation’. Truth on the Market blog (2015).

⁵² IEEE Standards Association Board of Governors (IEEE SA BOG) announced an update to its patent policy, entering into force in 2023. Available at <https://standards.ieee.org/news/ieee-announces-decision-on-its-standards-related-patent-policy/> (accessed 22 April 2023).

⁵³ Bundesministerium der Justiz. Available at https://www.bmj.de/SharedDocs/Gesetzgebungsverfahren/DE/PatMoG_2.html, see also Kostanze Richter, ‘Patent law reform: Bundestag introduces principle of proportionality’ (Juve Patent, 11 June 2021): Available at <https://www.juve-patent.com/legal-commentary/patent-law-reform-bundestag-introduces-principle-of-proportionality/> (accessed 15 March 2023).

⁵⁴ COM(2023)232—Proposal for a regulation of the European Parliament and of the Council on standard essential patents and amending Regulation (EU) 2017/1001. Available here: https://single-market-economy.ec.europa.eu/system/files/2023-04/COM_2023_232_1_EN_ACT_part1_v13.pdf (accessed 2 April 2023).

⁵⁵ Adam Houldsworth ‘European Commission to propose radical new SEP/FRAND regime with major consequences for patent owners’ (IAM, 29 March 2023). Available at <https://www.iam-media.com/article/european-commission-propose-radical-new-sepfrand-regime-major-consequences-patent-owners> (accessed 30 March 2023).

⁵⁶ Joff Wild ‘The EUIPO must Understand what Taking on SEPs will Mean’ (IAM, 13 July 2023). Available at <https://www.iam-media.com/article/jw-column-13th-july-2023-euipo-sep-regulation> (accessed 15 July 2023).

In light of the forging, there appears to be a concerted effort to weakening patent rights. Limiting patent owners' access to injunctive relief encourages implementers to engage in opportunistic, hold-out behaviour, which could hinder standards development.⁵⁷

c. Restricting markets for technology

Patents allow innovative technologies to be protected and commercialised. Patent trade has experienced significant growth in recent years.⁵⁸ However, the growth of the markets for technology has been accused of causing problems relating to technology access and competition.

An often-cited concern is that large transfers of patents to one or a small number of large entities could lead to alleged monopoly risks. Any anti-competitive behaviours arising from this may restrict small firms' abilities to access and navigate the IPR market.⁵⁹ However, such a scenario seems unlikely to occur in the context of SEPs. Firstly, the European Telecommunications Standards Institute (ETSI), maintains a database allowing firms to know the identity of SEP owners. Secondly, even for a company owning a large portfolio of SEPs to gain an injunction, it must first comply with the steps outlined by the CJEU in *Huawei v ZTE*.

The transfer of patents has also raised concerns about potential patent hold-up. In particular, there are concerns about the transferability of FRAND commitments attached to SEPs. However, such concerns seem unnecessary given that SDO IPR policies explicitly require SEP transferors to comply with previous FRAND commitments.⁶⁰ By contrast, patent transfers have been criticised for potentially spreading ownership to an overly diverse number of entities, thus increasing licensing transaction costs, hindering technology dissemination and innovation.⁶¹

The growth in technology markets has coincided with a rise in litigation. Patent assertion entities (PAEs) are accused of acquiring large volumes of patents with the aim of engaging in spurious litigation.⁶² However, such accusations appear unfounded when

⁵⁷ Feedback from Qualcomm to the European Commission's initiative 'Intellectual Property—New Framework for Standard-Essential Patents'. Available at https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/13109-Propriete-intellectuelle-nouveau-cadre-pour-les-brevets-essentiels-a-une-norme/F3257473_fr.

⁵⁸ Ashish Arora and Alfonso Gambardella, 'Ideas for Rent: An Overview of Markets for Technology' (2010) 19 *Industrial and Corporate Change* 775–803.

⁵⁹ Ashish Arora et al., *Markets for Technology: The Economics of Innovation and Corporate Strategy* (MIT Press 2004); Ajay Agrawal et al., 'Deals not Done: Sources of Failure in the Market for Ideas' (2015) 36 *Strategic Management Journal* 976–986; David J Teece, 'Profiting from Technological Innovation: Implications for Integration, Collaboration,

⁶⁰ See, eg: IEEE, IEEE-SA STANDARDS BOARD BYLAWS § 6.1 at 16 (2017). Available at https://standards.ieee.org/wp-content/uploads/import/documents/other/sb_bylaws.pdf (accessed 15 September 2023), ETSI IPR Policy 6.1 bis (2022). Available at <https://www.etsi.org/images/files/ipr/etsi-ipr-policy.pdf> (accessed 18 September 2023).

⁶¹ Ian M Cockburn et al., 'Patent Thickets, Licensing and Innovative Performance' (2010) 19 *Industrial and Corporate Change* 899–925; see also: Jeffrey Kuhn, 'Property rights and frictions in the sale of patents' (2016). Available at SSRN 2865293.

⁶² See, for instance, Coleen V Chien, 'C. V. (2008). Of trolls, Davids, Goliaths, and Kings.

presented with empirical evidence, which suggests patents litigated by PAE's are of a similar quality to those litigated by patent owners that work their patents.⁶³

Ultimately, patent transfers have provided many benefits including: (1) creating a level playing field where small firms can license or sell patents to obtain revenue,⁶⁴ (2) encouraging collaboration between companies which fosters further innovation,⁶⁵ (3) enabling freedom-to-operate allowing for more efficient use of resources,⁶⁶ and (4) enabling more efficient division of labour between technology specialists and downstream manufacturers.⁶⁷

For these reasons, well-functioning technology markets should be preserved. There is a correlation between strong technology markets and technology diffusion.⁶⁸ Conversely, underdeveloped technology markets have been found to adversely affect smaller companies disproportionately as they cannot avail of the benefits such markets provide. In light of a study which suggested European SMEs underuse IP in comparison to their US counterparts, perhaps EU policymakers should find solutions aimed at incentivising rather than restricting patent transactions.

d. Connecting the dots

Patents are central to innovation, and they solve two primary issues associated with knowledge, which are: (1) the difficulty in restricting others from using it without permission, and (2) the non-rivalrous nature of knowledge, meaning its availability is not diminished when used by someone.⁶⁹ Knowledge can usually offer far greater benefits when shared with society rather than when kept for use by one individual. Indeed, the individual incentive to produce knowledge may not be sufficient to encourage innovation, and so patents are a useful tool to encourage knowledge generation and sharing across society.⁷⁰

Perhaps the most compelling argument in favour of strong patent rights can be found in the pharmaceutical sector.⁷¹ Drug development is a risky, resource intensive process. It can take ten years to develop a vaccine, and investment costs can run to USD 2 billion. However,

⁶³ Timo Fischer and Joachim Henkel, 'Patent Trolls on Markets for Technology—An Empirical Analysis of NPEs' Patent Acquisitions' (2012).

⁶⁴ Carlos J Serrano, 'Estimating the Gains from Trade in the Market for Innovation: Evidence from the Transfer of Patents' (2011) National Bureau of Economic Research (working paper No. w17304).

⁶⁵ Jeffrey M Kuhn, 'Property Rights and Frictions in the Sale of Patents' (2016). Available at SSRN 2865293.

⁶⁶ Dominique Christ et al., 'Patent Aggregation: More Than Patent Trolls' (2019) 54 *Les Nouvelles—Journal of the Licensing Executives Society*.

⁶⁷ Laurie Ciaramella et al., 'Tracking Patent Transfers in Different European Countries: Methods and a First Application to Medical Technologies' (2017) 112 *Scientometrics* 817–850.

⁶⁸ Alfonso Gambardella et al., 'The Market for Patents in Europe' (2007) 36 *Research Policy* 1163–1183.

⁶⁹ William H Oakland, *Theory of Public Goods* (Vol 2, *Handbook of Public Economics*, 485–535, Elsevier 1987). See also Harold Demsetz, 'The Private Production of Public Goods' (1970) 13 *The Journal of Law and Economics* 293–306.

⁷⁰ George Abi Younes et al., 'COVID-19: Insights from Innovation Economists' (2020) 47 *Science and Public Policy* 733–745.

⁷¹ Derek Lowe 'Waiving IP' (*Science*, 6 May 2021): Available at <https://www.science.org/content/blog-post/waiving-ip> (accessed 5 March 2023).

once a successful formula is developed, manufacture is relatively easy and inexpensive.⁷² Without patent protection, the high development costs would act as a barrier to innovation, as companies would have little confidence about their ability to protect their technologies from imitators free-riding their innovation. Patents balance the need to reward innovators for their investment in R&D, whilst ensuring that there is adequate access to new technologies. Weakening patent rights would disrupt this balance.

4. Standardisation and licensing in the IoT space

Strong patent rights, and particularly the FRAND regime for licensing SEPs, are especially important in the context of emerging technologies. Standardisation, enabled by the FRAND framework has enabled effective adoption and diffusion of cutting-edge digital technologies. The IoT (Internet of Things) is also set to benefit from the many benefits of standardisation.⁷³

The IoT refers to the connection of everyday objects to the internet, such as medical wearables and connected cars. The primary function of such devices does not require connectivity however, their incorporation with wireless communication standards is set to significantly enhance their functionality. A 2016 report estimated that there were approximately 900 IoT related standards, a number which has no doubt grown in the years since.⁷⁴ Moreover, the number of IoT devices is projected to surpass 29 billion worldwide by 2030.⁷⁵ As such, the licensing demand for SEPs reading on IoT standards is set to increase.⁷⁶

The FRAND framework for licensing SEPs can provide many benefits in the IoT sphere. Standardisation provides interoperability functionality which removes barriers to market entry. By removing the need develop expensive proprietary technologies, firms are encouraged to enter the market and develop products and services that leverage the interoperability benefits offered by standards. In addition, the establishment of security protocols such as data encryption, illustrate that IoT standardisation can also offer safety and security benefits.⁷⁷

Whilst there is broad agreement on the benefits that standardisation can bring to the IoT, there are diverging views on where licensing should occur in the value chain. The current industry practice of licensing SEPs at the end-product level has been accused of hindering IoT

⁷² Jason Millman, 'Does it Really cost \$2.6 Billion to Develop a New Drug?' (The Washington Post, 18 November 2014). Available here: <https://www.washingtonpost.com/news/wonk/wp/2014/11/18/does-it-really>

⁷³ ETSI (n.d.), 'Internet of Things (IoT)'. Available at <https://www.etsi.org/technologies/internet-of-things> (accessed 22 June 2023).

⁷⁴ Kai Jakobs and Q Hassan, 'Standardizing the IoT and its Applications—Learning from the Past' (2018) Internet of Things—Concepts, Technologies, Applications, and Implementations 191–218.

⁷⁵ Statista 2023 report, 'Number of Internet of Things (IoT) Connected Devices Worldwide from 2019 to 2021, with Forecasts from 2022 to 2030'. Available at <https://www.statista.com/statistics/1183457/iot-connected-devices-worldwide/> (accessed 4 March 2023).

⁷⁶ Igor Nikolic and Niccolò Galli, 'SEP Expert Group Report: A Look into the IoT Future of SEP Licensing' (2021), CPI IP Columns.

⁷⁷ See, for example, 'ETSI EN 303 645: Cyber Security for Consumer Internet of Things: Baseline Requirements' a globally applicable standard for consumer IoT cyber security. Available at https://www.etsi.org/deliver/etsi_en/303600_303699/303645/02.01.00_30/en_303645v020100v.pdf (accessed 13 July 2023).

development and adoption.⁷⁸ However, there is no evidence to suggest that altering this practice by licensing further up the supply chain, would accelerate the current rate of IoT technology development. The FRAND framework is designed to ensure that any agreed royalty rate reflects the value the standardised technology generates at the end product.

Indeed, any supposed inefficiencies in the FRAND licensing framework are more than remedied by the emergence of patent pools and licensing platforms, both of which enhance the efficacy of SEP licensing.⁷⁹ For example, Avanci's 5G licensing pool offers a transparent one-stop-shop licensing platform for automakers.⁸⁰

5. Concluding remarks

Recent proposals to weaken the patent system risk diminishing what has proven to be a powerful policy tool to encourage innovation and technology development. These proposals, even when raised with good intentions, often prioritise short term gains at the expense of long-term benefits.

Patents have been accused of stifling competition and innovation by protecting established firms from new, more innovative market entrants. Counter to conventional thought, the loudest calls for weakening patent rights has come from established firms seeking to maintain their position in the market. This is because strong patent rights encourage new firms to enter market as they can rely on the knowledge that any innovations they create can be protected. Therefore, one can conclude that weak patent rights create the strongest barriers to new market entrants.

A strong patent system also fosters knowledge sharing and technology diffusion.⁸¹ The public disclosure element of patent protection enables others to develop further innovations.⁸² If patent rights are diluted to the extent that their ability to reward innovation is diminished, inventors may be discouraged from sharing their cutting-edge solutions.⁸³

⁷⁸ Joachim Henkel, 'Licensing standard-Essential Patents in the IoT—A Value Chain Perspective on the Markets for Technology' (2022) 51 Research Policy 104600.

⁷⁹ Igor Nikolic and Niccolo Galli, 'Patent Pools in 5G: The Principles for Facilitating Pool Licensing' (2022) 46 Telecommunications Policy 102287; Julia Brito and Axel H Contreras, 'Patent Pools: A Practical Perspective' — Part I and Part II (2021), *Les Nouvelles-Journal of the Licensing Executives Society*, 56(4).

⁸⁰ Victoria Waldersee and Suphanta Mukherjee, 'Automakers Tackle Patent Hurdle Quest in Car Tech' (Reuters, 21 September 2022): Available at <https://www.reuters.com/business/autos-transportation/automakers-tackle-patent-hurdle-quest-in-car-tech-2022-09-21/> (accessed 1 April 2023).

⁸¹ Lisa L Ouellette, 'Do Patents Disclose Useful Information?' (2012) 25 *Harvard Journal of Law & Technology* 545. Jeffrey L Furman et al., 'Disclosure and Subsequent Innovation: Evidence from the Patent Depository Library Program' (2021) 13 *American Economic Journal: Economic Policy* 239–270.

⁸² Jeanne C Fromer, 'Patent Disclosure' (2008) 94 *Iowa Law Review* 539; Petra Moser, 'Do Patents Weaken the Localization of Innovations? Evidence from World's Fairs' (2011) 71 *The Journal of Economic History* 363–382; Stefano Baruffaldi and Markus Simeth, 'Patents and Knowledge Diffusion: The Effect of Early Disclosure' (2020) 49 *Research Policy* 103927; Benjamin Büttner et al., 'Patents and Knowledge Diffusion: The Impact of Machine Translation' (2022) 51 *Research Policy* 104584.

⁸³ Ivan Png, 'Secrecy and Patents: Theory and Evidence from the Uniform Trade Secrets Act' (2017) 2 *Strategy Science* 176–193; Marta F Arroyabe et al., 'Trade Secret Protection and Firm Acquisitions: Evidence from the

It has also been argued that weakening patent rights could improve consumer welfare by reducing the cost of goods. Whilst there may (or may not) be a reduction in costs in the short term, the long-term negative impact on innovation and technology diffusion will ultimately harm consumers as there will be a reduction in the availability of new technologies.

This paper has also highlighted the perils of limiting patent owners' access to injunctive relief. It is important to reemphasise that denying an SEP owner access to injunctions would risk devaluing IPRs, particularly patents. Knowing that injunctive relief is available if needed, firms are encouraged to invest in R&D, safe in the knowledge that they can enforce their rights to protect their innovations.

Ultimately, fostering cooperation between regulators and industry stakeholders is necessary to find and protect an appropriate balance of interests from all parties involved with the patent system. The patent system plays a critical role in incentivising R&D and encouraging inventors to share the technologies necessary to solve the many challenges facing the world today. Therefore, any move to weaken patent rights must be considered in the context of any effect it may have on innovation and technology development.