INTELLECTUAL PROPERTY, ANTITRUST, AND ACCESS TO ESSENTIAL TECHNOLOGIES

by
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This Article explores whether and how we may leverage antitrust law to calibrate the exploitation of intellectual property ("IP") rights—e.g., IP licensing—to facilitate needed access to essential technologies. The Article's motivation is to help developing countries find an effective way to address their complaints that owners of IP-protected technologies refuse to license needed technologies or charge unfairly high prices. The Article concludes that leveraging antitrust law unilaterally to address these typical challenges developing countries experience in accessing essential technologies may be more effective and efficient than attempting to change the IP regime. The IP regime is governed by negotiated and established multilateral instruments and is likely helpful in promoting international technology transfer and domestic technology innovation.

In answering the question of whether we may leverage antitrust law to improve access to essential technologies, the Article explores the conceptual linkages among IP, antitrust law, and access to essential technologies, examining the diverse approaches toward the IP–antitrust interface by multilateral, regional, bilateral, and jurisdictional instruments. In answering the question of how we may do so, the Article suggests a possible approach containing four main aspects. In doing so, the Article presents reference points for implementing this approach by comparing courses taken by three major antitrust regimes—the United States, the European Union, and China—toward controversial topics such as refusal to license, the essential facilities doctrine, and excessive pricing. The Article then discusses the necessary balancing considerations for implementing this approach. It also considers the barriers developing countries need to overcome for the implementation.

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INTRODUCTION

Accumulated asymmetry in research and development ("R&D") investments exists between developed and developing countries. According to one assessment, in 2005, the triad region (North America, Japan, and Europe) took up 75% of the global R&D investments, with North America accounting for 35%, Europe for 27.2%, and Japan for 13.2%.[1] The gap has shrunk significantly. By 2020, the triad region's corresponding share of projected global R&D spending decreased to just more than half of the total, with North America at 27%, Europe at 20.5%, and Japan at 7.8%.[2] Meanwhile, the Asian region's share of projected global R&D spending in 2020 rose to more than 44% (with China at 23.2% and India at 4%). However, South America and Africa's summed shares were at 3.1%, though the two regions have more than 20% of the global population.[3]

The asymmetry in R&D investments between developed and developing countries, in turn, results in a corresponding disparity in innovation output, which can be indicated indirectly by intellectual property ("IP") ownership. In today's global trade system, this disparity shows up in IP licensing revenues. According to data from the World Bank, in 2010, the royalties and license fees[4] received by the top five countries (the United States, Japan, the Netherlands, the United Kingdom, and France) amounted to almost 69% of the global total.[5] In 2019, the amount received by the top five countries (the United States, Japan, the Netherlands, Germany, and the United Kingdom) was 70%, a decrease from 72% in 2016.[6]

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[1] Jacques Gaillard, *Measuring Research and Development in Developing Countries: Main Characteristics and Implications for the Frascati Manual*, 15 SCI., TECH. & SOC'Y 77, 95–96 (2010).

[2] Paul Heney, *Global R&D Investments Unabated in Spending Growth*, R&D WORLD (Mar. 19, 2020), https://www.rdworldonline.com/global-rd-investments-unabated-in-spending-growth/.

[3] *Id.*

[4] As defined in the *Encyclopedia of the Nations*:

> Royalty and license fees are payments and receipts between residents and nonresidents for the authorized use of intangible, nonproduced, nonfinancial assets and proprietary rights (such as patents, copyrights, trademarks, industrial processes, and franchises) and for the use, through licensing agreements, of produced originals of prototypes (such as films and manuscripts).

Royalty and License Fees, Payments (BoP, Current US$) – BOP – Basic Inds. and Nat. Accts – African Development Indicators, ENCYCLOPEDIA OF THE NATIONS, https://www.nationsencyclopedia.com/WorldStats/ADI-bop-royalty-license-fees-payments.html (last visited Dec. 30, 2022).

[5] DANIEL C.K. CHOW & EDWARD LEE, INTERNATIONAL INTELLECTUAL PROPERTY: PROBLEMS, CASES, AND MATERIALS 12 fig.1-3 (4th ed. 2021).

[6] *Id.* at 12–13.

Overall, in the current situation, developing countries tend to be the recipients, e.g., via licensing, of IP-protected technologies from developed countries.[7]

In seeking access to needed technologies, developing countries have complained that intellectual property rights ("IPR") acted as a barrier, and some IP owners refused to license the technologies or charged exorbitant fees for the access.[8] For instance, in a recent proposal at the World Trade Organization ("WTO") Council for the TRIPS Agreement ("TRIPS Council")[9] to waive IPR concerning COVID-19 vaccination technologies ("COVID-19 IP Waiver Proposal"), India and South Africa suggested that patents surrounding hospital ventilators and medical masks might prevent effective and efficient mobilization of needed manufacturing of these products.[10] Local firms in India indicated that the patent owners of ozone reduction technologies refused to license these technologies for fear of increased competition.[11] Developing countries also found that they could hardly access systematic information about the local implementation and adaptation of foreign technologies; and the information that developing countries got often was fragmented and restricted.[12]

Attempting to address these issues, some developing countries proposed reforming existing IP regimes, e.g., waiving or weakening IP protection for pharmaceutical and clean technologies. As mentioned, in 2020, India and South Africa made the COVID-19 IP Waiver Proposal, which asks for the waiver of IPR

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[7] Meanwhile, countries with emerging economies, such as Brazil, Russia, India, and China, have been increasing their R&D investments and, hence, technological output. For example, in recent years, China has had a positive net income from royalties and license fees, though the figure is rather low ($1.2 billion in 2016 versus $122 billion for the United States). DANIEL C.K. CHOW & EDWARD LEE, INTERNATIONAL INTELLECTUAL PROPERTY: PROBLEMS, CASES, AND MATERIALS 13 fig.1-3 (3d ed. 2018).

[8] WEI ZHUANG, INTELLECTUAL PROPERTY RIGHTS AND CLIMATE CHANGE: INTERPRETING THE TRIPS AGREEMENT FOR ENVIRONMENTALLY SOUND TECHNOLOGIES 47 (2017) ("As net technology-importing countries, the then developing countries claimed that they had suffered from many cases of patent abuse, especially by MNCs, such as 'the non-working of patents by foreigners, the restrictive practices in licensing agreements, [and] the payment of high royalties.'" (citing Andréa Koury Menescal, *Changing WIPO's Ways? The 2004 Development Agenda in Historical Perspective*, 8 J. WORLD INTELL. PROP. 761, 764 (2005))).

[9] The Council for WTO TRIPS Agreement is the body that is responsible for administering the TRIPS Agreement. It is open to all members of the WTO. *TRIPS Council Regular Meetings*, WORLD TRADE ORG., https://www.wto.org/english/tratop_e/trips_e/intel6_e.htm (last visited Dec. 30, 2022).

[10] Council for Trade-Related Aspects of Intell. Prop. Rts., *Waiver from Certain Provisions of the TRIPS Agreement for the Prevention, Containment and Treatment of COVID-19: Communication from India and South Africa*, WTO Doc. IP/C/W/669 (Oct. 2, 2020).

[11] JAYASHREE WATAL, INTELLECTUAL PROPERTY RIGHTS IN THE WTO AND DEVELOPING COUNTRIES 389 (2001).

[12] Chrisanthi Avgerou, Niall Hayes & Renata Lèbre La Rovere, *Growth in ICT Uptake in Developing Countries: New Users, New Uses, New Challenges*, 31 J. INFO. TECH. 329, 329 (2016).

such as patents, industrial designs, copyrights, and trade secrets concerning the "prevention, containment or treatment of COVID-19."[13] In 2013, Ecuador made a proposal at the TRIPS Council asking to eliminate or weaken patent protection on clean technologies necessary for mitigating or adapting to climate change.[14]

Via a recent research project, the Author concludes that providing IP protection helps developing countries attract the advanced foreign technologies they need.[15] The Author also concludes that adequate or strong IP protection is necessary for incentivizing investments in technological breakthroughs vital for addressing ongoing global challenges such as pandemics and climate change. These needed technological breakthroughs are complex. They may not have immediate commercial applicability or profitability. Therefore, they need ex-ante mechanisms, such as IP protection, to attract upfront investments. Consequently, the Author concludes that reforming the IP regime in the manners suggested by some developing countries to improve access to IP-protected technologies is likely not an optimal approach. The additional fact underlining this observation is that such a reform is controversial[16] and likely requires amendments to multilateral IP treaties, such as the WTO TRIPS Agreement ("TRIPS Agreement"), which is a time-consuming process at least.[17]

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[13] Council for Trade-Related Aspects of Intell. Prop. Rts., *supra* note 10, at 3.

[14] Council for Trade-Related Aspects of Intell. Prop. Rts., *Contribution of Intellectual Property to Facilitating the Transfer of Environmentally Rational Technology: Communication from Ecuador*, WTO Doc. IP/C/W/585 (Feb. 27, 2013).

[15] JOY Y. XIANG, CLIMATE CHANGE, SUSTAINABLE DEVELOPMENT AND CLEANTECH: A PATHWAY FOR DEVELOPING COUNTRIES 60–61 (2022).

[16] Directorate-Gen. for Internal Pol'y, Eur. Parliament, Study for the PETI Comm.: The Marrakesh Treaty, P.E. Doc. 571.387, at 7 (2016).

[17] For example, in 2001, WTO member countries agreed on the Doha Declaration on the TRIPS Agreement and Public Health ("Doha Declaration"), identifying options available for WTO member countries to address public health needs. *See* World Trade Organization, Ministerial Declaration of 14 November 2001, WTO Doc. WT/MIN(01)/DEC/1, 41 ILM 746 (2002). In 2005, WTO member countries agreed to amend the TRIPS Agreement per Paragraph 6 in the Doha Declaration. *TRIPS and Public Health*, World Trade Org., https://www.wto.org/english/tratop_e/trips_e/pharmpatent_e.htm (last visited Dec. 30, 2022). The amendment, TRIPS Article 31bis, took effect in January 2017. *See* Agreement on Trade-Related Aspects of Intellectual Property Rights, art. 31, art. 31bis, Apr. 15, 1994 (as amended Jan. 23, 2017), Marrakesh Agreement Establishing the World Trade Organization, annex 1C, 1869 U.N.T.S. 299 (1994) [hereinafter TRIPS Agreement]. Similar amendments for easing access to essential technologies in other fields may be as achievable, yet may take as much time, if not more. In addition, such an amendment could be difficult to achieve, as a change to a WTO agreement would require the initiation of a proposal to amend to the Ministerial Conference, and for Article 4 of the TRIPS Agreement, consensus by all WTO members. Marrakesh Agreement Establishing the World Trade Organization, art. X, Apr. 15, 1994, 1867 U.N.T.S. 159 (Article X outlines different scenarios for deciding on and accepting proposed changes to a WTO agreement).

Then, what other means are available for developing countries to effectively address their complaints and enhance their abilities to access technologies necessary for sustainable development and social welfare such as public health? These technologies are essential and, given today's knowledge economy, most likely are under IP protection.

Article 40 of the TRIPS Agreement provides an option. Article 40 affords WTO member countries the power to adopt measures to address "practices or conditions" in particular cases pertaining to abuse of IPR that may have an anticompetitive effect.[18] However, such measures, including antitrust regulations, need to be appropriate and consistent with the other provisions of the TRIPS Agreement. The phrase "practices or conditions" may be interpreted to cover both license provisions and conduct surrounding license grants and executions. Therefore, it is likely that Article 40 covers practices that developing countries complain of, such as refusal to license and excessive pricing, once such practices are deemed anticompetitive. Article 40 thus may provide coverage against anticompetitive IP licensing conduct concerning essential technologies in developed and developing countries. As there has been no WTO case, and hence no WTO jurisprudence that interprets the scope of Article 40, countries thus have much freedom in interpreting and implementing this option provided by the TRIPS Agreement, as well as in leveraging antitrust law[19] to address anticompetitive IPR practices.

Meanwhile, a broader question remains: whether we may leverage antitrust law and regulations to improve access to essential technologies in general, rather than just to regulate the anticompetitive IPR practices concerning them. If the answer is "yes," countries thus have one more tool to legally enhance their access to technologies necessary for national development and social welfare.

Hence, this Article explores whether countries may leverage antitrust law and regulations to improve access to essential technologies, such as essential pharmaceutical, environmentally friendly, and digital technologies (Part I). This Article finds the answer in the affirmative, because antitrust law can be designed to protect market competition and economic efficiency, as well as social welfare, public interests, and even the healthy development of the national economy. Improving access to essential technologies may facilitate the fulfillment of these objectives. In

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[18] TRIPS Agreement, *supra* note 17, art. 40. Article 40(2) specifies that WTO member countries may adopt measures to prevent or control practices such as, "exclusive grantback conditions, conditions preventing challenges to validity and coercive package licensing . . . ." *Id.* art. 40(2).

[19] Some jurisdictions refer to their antitrust laws by different names. For example, many countries call theirs "competition law," and China and Russia call theirs "antimonopoly law." *See Antitrust Sites Worldwide*, U.S. DEP'T OF JUST., https://www.justice.gov/atr/antitrust-sites-worldwide (Oct. 7, 2022). This Article is to be published in a U.S. law review, and hence uses the term "antitrust law" in general.

addition, this Article concludes that the relevant international legal framework supports such leverage, or at least does not oppose it. The IP laws have multiple multilateral instruments—such as the TRIPS Agreement, the Paris Convention, the Berne Convention, the Rome Convention, and the Madrid System—that weave together a web of international minimum standards mandated for jurisdictions that join these instruments to access the benefits they offer. However, antitrust laws have no multilateral binding agreements that enforce a minimum standard.[20] This reality gives an individual jurisdiction much leeway in designing a unilateral antitrust regime according to its national circumstances and priorities.

This Article then explores how countries may leverage antitrust laws to improve access to essential technologies, especially IP-protected technologies (Part II). This Article suggests a possible approach to design an antitrust law that would facilitate access to essential technologies. In doing so, this Article compares the approaches that three major antitrust law jurisdictions—the United States, the European Union, and China—take in relevant antitrust concepts and practices.[21] Such a comparative analysis is intended to provide reference points for implementing the possible approach. This Article then identifies the necessary balancing considerations for such an implementation and the obstacles developing countries may encounter during the implementation (Part III).

Overall, this Article concludes that a jurisdiction should be able to leverage its antitrust law and regulations to address the typical challenges that developing

[20] Nonetheless, as discussed in Section I.B *infra*, informal international norms do exist for antitrust law concepts and practice.

[21] The Author selected these three jurisdictions for the comparative analysis for two reasons. First, the United States and the European Union have historically been the leading antitrust regimes and have influenced antitrust law and practices globally. Jurisdictions of developed countries, such as Canada, Australia, Japan, and Korea, have been converging their practices with those of the United States and the European Union. Second, developing countries have become active in developing their antitrust regimes, but are showing varying strengths. Of the leading developing countries (for example, Brazil, China, India, Russia, and South Africa), Brazil and India started their antitrust regimes in the 1960s and were instrumental in the inclusion of antitrust concepts in the TRIPS Agreement. However, China, though a later comer, has shown strength in this field by providing multiple guidelines on critical issues and by taking stances on controversial topics such as the IP-antitrust interface, refusal to license, the essential facilities doctrine, and excessive pricing. *See* Robert D. Anderson, Jianning Chen, Anna Caroline Müller, Daria Novozhilkina, Philippe Pelletier, Antonella Salgueiro Mezgolits, Nivedita Sen & Nadezhda Sporysheva, *Competition Agency Guidelines and Policy Initiatives Regarding Intellectual Property in the BRICS and Other Major Jurisdictions: A Comparative Analysis*, *in* COMPETITION POLICY AND INTELLECTUAL PROPERTY IN TODAY'S GLOBAL ECONOMY 517 (Robert D. Anderson, Nuno Pires de Carvalho & Antony Taubman eds., 2021). This Article, therefore, uses China as an example highlighting an approach toward antitrust law and regulations by a developing country, albeit a large one. Such a selection for the comparative analysis is underlined by the fact that the Author learned, practiced, and taught law in the United States, has been teaching law in China since 2016, and has easier access to the happenings there regarding the related topics.

countries have complained about in accessing essential technologies. This approach may be more effective and efficient than attempting to change the IP regime that is governed by negotiated and established multilateral instruments, though it is possible to proceed with both approaches in parallel. A jurisdiction, in general, has unilateral discretion in designing and implementing its antitrust regime. Specifically, the jurisdiction can define the scope of technology—e.g., whether technology concerns only the application of science or covers the application of knowledge. If it is the latter, knowledge, information, data, and materials can be part of technology, so long as they are necessary for researching, developing, diffusing, and implementing the technology. What constitutes essential technologies in a given field can thus be broad as well. Further, the jurisdiction can decide what constitutes essential technologies in a given social scenario. The jurisdiction can do so by declaring the primary social objective in the scenario and deeming the technologies in the relevant markets that serve the primary social objective as essential. Further, the jurisdiction can decide how it addresses refusal to license and excessive pricing, what constitutes essential facilities that mandate access, whether IP can be essential facilities, and what remedies are available for an antitrust violation. The remedies provided by an antitrust regime can be more encompassing than that of the IP regime. For example, compelled or statutory licensing via an antitrust regime can cover more substantive matters than the compulsory licensing remedy allowed by the TRIPS Agreement. The latter only permits compulsory licensing against patents and aspects of copyrights, but is silent on trade secrets, and forbids compulsory licensing against trademarks.

I. MAY WE LEVERAGE ANTITRUST LAW TO IMPROVE ACCESS TO ESSENTIAL TECHNOLOGIES?

The answer is, "we may." First, individual jurisdictions have unilateral discretion in designing their antitrust laws. Second, the current international legal framework provides no multilateral obligations on antitrust law standards. The relevant international instruments, such as the multilateral TRIPS Agreement and regional or bilateral free trade agreements ("FTAs"), generally support adopting antitrust measures to address anticompetitive IPR practices. The remaining few are silent about it—that is, do not object to it. Therefore, if facilitating access to essential technologies fulfills an antitrust regime's objectives, the design of which is up to the jurisdiction to decide, the jurisdiction should be able to leverage its antitrust law to improve access to essential technologies.[22]

[22] This project was heavily inspired by ORG. FOR ECON. COOP. & DEV. [OECD], SUSTAINABILITY AND COMPETITION (2020), http://www.oecd.org/daf/competition/sustainability-and-competition-2020.pdf.

A. Jurisdictions Have Unilateral Discretion in Designing Antitrust Laws

Absent mandated international standards for antitrust laws, jurisdictions are generally free to design their antitrust laws. For example, jurisdictions can set their own goals for antitrust laws; the goals determine whether improving access to essential technologies is part of the mandate of an antitrust regime.

In practice, jurisdictions have set varying objectives for their antitrust laws. An article reviewing the objectives of 73 jurisdictions that adopted competition laws between 1990 and 2010[23] found that the objectives typically include aims such as market competition, economic efficiency, consumer welfare, social welfare or public interests, and healthy or balanced national development.[24] Specifically, among the competition laws analyzed, 71 aim to promote market competition, 52 at economic efficiency, 46 at consumer welfares, 27 at social welfare and public interests, and 7 at the healthy or balanced development of the national economy.[25]

Improved access to essential technologies likely helps fulfill all these goals. Improved access to essential technologies may promote follow-on innovation and improve market competition, economic efficiency, and overall consumer welfare. Further, it can enhance social welfare and public interests if improved access is necessary to address critical or urgent social needs, such as public health or the climate crisis. For example, the Chinese antimonopoly regime deemed wireless-technology giant Qualcomm's patent licensing practices harmful because Qualcomm charged an excessive patent licensing fee, severely eliminated and restricted competition, hindered and inhibited technology innovation, and ultimately harmed consumer interests.[26] China also deemed unreasonable prices in medicines as harming social welfare and consumer welfare as the rising prices significantly increased national medical insurance expenditure and hence social expenditure.[27] The Chinese antimonopoly regime also ruled that the e-commerce

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[23] The 73 antitrust jurisdictions come from the 2019 Comparative Competition Law Project. For more details about the Comparative Competition Law Project, see Anu Bradford, Adam S. Chilton, Christopher Megaw & Nathaniel Sokol, *Competition Law Gone Global: Introducing the Comparative Competition Law and Enforcement Datasets*, 16 J. EMPIRICAL LEGAL STUD. 411 (2019).

[24] *Id.* at 418 fig.3.

[25] *Id.* at 421 fig.4(B).

[26] Qualcomm Inc., Guanyu Shiyong <Zhonghua Renming Fan Longduan Fa> De Jueding [2015] Di Hao (关于适用《中华人民共和国反垄断法》的决定，决定 【2015】1号) [Qualcomm Inc., Decision on Application of the <Anti-Monopoly Law of People's Republic of China>, Decision. No. 1 [2015]] (issued by the Nat'l Dev. & Reform Comm'n, Feb. 9, 2015), available at https://cclp.sjtu.edu.cn/Show.aspx?info_lb=682&info_id=3560&flag=679 (China).

[27] Yangzijiang Pharmaceutical Group Co., Ltd., Shiyong <Zhonghua Renming Fan Longduan Fa> Xingzheng Chufa Jueding [2021] Zi Hao (适用《中华人民共和国反垄断法》行政处罚决定，决定字 【2021】 29号) [Yangzijiang Pharmaceutical Group Co., Ltd., Administrative Penalty Decision on Application of the <Anti-Monopoly Law of People's Republic

giant Alibaba's online-platform practices that limited its competitors' offerings on its online platform harmed consumers' actual and expected interests and would potentially damage the overall social welfare in the long run.[28]

Meanwhile, if a jurisdiction's antitrust law currently does not consider noneconomic goals, such as public interests, the trend indicates such an exclusion may change. Scholars currently argue that antitrust laws should move away from economic goals and emphasize noneconomic values, such as sustainability, to allow cooperation between companies to contribute to such noneconomic goals.[29] Such a shift would allow the private sector to participate and contribute to noneconomic goals such as sustainable development, broad access to essential medicines, and reducing the digital divide. The growing consensus in the 21st century is that antitrust laws' objectives should be aimed at benefitting consumers, rather than the interests of competitors.[30] The Court of Justice of the European Union ("CJEU") has confirmed that the E.U. competition provisions aim to protect the competitors' and consumers' interests, as well as the market structure and competition structure.[31] Improved access to essential technologies can benefit consumers and competitors, improve social welfare, and protect the market structure and competition structure in a particular market. For example, if a particular technology is critical for multiple competitors to coexist in an important market, antitrust laws in an E.U. jurisdiction should address any unreasonable restriction on access to the technology.

B. The Existing International Legal Framework Enables

Meanwhile, the existing international legal framework supports using antitrust law to improve access to essential technologies.

At the multilateral level, countries are given the ability to use antitrust law to regulate unreasonable restrictions on access to needed technologies. As mentioned in the Introduction, the TRIPS Agreement grants WTO members the option to

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of China>, Decision No. 29 [2021]] (issued by the State Admin. for Mkt. Regul., Apr. 15, 2021), available at https://www.samr.gov.cn/xw/zj/202104/t20210415_327851.html.

[28] Alibaba Grp., Shiyong <Zhonghua Renming Fan Longduan Fa> Xingzheng Chufa Jueding [2021] Zi Hao (适用《中华人民共和国反垄断法》行政处罚决定，决定字 【2021】 28 号) [Alibaba Grp., Administrative Penalty Decision on Application of the <Anti-Monopoly Law of People's Republic of China>, Decision No. 28 [2021]] (issued by the State Admin. for Mkt. Regul., Apr. 10, 2021), available at https://www.samr.gov.cn/xw/zj/202104/t20210410_327702.html.

[29] Rutger Claassen & Anna Gerbrandy, *Rethinking European Competition Law: From a Consumer Welfare to a Capability Approach*, UTRECHT L. REV., Jan.–Oct. 2016, at 1, 6, 13–14 (discussed in OECD, *supra* note 22, at 15).

[30] ABBE E.L. BROWN, INTELLECTUAL PROPERTY, HUMAN RIGHTS AND COMPETITION: ACCESS TO ESSENTIAL INNOVATION AND TECHNOLOGY 27 (2012).

[31] *See, e.g.*, Case C-501/06, GlaxoSmithKline Servs. v. Comm'n, 2009 E.C.R. I-9212, I-9401.

employ measures such as antitrust law to address IPR abuses, which may include unreasonable denial of access to IP-protected technologies or charging excessive prices for the access.[32] Most jurisdictions nowadays are members of international treaties such as the TRIPS Agreement.[33] Hence, most countries have this option.

In addition, there is no formal multilateral agreement on antitrust law standards. Relevant provisions in regional and bilateral FTAs either allow for countries to use antitrust law to address restrictive business practices or are silent; however, none forbid countries from doing so.

The discussion in this Section examines the relevant multilateral, regional, bilateral, and jurisdictional instruments to understand their approaches toward anticompetitive IPR practices. As most essential technologies likely would be protected by IP (if not, access probably is not an issue), the discussion also explores the relationships between IP, antitrust, and access to essential technologies.

1. Intellectual Property and Intellectual Property Licensing

Because of the proliferation of IP in today's knowledge economy, a potential user of technology most likely needs to obtain permission from the IP owner of the technology to access the technology. The IP owner has the right not to give permission—that is, not grant a license for the use.

IP licensing hence has become an increasingly important form of trade and the main avenue for diffusing IP-protected innovation, knowledge, and information. Meanwhile, IP licensing provides incentives in R&D by enabling innovators to obtain compensation and recoup investments for successful R&D, hence balancing these successes against failed R&D investments.[34] IP licensing generally is procompetitive. It expands the use of valuable technology to other parties, and it lowers barriers to market entry by allowing companies to have access to—and thus leverage—technologies they do not own themselves.[35]

Here, the Author argues for a voluntary IP license, as opposed to a compulsory license issued by a government without the IP owner's consent, to address situations involving public interests. Compared with compulsory licensing, voluntary IP licensing would be the mainstream practice, can be faster and cheaper to obtain, and more effective. The cooperative relationship in voluntary IP licensing also allows the transfer of the associated know-how that is necessary for implementing the technology.

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[32] TRIPS Agreement, *supra* note 17, art. 40(1), (2).

[33] As of 2022, 164 of the 195 countries in the global community are WTO members. *Members and Observers*, WORLD TRADE ORG., https://www.wto.org/english/thewto_e/whatis_e/tif_e/org6_e.htm (last visited Dec. 30, 2022).

[34] Org. for Econ. Coop. & Dev. [OECD], *Licensing of IP Rights and Competition Law – Summaries of Contributions*, at 5, OECD Doc. DAF/COMP/WD(2019)62 (June 6, 2019).

[35] *Id.*

There is neither an international IP licensing law nor any international treaty harmonizing IP licensing practices. The TRIPS Agreement harmonizes international IP by mandating WTO member countries to comply with the minimum standards contained therein concerning important IP concepts, enforcement, and dispute resolution.[36] The TRIPS Agreement does not regulate IP exploitation such as IP licensing, though it does evoke the concept. For example, the TRIPS Agreement states that WTO members "may determine conditions on trademark licensing and assignment"[37] and that patent owners have the right to assign or transfer patents and to conclude licensing contracts.[38]

The laws governing IP license agreements involve at least contract law and the laws governing the IP subject matter covered in an IP license agreement. When the IP license agreement itself involves anticompetitive business practices, antitrust law becomes relevant.

2. Antitrust and Intellectual Property

An antitrust law's primary aim is to promote or maintain healthy or fair competition in domestic markets. Antitrust laws achieve this aim by regulating business conduct deemed detrimental to healthy competition in an open market, e.g., anticompetitive conduct causing higher prices, reduced output, or adverse effects on innovation incentives.[39]

In aiming to maintain a healthy market environment for competition, antitrust law benefits consumers with choices of products or services and reasonable pricing of those products or services. In promoting competition, antitrust law also indirectly fosters innovation. For example, competition from generic drug makers pushes research-based pharmaceutical companies towards continuous innovation.[40] In addition, antitrust law enforcement may also reach products and services not under IP protection as well as their impacts on the market.

IP law and antitrust law may seem to conflict. IP laws may incentivize innovation by offering an IPR owner the right to exclude unauthorized use of the IP. The right to exclude potential competitors from using the intellectual asset seems to run afoul of antitrust law, which protects competition. IPR may also imply market power and higher prices paid by consumers; both elicit antitrust concern, as

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[36] *See generally* TRIPS Agreement, *supra* note 17.

[37] *Id.* art. 28(2).

[38] *Id.* art. 21.

[39] HERBERT HOVENKAMP, MARK D. JANIS, MARK A. LEMLEY & CHRISTOPHER R. LESLIE, IP AND ANTITRUST: AN ANALYSIS OF ANTITRUST PRINCIPLES APPLIED TO INTELLECTUAL PROPERTY LAW § 1.2, at 5–6 (2d ed. 2013).

[40] *See Balancing Drug Innovation and Market Competition*, SENATE REPUBLICAN POL'Y COMM. (July 18, 2019), https://www.rpc.senate.gov/policy-papers/balancing-drug-innovation-and-marketing-competition.

antitrust law intends to reduce monopolies, substantial market power, and prices paid by consumers.

However, potential tension between IP law and antitrust law may not be acute in developing countries. Most inventions likely are not under IP protection in many developing countries.[41] One scholar estimates that developing countries only own laggard innovation that includes acquiring tacit knowledge, imitation, and process innovation, most of which—except process innovation—are not subjects of patent protection.[42] Meanwhile, as will be discussed in detail in Section III.B, many developing countries need to first overcome hurdles to design or implement a full-fledged antitrust regime before they are able to address the interplay between IP law and antitrust law.

On the other hand, some scholars and jurisdictions consider antitrust law and IP law to supplement each other, as both regimes aim to encourage innovation, industry, and competition.[43] Both regimes can stimulate R&D investments and improve consumer welfare by satisfying consumer demands at the lowest cost.[44] IP laws advance these goals by incentivizing innovation. Antitrust law promotes the same goals by ensuring healthy competition among firms, thus lowering prices and enhancing consumer welfare. Meanwhile, antitrust law's aim for healthy market competition encourages innovation, as innovation is one of the most effective ways

[41] *See* COPENHAGEN ECON. A/S & IPR CO. APS, ARE IPR A BARRIER TO THE TRANSFER OF CLIMATE CHANGE TECHNOLOGY? 4–5 (Jan. 19, 2009) (According to the study, 80% of global clean technologies were owned by developed countries, 19.9% by the emerging economies, and less than 0.1% by the rest of the developing countries). A similar situation exists for pharmaceutical technologies, where most patent families are filed in developed countries and major emerging economies. WORLD INTELL. PROP. ORG. [WIPO], WORLD INTELLECTUAL PROPERTY INDICATORS 2021, at 18 (Nov. 8, 2021).

[42] THOMAS K. CHENG, COMPETITION LAW IN DEVELOPING COUNTRIES 440 (2020).

[43] *See, e.g.*, Atari Games Corp. v. Nintendo of Am., Inc., 897 F.2d 1572, 1576 (Fed. Cir. 1990). Both China and the United States adopt this view. *See generally*, E. Thomas Sullivan, *The Confluence of Antitrust and Intellectual Property at the New Century*, 1 MINN. INTELL. PROP. REV. 1 (2000) (discussing the complementary aspects of IP and antitrust laws in the United States); GUANGJIE LI, REVISITING CHINA'S COMPETITION LAW AND ITS INTERACTION WITH INTELLECTUAL PROPERTY RIGHTS (2018) (discussing the confluence of goals of China's Anti-Monopoly Law and its IP regime). China amended its Anti-Monopoly Law in June 2022, declaring encouraging innovation as part of the objectives of the law. *See Anti-Monopoly Law (2022 Edition)*, CHINA L. TRANSLATE (June 27, 2022), https://www.chinalawtranslate.com/en/anti-monopoly-law-2022/. Though the implementation and the effect of such an expansion of the law's legislative objectives are yet to be seen, this expansion further signals that a jurisdiction may view both antitrust law and IP laws as a means for encouraging innovation.

[44] WARD S. BOWMAN, JR., PATENT AND ANTITRUST LAW: A LEGAL AND ECONOMIC APPRAISAL 1 (1973).

for a firm to improve its competitiveness legitimately in the market.[45] Hence, IP laws and antitrust laws, in principle, can be complementary instruments for encouraging innovation, and establishing and preserving competitive markets.[46]

No multilateral treaty addressing antitrust law, nor antitrust law's interface with IP law, has been agreed upon. However, the international community has been trying to address the interplay between antitrust law and IP law. IP provisions are found in instruments concerning antitrust law, while references to antitrust law are found in IP-related treaties or regulations. The discussion below aims to capture the international legal norms for the IP and antitrust interface through examining how multilateral, regional, bilateral, and jurisdictional legal and trade instruments address this interplay.

a. Intellectual Property in Antitrust Regimes

Antitrust law had a later start than IP laws at the international level. The international community has made multiple efforts to harmonize antitrust concepts and practices, including the IP–antitrust interplay, but has yet to arrive at a multilateral agreement providing minimum standards.

1. Multilateral

The earliest effort to unify antitrust standards was probably the 1927 International Economic Conference, where proposals made by the League of Nations Economic Committee to unify national laws on restrictive business practices were considered though rejected.[47] Subsequently, in 1948, after World War II, the Allies attempted to establish a new world economy, e.g., by creating an International Trade Organization via the Havana Charter.[48] The Havana Charter

[45] Yong Huang, Elizabeth Xiao-Ru Wang & Roger Xin Zhang, *Essential Facilities Doctrine and Its Application in Intellectual Property Space Under China's Anti-Monopoly Law*, 22 GEO. MASON L. REV. 1103, 1124–25 (2015).

[46] Josef Drexl, *The Critical Role of Competition Law in Preserving Public Goods in Conflict with Intellectual Property Rights*, *in* INTERNATIONAL PUBLIC GOODS AND TRANSFER OF TECHNOLOGY UNDER A GLOBALIZED INTELLECTUAL PROPERTY REGIME 709, 717–18 (Keith E. Maskus & Jerome H. Reichman eds., 2005); *see also* Jinzhi Lanyong Zhishichanquan Paichu Xianzhi Jingzheng Xingwei Guiding (Zhengqiuyijian Gao) (禁止滥用知识产权排除、限制竞争行为规定 (征求意见稿)) [Provisions on Prohibition of Abuse of Intellectual Property Rights to Exclude and Restrict Competition (Draft for Comment)] (notice of the St. Admin. for Mkt. Regul., June 27, 2022, effective Aug. 1, 2022), available at https://gkml.samr.gov.cn/nsjg/fgs/202011/t20201103_322857.html [hereinafter Provisions on IPR Abuse], *translated in* PEKING UNI. LEGAL INFO. CTR. (CLI.4.345983).

[47] Dale B. Furnish, *A Transnational Approach to Restrictive Business Practices,* 4 INT'L LAW. (ABA) 317, 318–19 (1970).

[48] Douglas A. Irwin, *The GATT's Contribution to Economic Recovery in Post-War Western Europe*, *in* EUROPE'S POST-WAR RECOVERY 127, 130–31 (Barry Eichengreen ed., 1995).

provided provisions for dealing with restrictive business practices.[49] The Havana Charter identified two types of IPR-related restrictive business practices: "preventing by agreement the development or application of technology or invention whether patented or unpatented" and "extending the use of [IPR] granted by any member to matters which . . . are not within the scope of such grants, or to products or conditions of production, use or sale which are likewise not the subject of such grants."[50] The Havana Charter was never ratified, though.[51]

During the 1970s and 1980s, developing countries attempted to establish principles on restrictive business practices in technology transfer and to eliminate such practices.[52] With the support of the United Nations Conference on Trade and Development ("UNCTAD"), the effort generated a draft of the International Code of Conduct on the Transfer of Technology ("TOT Code"). The 1985 version of the TOT Code listed a number of restrictive practices to avoid in a technology transfer agreement.[53] Like the Havana Charter, the TOT Code failed to become an international agreement.[54]

Later, in 1993, a group of leading scholars proposed to the General Agreement on Tarrifs and Trade ("GATT") General Secretary an International Antitrust Code ("Munich Code") to regulate global competition issues.[55] The Munich Code aimed to establish competition rules through a plurilateral trade agreement to be

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[49] U.N. Conference on Trade and Employment, *Havana Charter for an International Trade Organization*, ch. V, art. 46, U.N. Doc. E/Conf.2/78 (Mar. 24, 1948).

[50] *Id.* art. 46(3)(e), (f).

[51] TU THANH NGUYEN, COMPETITION LAW, TECHNOLOGY TRANSFER AND THE TRIPS AGREEMENT: IMPLICATIONS FOR DEVELOPING COUNTRIES 40 (2010); *see also* Irwin, *supra* note 48, at 131.

[52] NGUYEN, *supra* note 51, at 40.

[53] U.N. CONF. ON TRADE & DEV., COMPENDIUM OF INTERNATIONAL ARRANGEMENTS ON TRANSFER OF TECHNOLOGY: SELECTED INSTRUMENTS, annex at 266–69 (Draft International Code of Conduct on the Transfer of Technology), U.N. Sales No. E-01.II.D.28 (2001). These practices include: exclusive grant-back provisions, challenges to the validity of IP-involved, exclusive dealing, restrictions on research, restrictions on the use of personnel, price-fixing, restrictions on adaptations, exclusive sales or representation agreements, tying agreements, export restrictions, patent pools or cross-licensing agreements and other arrangements, restrictions on publicity, payments and other obligations after expiration of IPR, and restrictions after the expiration of the arrangement.

[54] There were major disagreements between developed and developing countries on what constituted restrictive business practices. Homer O. Blair, *United Nations International Code of Conduct on the Transfer of Technology*, 13 J. MARSHALL L. REV. 163, 163–64 (1979).

[55] *See* Wolfgang Fikentscher, *The Draft International Antitrust Code ("DIAC") in the Context of International Technological Integration*, 72 CHI.-KENT L. REV. 533 (1996); DIMITRIS LIAKOPOULOS & ARMANDO MARSILIA, THE REGULATION OF TRANSNATIONAL MERGERS IN INTERNATIONAL AND EUROPEAN LAW 144 (2010).

administered by a trade organization such as the WTO.[56] The Munich Code offered a set of internationally applicable laws that were to be implemented by the countries in the form of national competition laws.[57] The Munich Code recognized that the exercise of IPR within the scope of such rights would not restrain competition; when the exercise exceeds such a scope, the resulting restraint of competition may be illegal.[58] The Munich Code also prohibited abusing a dominant position by obtaining, exercising, or pooling IPR to suppress technology or raise prices.[59] The Munich Code expressly considered it illegal to impose obligations on licensees to not challenge the validity of the licensed IPR and to respect the license right even though the IPR may have expired.[60] Like the Havana Charter and the TOT Code, although visionary, the Munich Code did not gather sufficient support for implementation.[61]

Subsequent efforts to create a multilateral antitrust law agreement, e.g., at the WTO, have also been stalled.[62] In 2003, an E.U. and U.S. working group proposed a multilateral WTO framework for antitrust policies before the WTO Ministerial Conference in Cancun.[63] Developing countries opposed the proposals out of concern that their interests would not be accounted for appropriately. These developing countries worried that developed countries would use the proposed antitrust rules to open local markets to their multinational firms, which would "push small local enterprises out of the market."[64] They also worried that, like with the TRIPS Agreement, the newly-created global standards would favor developed countries.[65] Developing countries regarded the proposal as a "trade law-oriented

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[56] LIAKOPOULOS & MARSILIA, *supra* note 55, at 144.

[57] For example, the Munich Code suggested five principles to be implemented: application of substantive national law to resolve international cases, national treatment, minimum standards for national law, international procedural initiatives (establishing an international antitrust agency), and cross-border situations. *See* Int'l Antitrust Code Working Grp., *Draft International Antitrust Code as a GATT-MTO-Plurilateral Trade Agreement*, 65 ANTITRUST & TRADE REGUL. REP. (BNA) S-3, S-6 to -7 (SPECIAL SUPP. July 10, 1993).

[58] *Id.* at S-11 to -12.

[59] *Id.* at S-13.

[60] *Id.*

[61] LIAKOPOULOS & MARSILIA, *supra* note 55, at 144.

[62] *Working Group on the Interaction Between Trade and Competition Policy (WGTCP) – History, Mandates and Decisions*, WORLD TRADE ORG., https://www.wto.org/english/tratop_e/comp_e/comp_e.htm (last visited Dec. 30, 2022).

[63] United States & European Communities, *Joint EC-U.S. Paper on Agriculture*, WTO Doc. JOB(03)/157 (Aug. 13, 2003).

[64] Haris Apostolopoulos, *Anti-Competitive Abuse of IP Rights and Compulsory Licensing Through the International Dimension of the TRIPS Agreement and the Stockholm Proposal for Its Amendment,* 6 RICH. J. GLOB. L. & BUS. 265, 266 (2007).

[65] *Id.*

approach" to antitrust policy that focused on market access.[66] Developing countries preferred to focus less on market access issues in lieu of a more comprehensive approach that treated international antitrust policy as an instrument to establish competitively viable local market systems and structures, for example, by creating competent and independent institutions.[67]

As a result, there is no multilateral agreement binding on antitrust law and regulations. Therefore, individual countries should have broad discretion in designing domestic antitrust regimes.

Meanwhile, such broad discretion may not be absolute, given the informal international consensus on antitrust law. The global community's historic and contemporary efforts in creating consensus on antitrust law and practices have built an international or transnational normative repertoire that may impart a "transnational legal order" on national antitrust regimes.[68] For example, though the TOT Code failed to become an international agreement, it has continued to act as a point of reference in international law and policy on competition issues related to technology transfer. During the process for drafting the TOT Code, the United Nations General Assembly was able to adopt a Set of Multilaterally Equitable Agreed Principles and Rules for the Control of Restrictive Business Practices ("UN Set").[69] The UN Set "[p]rovides a set of equitable rules for the control of anti-competitive practices[,] [r]ecognizes the development dimension of competition law and policy[, and] provides a framework for international operation and exchange of best practices."[70] The UNCTAD organizes Review Conferences every five years to monitor and facilitate the voluntary implementation of the UN Set and exchange of best competition law

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[66] *Id.*

[67] *Id.*

[68] Francis Snyder, *Understanding the Regulation of Ecological Food in China: Regulatory Intermediation, Path Dependence and Legal Pluralism*, *in* REGULATORY ISSUES IN ORGANIC FOOD SAFETY IN THE ASIA PACIFIC 11, 18 (GOH Bee Chen & Rohan Price eds., 2019) (explaining that, in the creation of international standards, "each field [has] 'a handful of basic principles [involving] the constitution of a conceptual and normative repertoire, drawing on [international or transnational law], national legislation, multilateral negotiations, and administrative [and judicial] decisions in several jurisdictions within a specific historical context.'. . . In some contexts, an [international normative repertoire] may be implemented more or less directly, to the extent that we can speak of a 'transnational legal order', in which international, regional and national sets of substantive norms are essentially identical." (first quoting Francis Snyder, *The Origins of the 'Nonmarket Economy': Ideas, Pluralism & Power in EC Anti-Dumping Law About China*, EUR. L.J. 396, 419–20 (2001); and then quoting Terence C. Halliday & Gregory Shaffer, Introduction, *Transnational Legal Orders*, *in* TRANSNATIONAL LEGAL ORDERS 3, 3 (Terence C. Halliday & Gregory Shaffer eds., 2015))).

[69] *The United Nations Set of Principles on Competition (The UN Set)*, UNCTAD, https://unctad.org/topic/competition-and-consumer-protection/the-united-nations-set-of-principles-on-competition (last visited Dec. 30, 2022).

[70] *Id.*

practices.[71] In addition, the International Competition Network ("ICN"), an informal virtual network hosting 141 competition agencies from 129 jurisdictions, provides a forum for competition authorities to address common competition policy and enforcement issues.[72] The forums provided by the UNCTAD and the ICN function as informal norm-setting venues for competition authorities from different jurisdictions to explore how they may closely align competition policies and procedures.

2. Jurisdictional

The United States and the European Union have been considered the leading antitrust jurisdictions in the modern era.[73] Their antitrust policies are considered innovation-oriented. The United States and the European Union have actively promoted and exported their antitrust policies and practices to the global community. Meanwhile, many developing countries' antitrust policies are considered to orient toward technology transfer—China is one of them. Established in 2008, China's antitrust law was much influenced by the E.U. practice, and has been considered a formidable new player. The three jurisdictions vary in their approaches toward the IP and antitrust interplay.

a. The United States

The United States considers its IP laws and antitrust law to complement each other. The policies of the patent and antitrust laws are aligned in their mutual aim to foster innovation that creates dynamic competition.[74] Innovation drives economic growth and benefits consumers by bringing new ideas, products, and services that solve problems and improve human living.

The United States views IPR "principally as encouraging firms to engage *in* competition, particularly competition that involves risky and long-term investment," rather than solely protecting the IPR owners *from* competition.[75] The U.S. antitrust regime adopts three principles when analyzing whether IP licensing is anticompetitive or not. First, it applies the same general antitrust analysis to IP as

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[71] *Id.*

[72] *ICN Factsheet and Key Messages,* INT'L COMPETITION NETWORK (April 2022), https://unctad.org/topic/competition-and-consumer-protection/the-united-nations-set-of-principles-on-competition.

[73] Gregor Erbach, Eur. Parliamentary Rsch. Serv., *EU and US Competition Policies: Similar Objectives, Different Approaches*, at 2, Doc. 140779REV1 (Mar. 3, 2014) (noting that "[m]odern competition policy started with the adoption of the Sherman Antitrust Act by the US Congress in 1890").

[74] U.S. DEP'T OF JUST. & FED. TRADE COMM'N, ANTITRUST ENFORCEMENT AND INTELLECTUAL PROPERTY RIGHTS: PROMOTING INNOVATION AND COMPETITION 1–2 (April 2007).

[75] Org. for Econ. Coop. & Dev. [OECD], *Licensing of IP Rights and Competition Law – Note by the United States*, at 6, OECD Doc. DAF/COMP/WD(2019)58 (June 6, 2019).

to other forms of property.[76] Second, it does not presume without analysis that IPR confer market power on their owners, as sufficient actual or close substitutes likely are available to prevent the IP owners from exercising market power.[77] Third, the U.S. antitrust regime considers IP license agreements generally as procompetitive, though antitrust concerns may arise occasionally.[78] IP licensing can lead to more efficient exploitation of IP-protected assets and benefits consumers by reducing the cost of existing products or introducing new products. By increasing IP's expected returns, IP licensing can also induce a more significant investment in R&D. Further, even if an IP license agreement has an anticompetitive effect, the agreement may still be valid if the rule of reason analysis under the U.S. antitrust law deems the agreement to have sufficient procompetitive effects.[79] The rule of reason analysis is fact-specific. It focuses on the actual or likely effects of the licensing terms and conditions. It considers whether a restraint is likely to have anticompetitive effects and, if so, whether the restraint is reasonably necessary to achieve procompetitive benefits that outweigh the anticompetitive effects.[80]

In particular, the U.S. antitrust regime "emphasize[s] that remedies should . . . address the identified harm to consumers, and not be expanded to address other policy goals, e.g., to further industrial policy or to advantage domestic competitors."[81]

b. The European Union

The E.U. competition regime affirms the vital role of IPR in modern societies and innovation, as IPR ensure "widespread distribution of the different technologies and creations protected by IPRs."[82] While it considers that IPR and competition policy share the same basic objectives in promoting consumer welfare and efficient allocation of social resources, it also subjects IPR to competition law scrutiny.[83]

The E.U. competition regime acknowledges that IP licensing in general may increase markets' access to IPR and therefore enhance competition. However, it also acknowledges that certain IP licensing practices may be detrimental to market

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[76] U.S. DEP'T OF JUST. & FED. TRADE COMM'N, ANTITRUST GUIDELINES FOR THE LICENSING OF INTELLECTUAL PROPERTY § 2.0 (Jan. 12, 2017) [hereinafter U.S. ANTITRUST–IP GUIDELINES].

[77] *Id.*

[78] *Id.*

[79] *Id.* § 4.2.

[80] *Id.* § 3.4.

[81] OECD, *supra* note 34, at 16.

[82] Org. for Econ. Coop. & Dev. [OECD], *Licensing of IP Rights and Competition Law – Note by the EU*, at 2, OECD Doc. DAF/COMP/WD(2019)52 (May 22, 2019).

[83] Commission Notice 89/03, Guidelines on the Application of Article 101 of the Treaty on the Functioning of the European Union to Technology Transfer Agreements, 2014 O.J. (C 89) 3, 7 (EC).

competition, and therefore should be regulated.[84] Two articles in the Treaty on the Functioning of the European Union ("TFEU") are particularly relevant to the E.U. competition regime's regulation of situations or transactions involving IPR and their licensing. Article 101 of the TFEU sanctions anticompetitive agreements and concerted practices.[85] License agreements are prohibited if they engage with, for example, price fixing or they "limit or control production, markets, technical development, or investment."[86] Article 102 of the TFEU sanctions unilateral abusive conduct by an entity in a dominant market position.[87] Such abuse includes unfair pricing or trading conditions and "limiting production, markets or technical development to the prejudice of consumers."[88]

Meanwhile, the E.U. competition regime leverages the Block Exemption Regulations to insulate IPR's procompetitive effects from antitrust law prohibitions by providing IP licensing agreements a legal safe harbor from the applicability of Article 101 of the TFEU. Specifically, the Technology Transfer Block Exemption Regulation ("TTBER") codifies categories of licensing agreements commonly meeting the exemption conditions outlined in Article 101(3) of the TFEU.[89] The TTBER deems most types of IP licensing agreements compatible with Article 101 of the TFEU and should be exempt from competition law scrutiny.[90]

In addition, the TTBER also "articulates market share thresholds and lists specific license restrictions that could be subjected to what is in effect per se prohibition."[91] For example, a technology transfer agreement is presumed to be procompetitive if between firms with a combined relevant market share of less than 20% or includes parties with individual shares of distinct markets less than 30%

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[84] OECD, *supra* note 82, at 3.

[85] Consolidated Version of the Treaty on the Functioning of the European Union art. 101, Oct. 26, 2012, 2012 O.J. (C 326) 88 [hereinafter TFEU].

[86] *Id.*

[87] *Id.* art. 102. Please note that the E.U. Commission and the national competition authorities of the E.U. member states share the enforcement of E.U. competition rules. The E.U. Commission is the principal enforcer; the national competition authorities apply E.U. competition rules alongside the E.U. Commission. The latter typically handles violations of E.U. competition rules that occurred within one member state or between two member states; the former also monitors E.U.-wide markets and addresses anticompetitive activities affecting cross-border trade. *See* Marcin Szczepanski, Eur. Parliamentary Rsch. Serv., *EU Competition Policy: Key to a Fair Single Market*, at 2, Doc. PE 642.209 (Oct. 2019).

[88] TFEU, *supra* note 85, art. 102.

[89] Commission Regulation 316/2014 of 21 March 2014 on the Application of Article 101(3) of the Treaty on the Functioning of the European Union to Categories of Technology Transfer Agreements, pmbl., 2014 O.J. (L 93) 17, 17, ¶ 2 [hereinafter TTBER].

[90] OECD, *supra* note 34, at 9.

[91] F.M. Scherer & Jayashree Watal, *Competition Policy and Intellectual Property: Insights from Developed Country Experience* 18–19 (Harv. Kennedy Sch., Working Paper, RWP 14-013, 2014).

each.[92] The TTBER identifies hardcore restrictions, such as price-fixing clauses and most output restrictions, that can countervail the presumption of legality.[93]

c. China

Article 55 of the Chinese Anti-Monopoly Law ("AML") declares that the AML prohibits the abuse of IPR to eliminate or restrict market competition, but does not apply to the lawful exercise of IPR, i.e., IPR practices that are consistent with relevant IPR laws and administrative regulations.[94] Through the AML–IPR Guidelines, published on September 18, 2020 ("AML–IPR Guidelines"), China states that its AML regime and its IP regime share the same goal—both protect competition, encourage innovation, improve economic efficiency, and safeguard the consumer and public interests.[95] In the Provisions on Prohibition of Abuse of Intellectual Property Rights to Exclude and Restrict Competition, published in November 2020 ("Provisions on IPR Abuse"), China considers IP ownership by itself does not project a dominant market position; what violates the AML are IPR abuses that exclude and restrict competition, i.e., anticompetitive IPR practices.[96]

In deciding whether a business operator abuses IPR to exclude or restrict competition, China considers the effects the behavior at issue has on market competition, innovation, and efficiencies.[97] Analyzing the behavior's impact on market competition includes assessing the current market competition conditions and the particular behaviors at issue. Examining whether the behavior at issue has a positive effect on innovation and efficiencies involves considering whether the behavior promotes the technology's diffusion and deployment and whether it improves efficiency in resource utilization.[98]

Article 6 of the AML–IPR Guidelines enumerates the factors that the behavior at issue must meet to be deemed procompetitive rather than anticompetitive. These factors include:

1. There is a causal relationship between the conduct and promoting

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[92] TTBER, *supra* note 89, pmbl., ¶¶ 10, 11.

[93] *Id.* art. 4, ¶ 1.

[94] Zhonghua Renmin Gongheguo Fanlongduanfa (中华人民共和国反垄断法) [Anti-Monopoly Law of the People's Republic of China] (promulgated by Order No. 68 of the Standing Comm. Nat'l People's Cong., Aug 30, 2007, effective Aug. 1, 2008), art. 55, 2007 STANDING COMM. NAT'L PEOPLE'S CONG. GAZ. 513 [hereinafter AML].

[95] Zhishi Chanquan Lingyu Fan Longduan Zhinan (知识产权领域反垄断指南) [Anti-Monopoly Guidelines on the Field of Intellectual Property] (promulgated by the Anti-Monopoly Comm. of the State Council, Jan. 4, 2019, effective Sept. 18, 2020), art. 1, available at https://gkml.samr.gov.cn/nsjg/fldj/202009/t20200918_321857.html [hereinafter AML–IPR Guidelines], *translated in* PEKING UNI. LEGAL INFO. CTR. (CLI.4.345983).

[96] Provisions on IPR Abuse, *supra* note 46, art. 3.

[97] AML–IPR Guidelines, *supra* note 95, art. 3.

[98] *Id.*

innovation and improving efficiency;

2. The conduct poses less impact of precluding and restricting market competition within the scope of undertakers' reasonable business choices in comparison with other conduct promoting innovation and improving efficiency;
3. The conduct will not preclude or severely restrict market competition;
4. The conduct will not severely impede the innovation of other undertakers; and
5. Consumers can share the benefits from promotion of innovation and improvement of efficiency.[99]

China provides safe harbors where a technology agreement is presumed to not be anticompetitive, absent evidence showing an anticompetitive effect. Specifically, for an agreement between competitors, the parties' combined share in the relevant market must be no more than 20%; for an agreement between non-competitors, the figure becomes 30%; or, if market share data is unavailable or inaccurate, there must be at least four additional substitutable technologies in the relevant market that are controlled independently by third parties and obtainable at a reasonable cost.[100]

d. Other Developing Countries

Many developing countries, such as low- and middle-income countries ("LMICs"), have yet to implement antitrust laws. Even if antitrust laws are in place, enforcement is lacking due to, e.g., local capacity and expertise constraints.[101] Some countries, though having an antitrust law, exempt IPR from the coverage.[102] According to one study, LMICs have made extremely limited use of the flexibility provided by the TRIPS Agreement in leveraging antitrust law to address IPR-related anticompetitive practices.[103] In reality, many countries' antitrust laws have been ineffective in facilitating access to technologies, as these laws neither prohibit excessive pricing nor recognize the refusal to license IP as an offense.[104]

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[99] *Id.* art. 6.

[100] *Id.* art. 13.

[101] NGUYEN, *supra* note 51, at 39.

[102] *See* CHENG, *supra* note 42, at 464 (discussing, e.g., the Russian Federation and Jamaica, which completely exempt IP exploitation practices from their competition laws).

[103] Frederick Abbott, Sean Flynn, Carlos Correa, Jonathan Berger & Natasha Nyak, U.N. Dev. Programme, *Using Competition Law to Promote Access to Health Technologies: A Guidebook for Low- and Middle-Income Countries* 57 (May 2014).

[104] Eleanor M. Fox, *Can Antitrust Policy Protect the Global Commons from the Excesses of IPRs?*, *in* INTERNATIONAL PUBLIC GOODS AND TRANSFER OF TECHNOLOGY UNDER A GLOBALIZED INTELLECTUAL PROPERTY REGIME 758, 764 (Keith E. Maskus & Jerome H. Reichman eds., 2005).

b. Antitrust in Intellectual Property Regimes

Despite of the lack of multilateral agreement on antitrust law and the antitrust–IP interface, antitrust concepts have been incorporated into major multilateral or jurisdictional IP instruments.

1. Multilateral

Currently, several multilateral IP treaties have provisions incorporating antitrust law concepts. For example, both the Paris Convention and the TRIPS Agreement have provisions that put antitrust limitations on the exercise of IPR.

The Paris Convention allows its member countries to use compulsory licensing to address patent abuses.[105] The Paris Convention is ambiguous on the coverage of patent abuses: it is unclear whether the abuses only concern "fail to work," as expressed in Article 5(A)(2) of the Paris Convention, or "fail to work" is merely illustrating a specific example of patent abuses. Being read together with other provisions of Article 5(A), patent abuses may include refusal to license on reasonable terms and conditions that impede industrial development, insufficient supply, or excessive pricing of patented products.[106] Meanwhile, Article 5(A) of the Paris Convention provides members the "right to take legislative measures" for compulsory licensing, rather than the obligation to do so.[107]

Multiple provisions in the TRIPS Agreement, e.g., Articles 7, 8, 31, 40, and 48, involve antitrust limitations on IPR. Scholars have regarded Articles 7 and 8 in the TRIPS Agreement as a means for aggressive antitrust regulations of IPR.[108]

Article 7 of the TRIPS Agreement, stipulating the objectives of the TRIPS Agreement, directs that:

> [T]he protection and enforcement of [IPR] should contribute to the promotion of technological innovation and to the transfer and dissemination of technology, to the mutual advantage of producers and users of technological knowledge and in a manner conducive to social and economic welfare, and to a balance of rights and obligations.[109]

The TRIPS Agreement, therefore, aims for a balance between IPR and social and economic welfare. The protection and enforcement of IPR are for the mutual advantages of producers and users of IP-protected technological innovation; that is, for both promotion of technological innovation as well as the transfer and dissemination of them. Therefore, antitrust regulation of IP enforcement and

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[105] Paris Convention for the Protection of Industrial Property, art. 5, § A, ¶ 2, Mar. 20, 1883, 21 U.S.T. 1629, 828 U.N.T.S. 305 [hereinafter Paris Convention].

[106] G.H.C. BODENHAUSEN, GUIDE TO THE APPLICATION OF THE PARIS CONVENTION FOR THE PROTECTION OF INDUSTRIAL PROPERTY 67, 71 (photo. reprt. 2007) (1969).

[107] Paris Convention, *supra* note 105, art. 5, § A, ¶ 2.

[108] *See, e.g.*, HOVENKAMP et al., *supra* note 39, § 40.2, at 15.

[109] TRIPS Agreement, *supra* note 17, art. 7.

exploitation may be regarded as ensuring the balance between IPR and social and economic welfare.

Article 8 of the TRIPS Agreement grants WTO member countries the power to address both IPR abuse and unreasonable practices restricting trade and international technology transfer. Identifying the principles of the TRIPS Agreement, Article 8(1) stipulates that WTO member countries may "adopt measures necessary to protect public health and nutrition, and to promote public interest in sectors of vital importance to their socio-economic and technological development . . . ."[110] Therefore, WTO member countries can assert this provision in adopting measures necessary, for example, for addressing the COVID-19 pandemic and the climate crisis and building sustainable development.

Particularly relevant to the discussion in this Article, Article 8(2) of the TRIPS Agreement further stipulates that WTO member countries may use such measures to address IPR abuse by right holders; abuse includes practices that "unreasonably restrain trade," and practices that "adversely affect international transfer of technology."[111] This stipulation resonates with the Preamble of the TRIPS agreement, which states that IPR should not be used to distort and impede legitimate trade.[112] Article 8(2), however, does not address other possible anticompetitive behaviors, such as mergers and acquisitions and joint ventures, that likely have indirect, but not direct, relations with IPR. Hence, this Article focuses on practices covered by Article 8(2), which are often complained of by developing countries.

Article 40, already discussed in the Introduction, may be viewed as interpreting Article 8(2), which addresses anticompetitive practices in contractual licenses. Meanwhile, Article 40(3) and 40(4) outline procedural rules for a WTO member country to enforce IPR-related antitrust regulations against an IPR owner that is a national or domiciliary of another WTO member country; the first member country must consult and cooperate with the second member country.[113]

Remedy-wise, the TRIPS Agreement affords WTO member countries compulsory licenses as a means to address unilateral anticompetitive IPR practices.[114] Article 31(k) of the TRIPS Agreement waives specific criteria for issuing compulsory licenses if such licenses were issued to address anticompetitive practices:

> Members are not obliged to apply the conditions set forth in subparagraphs (b) and (f) where such use is permitted to remedy a practice determined after judicial or administrative process to be anti-competitive. The need to correct anti-competitive practices may be taken into account in

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[110] *Id.* art. 8(1).

[111] *Id.* art. 8(2).

[112] *Id.* pmbl.

[113] *Id.* art. 40(3), (4).

[114] *Id.* art. 31(k).

> determining the amount of remuneration in such cases. Competent authorities shall have the authority to refuse termination of authorization if and when the conditions which led to such authorization are likely to recur.[115]

Article 31(k) requires a judicial or administrative process to determine whether a practice is anticompetitive. After the judicial or administrative process, if a right holder's conduct is deemed as anticompetitive, the WTO member's antitrust authority may authorize compulsory license without prior negotiation with the right holder.[116] The antitrust authority also does not need to satisfy the requirement that the resultant products from the compulsory license would predominantly supply the domestic market of the WTO member.[117] Hence, some scholars conclude, "Compulsory licenses issued for anticompetitive behaviors under . . . the TRIPS Agreement are subject to minimum restrictions and prerequisites, other than some administrative or judicial procedures, and even the right to compensation may be virtually nullified by such behavior."[118]

However, the compulsory licensing remedy provided by the TRIPS Agreement is limited in coverage. The TRIPS Agreement expressly allows compulsory licensing against subject matters protected by patents.[119] It also allows compulsory licensing against copyright as to an author's translation and reproduction rights for developing countries.[120] However, the TRIPS Agreement is silent on compulsory licensing against trade secrets and explicitly prohibits compulsory licensing against trademarks.[121]

Meanwhile, Article 48(1) of the TRIPS Agreement provides that a party that was wrongfully enjoined or restrained by abusive IPR enforcement may be adequately compensated for the injury suffered.[122]

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[115] *Id.*

[116] *Id.* (providing that the requirement set forth in Article 31(b) that "the proposed user has made efforts to obtain authorization from the right holder" does not apply).

[117] *Id.* (providing that WTO members do not need to comply with the condition set forth in Article 31(f) that "any such use shall be authorized predominantly for the supply of the domestic market of the Member authorizing such use").

[118] Jerome Reichman, Arti K. Rai, Richard G. Newell & Jonathan B. Wiener, *Intellectual Property and Alternatives: Strategies for Green Innovation* 31 (Chatham House, Energy, Env't & Dev. Programme, Paper No. 08/03, 2008).

[119] TRIPS Agreement, *supra* note 17, art. 31.

[120] *Id.* art. 9 ("Members shall comply with Articles 1 through 21 of the Berne Convention (1971) and the Appendix thereto. However, Members shall not have rights or obligations under this Agreement in respect of the rights conferred under Article 6*bis* of that Convention or of the rights derived therefrom." (citing Berne Convention for the Protection of Literary and Artistic Works, Sept. 9, 1886, as last revised at Paris on July 24, 1971, arts. (1)–(21), 1161 U.N.T.S. 30)).

[121] *Id.* art. 21.

[122] *Id.* art. 48(1).

In addition, other provisions in the TRIPS Agreement may be pro-competition. For example, the first recital of the Preamble of the TRIPS Agreement states that IPR use should not distort and impede trade and technology transfer.[123] Article 6 allows WTO members to choose their own IPR exhaustion regime.[124] The IPR exhaustion regime enables a jurisdiction to decide whether lawful sales of IP-protected goods locally, regionally, or globally would exhaust the IPR owner's distribution right in the jurisdiction.[125] Hence, the scope of a jurisdiction's IPR exhaustion regime may affect the goods' competitiveness in the local market.

Consequently, both the Paris Convention and the TRIPS Agreement grant their members ample discretion in intervening against anticompetitive IPR practices. The Paris Convention is ambiguous about what constitutes patent abuse. The TRIPS Agreement does not define what constitutes IPR abuse or unreasonable restrictive practices. Therefore, member countries of both multilateral treaties have significant autonomy, both in defining these practices as well as in designing and applying regulations to address these practices.

2. Jurisdictional

Some patent jurisdictions expressly acknowledge the function of antitrust law in IPR exploitation. For example, the European Patent Convention obligates the European Patent Office to cooperate with competition authorities of the E.U. member states to prevent, among other things, patent abuse.[126] The Chinese Patent Law provides that no one may abuse patent rights to harm the public interest or others' legitimate rights and interests. It expressly declares that patent abuse to eliminate or restrict competition constitutes a monopolistic act, punishable according to the AML.[127] The United Kingdom Patent Act requires engagement with its national competition authority when a patent license restricts the licensee's use of the technology, the licensor's right to grant other licenses, or when the patent owner refuses to grant licenses on reasonable terms.[128]

In addition, the patent laws in jurisdictions such as Brazil, China, Germany, and India provide compulsory licenses to address anticompetitive practices to

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[123] *Id.* pmbl.

[124] *Id.* art. 6.

[125] Vincent Chiappetta, *The Desirability of Agreeing to Disagree: The WTO, Trips, International IPR Exhaustion and a Few Other Things*, 21 MICH. J. INT'L L. 333, 340–41 (2000).

[126] Convention on the Grant of European Patents art. 20, ¶ 1, Oct. 5, 1973, 1065 U.N.T.S. 255.

[127] Zhonghua Renmin Gongheguo Zhuanli Fa (中华人民共和国专利法) [Patent Law of the People's Republic of China] (promulgated by the Standing Comm. of the Nat'l People's Cong., Mar. 12, 1984; rev'd by Order No. 55 Oct. 17, 2020; effective June 1, 2021), art. 5, available at https://wipolex.wipo.int/en/text/585084 [hereinafter Patent Law of China]; AML, *supra* note 94, arts. 1, 55.

[128] Patents Act, 1977, c. 37, § 50A(1)(b), (c)(i)(ii) (U.K.).

eliminate or reduce the adverse impact of such acts on the competition.[129] India even allows the licensee of a compulsory license to export the patented product if needed.[130] This allowance goes beyond the scope of the TRIPS Agreement, which allows only the export of pharmaceutical products from a compulsory license to countries that do not have manufacturing capacities for such products.[131] The European Union allows nonvoluntary license arrangements for database products if the owners have abused their *sui generis* right to obtain a dominant position or otherwise to interfere with free competition.[132]

In summary, despite the lack of multinational consensus on antitrust law and practices, including the intersection between antitrust and IP, international and jurisdictional IP instruments provide well-integrated antitrust concepts for regulating anticompetitive IPR use.

c. Intellectual Property–Antitrust Interplay in Free Trade Agreements

The interaction between IP and antitrust law is also present in the proliferation of regional and bilateral FTAs. For example, most of such FTAs allow participating countries to use antitrust law to regulate restrictive IPR practices.

1. Regional Free Trade Agreements

Multiple regional FTAs refer to the interplay between IP law and antitrust law. For example, the North American Free Trade Agreement ("NAFTA"), formed in 1994 between Canada, Mexico, and the United States, has a chapter on IP that allows the participating jurisdictions to adopt measures such as antitrust law to regulate anticompetitive IPR practices:

> Nothing in this Chapter shall prevent a Party from specifying in its domestic law licensing practices or conditions that may in particular cases constitute *an abuse of intellectual property rights having an adverse effect on competition in the relevant market*. A Party may adopt or maintain, consistent with the other provisions of this Agreement, appropriate measures to prevent or control such practices or conditions.[133]

Here, NAFTA implies IPR abuse needs to have an adverse effect on competition in the relevant market. NAFTA allows its parties to utilize appropriate

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[129] Decreto No. 9.279, de 14 maio de 1996, Diário Oficial da União [D.O.U.] de 15.5.1996, Seção 1, p. 8353 (Braz.); Patent Law of China, *supra* note 127, art. 53(2); Patentgesetz [PatG] [Patent Act], Dec. 16, 1980, Bundesgesetzblatt [BGBL I] I at 3546, last amended by Gestetz [G], Oct. 8, 2017 BGBL I at 3546, art. 4 (Ger.); The *Patents Act,* 1970, § 84(1) (India).

[130] The Patents Act, 1970, § 90(1)(vii) (India).

[131] TRIPS Agreement, *supra* note 17, art. 31bis(3).

[132] Directive 96/9/EC, of the European Parliament and of the Council of 11 March 1996 on the Legal Protection of Databases, art. 16, ¶ 3, 1996 O.J. (L 77) 20, 27, ¶ 3.

[133] North American Free Trade Agreement, Can.-Mex.-U.S., art. 1704, Dec. 17, 1992, 32 I.L.M. 605 (emphasis added).

measures to regulate such practices or conditions, including broader regulatory means than the compulsory license measures provided by Paris Convention Article 5(A).[134] This NAFTA provision thus is much like the above-mentioned Article 40(2) of the TRIPS Agreement.

The U.S.-Mexico-Canada Agreement ("USMCA")—NAFTA's replacement since 2018—makes a passing reference to abuse of IPR in its IP chapter:

> Appropriate measures, provided that they are consistent with the provisions of this Chapter, may be needed to prevent the abuse of intellectual property rights by right holders or the resort to practices which unreasonably restrain trade or adversely affect the international transfer of technology.[135]

Here, the USMCA allows measures to address IPR abuses and practices that unreasonably restrain trade or adversely affect international technology transfer. The language is substantially similar to Article 8(2) of the TRIPS Agreement.[136] Meanwhile, the USMCA also provides that IP enforcement procedures shall be applied to avoid creating trade barriers and to safeguard against abuses.[137] It also provides judicial authorities with the power to grant compensation for injuries resulting from abusive IP enforcement.[138]

The Regional Comprehensive Economic Partnership Agreement ("RCEP") includes chapters on IP and antitrust, respectively.[139] However, neither chapter makes references to Article 40(2) nor Article 8(2) of the TRIPS Agreement. The RCEP does recognize the sovereign rights of each RECP member party to develop and enforce its antitrust laws and policies. The RCEP allows for exclusion or exemptions from antitrust regulations on the grounds of public policy or public interest, but it does not provide any definition or interpretation of "public interest."[140] The antitrust chapter of the RCEP does not require a causation analysis between IPR abuse and adverse effects on competition. It defines anticompetitive activity only by providing examples: anticompetitive agreements, abuses of a dominant position, and anticompetitive mergers and acquisitions.[141]

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[134] *Cf.* Paris Convention, *supra* note 105, art. 5, § A, ¶¶ 2, 4.

[135] Agreement Between the United States of America, the United Mexican States, and Canada, art 20.3(2), Nov. 30, 2018, OFF. OF THE U.S. TRADE REPRESENTATIVE [hereinafter USMCA].

[136] TRIPS Agreement, *supra* note 17, art. 8(2) ("Appropriate measures, provided that they are consistent with the provisions of this Agreement, may be needed to prevent the abuse of intellectual property rights by right holders or the resort to practices which unreasonably restrain trade or adversely affect the international transfer of technology.").

[137] USMCA, *supra* note 135, art. 20.78, ¶ 1.

[138] *Id.* art. 20.81, ¶ 15.

[139] Regional Comprehensive Economic Partnership Agreement, chs. 11, 13, Nov. 18, 2020, RCEP, https://rcepsec.org/legal-text/.

[140] *Id.* ch. 13.3(5).

[141] *Id.* ch. 13.3(1).

The Comprehensive and Progressive Agreement for Trans-Pacific Partnership Agreement's ("CPTPP") antitrust law chapter has important procedural due process provisions and considerations for economic analysis in antitrust law practices.[142] These features are mostly absent from the RCEP. Like the RCEP, the CPTPP also allows exemptions from antitrust liability, provided that such exemptions are transparent and based on public policy or public interests.[143] Also similar to the RCEP, the CPTPP does not define what constitutes public interests, thus allowing its members to define the concept.

2. Bilateral Free Trade Agreements

Most bilateral FTAs affirm the TRIPS Agreement's provision on adopting measures to regulate anticompetitive IPR practices. However, these FTAs mainly regulate the due process of antitrust law investigation and parties' cooperation and do not provide much guidance about the regulation of measures used to prevent IPR abuse. For example, the FTA between Australia and China provides:

> The Parties recognise that . . . appropriate measures, provided they are consistent with the provisions of the TRIPS Agreement and this Chapter, may be needed to prevent the abuse of intellectual property rights by right holders, or the resort to practices which unreasonably restrain trade, are anticompetitive or adversely affect the international transfer of technology.[144]

It does not offer any regulations on anticompetitive IPR practices. Meantime, the E.U.–China Comprehensive Agreement on Investment ("E.U.–China CAI") provides a minimum due process guarantee in antitrust investigations.[145] It does not speak on the specifics of regulating against anticompetitive IPR practices either.

Consequently, the regional and bilateral FTAs recognize that member parties have the authority to administer antitrust laws and regulations. The FTAs either explicitly allow member parties to adopt measures to address anticompetitive IPR practices, or remain silent. None expressly forbids member parties from doing so.

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[142] Comprehensive and Progressive Agreement for Trans-Pacific Partnership, arts. 16.2, 16.6, 16.7, Mar. 8, 2018, INST. FOR INT'L L. & JUST., https://www.iilj.org/megareg/materials/. *See generally* art. 16.2 (procedural fairness in competition law enforcement); art. 16.6 (consumer protection); art. 16.7 (transparency).

[143] *Id.* art. 16.1, ¶ 2.

[144] Free Trade Agreement Between the Government of Australia and the Government of the People's Republic of China, art. 11.1(f), June 17, 2015, [2015] ATS 15.

[145] EU–China Investment Agreement in Principle, § III, art. 5, Jan. 22, 2021, EUR. COMM'N, https://trade.ec.europa.eu/doclib/press/index.cfm?id=2237. Article 5, for example, requires the antitrust authority to notify and inform the recipient involved in an investigation of its concerns or objection, including the facts and legal basis on which the proposed decision will be based. The antitrust authority is also required to give the recipient of the decision the right to submit written comments in relation to antitrust concerns or objections before the adoption of the final written decision, the right to a legal representative of its choice, and the right to appeal the final decisions of the antitrust authorities to a competent court of law. *Id.* art. 5, ¶ 4.

3. Access to Essential Technology

The discussion now focuses on what constitutes "access to essential technology." "Access to essential technology" may be defined as the equitable availability and affordability of an essential technology needed by consumers or entities to develop products or deduce further innovation. For example, the World Health Organization ("WHO") has defined "access to essential medicines" as the "equitable availability and affordability of essential medicines during the process of medicine acquisition."[146]

a. What Is Essential Technology

A popular and conventional concept of "technology" has been that it is applied science. An old yet well-accepted definition of "technology" is "the principles, processes, and nomenclatures of the more conspicuous arts, particularly those which involve application of science."[147] The U.S. Patent and Trademark Office refined this definition and declared "technology" to be "the application of science and engineering to the development of machines and procedures in order to enhance or improve human conditions, or at least to improve human efficiency in some respect."[148] Under this view, human activities that do not involve science or the application of science will not constitute technological activity.

A much broader and more liberal view regards "technology" simply as the "application of knowledge."[149] In this view, technology is far more than applied scientific knowledge; it is "the practical implementation of intelligence."[150] Under this definition, knowledge, information, data, and materials can also be technology, so long as they are necessary for researching, developing, diffusing, and implementing the technology. This Article adopts this view. Therefore, information and materials, such as patented research tools, trade secrets, genes, cell lines, tissues, organisms, and data, can all be considered as part of technology.

Essential technology, therefore, may include technologies that are indispensable for the research community, or the market, to conduct further research or product development. That is, the technology has become the essential

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[146] WORLD TRADE ORG., WORLD INTELL. PROP. ORG. & WORLD HEALTH ORG., PROMOTING ACCESS TO MEDICAL TECHNOLOGIES AND INNOVATION: INTERSECTIONS BETWEEN PUBLIC HEALTH, INTELLECTUAL PROPERTY AND TRADE 195 (2d ed. 2020).

[147] JACOB BIGELOW, ELEMENTS OF TECHNOLOGY, at iv–v (1829).

[148] Examination Guidelines for Computer-Related Inventions, 61 Fed. Reg. 7478, 7479 n.7 (U.S. Pat. & Trademark Off. Feb. 28, 1996) (quoting *Technology*, COMPUTER DICTIONARY 384 (Microsoft Press, 2d ed. 1994)).

[149] *Technology*, MERRIAM-WEBSTER, https://www.merriam-webster.com/dictionary/technology (last visited Dec. 30, 2022).

[150] FREDERICK FERRÉ, PHILOSOPHY OF TECHNOLOGY 26 (1988).

path or the essential infrastructure for future research and innovation for downstream products or follow-on innovations.[151]

4. Intellectual Property Licensing, Antitrust, and Access to Essential Technologies

In the knowledge economy, virtually all intangible intellectual assets are under IP protection, based on one or more forms of IP laws. IP licensing—i.e., authorized access to IP-protected subject matters—hence is vital for the diffusion and transfer of essential technologies, which are most likely IP-protected because of their essentiality.

Restrictive practices in IP licensing, such as unjustified refusal to license and excessive pricing, can become issues in accessing essential technologies. When this happens, both the relevant IP law and antitrust law may offer solutions. As will be discussed in Part II, access seekers may raise an antitrust law claim based on abuse of a dominant position for either refusal to license or abusive pricing. Countries can also leverage the mechanisms provided by the IP regime to improve access to needed technologies. These mechanisms include, for example: the flexibilities offered by multilateral IP treaties, such as the discretion in IPR exceptions and exemptions provided by the TRIPS Agreement; the IP misuse doctrine practiced by the U.S. jurisdiction; international or regional IP exhaustion; and parallel imports.[152]

In summary, countries may leverage antitrust law to address anticompetitive issues in accessing essential technologies (including IP-protected essential technologies). Developing countries especially should do so, given their acute need to access advanced technologies to survive global challenges like the COVID-19 pandemic and the climate crisis.

II. HOW MAY WE LEVERAGE ANTITRUST LAW TO IMPROVE ACCESS TO ESSENTIAL TECHNOLOGIES? A POSSIBLE APPROACH

Countries may leverage avenues available in antitrust law to improve access to essential technologies unilaterally. A unilateral course of action can proceed in parallel with efforts to improve access to essential technologies at the multilateral level, e.g., through reforming the TRIPS Agreement. The discussion here offers a possible approach in leveraging antitrust law to improve access to essential technologies. The approach includes four main aspects: (1) setting encompassing objectives for the antitrust law; (2) identifying essential technologies; (3) effectively leveraging the abuse-of-dominant-position scrutiny; and (4) tailoring remedies to facilitate needed technology access. The discussion below will discuss these four aspects in detail.

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[151] Jerome H. Reichman, *Intellectual Property in the Twenty-First Century: Will the Developing Countries Lead or Follow?*, 46 HOUS. L. REV. 1115, 1140–41 (2009).

[152] Mechanisms in the IP regime are out of this Article's scope; for a relevant discussion in the Author's previous research project, see generally XIANG, *supra* note 15, pt. I, at 25.

Meanwhile, the discussion will examine how the U.S., the E.U., and Chinese antitrust regimes currently implement concepts and practices relevant to the possible approach. The discussion also will suggest how other countries, especially developing countries, may reference the three jurisdictions' implementation, and design their own courses of action according to their national contexts.[153]

A. Setting Encompassing Objectives of the Law

The antitrust law should provide encompassing objectives. Such objectives may include promoting consumer welfare, social welfare, and public interests, in addition to the conventional goals of maintaining healthy market competition and efficiencies.

As discussed in Section I.A, in practice, countries have adopted diverse objectives for their antitrust laws. For example, the purpose of the U.S. antitrust law is to "protect economic freedom and opportunity by promoting free and fair competition in the marketplace."[154] In the European Union, "[t]he main objective for the EU competition rules is to enable the proper functioning of the EU's internal market as a key driver for the well-being of E.U. citizens, businesses and society as a whole."[155] China's antimonopoly regime aims at "preventing and restraining monopolistic conducts, protecting fair market competition, enhancing economic efficiency, safeguarding the interests of consumers and the interests of society as a whole, and promoting healthy development of the socialist market economy."[156]

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[153] The application of antitrust rules likely depends on a country's political and economic contexts—for example, whether the jurisdiction aims to stimulate innovation or focuses more on technology transfer. In referencing approaches taken by these three major antitrust regimes, a developing country also needs to consider factors involved in the application of different legal approaches, the differences the jurisdiction has with the United States, the European Union, and China, and the power imbalance it may have with its major trading partners, which are likely developed countries.

[154] *Mission: Antitrust Laws*, U.S. DEP'T OF JUST., https://www.justice.gov/atr/mission (last visited Dec. 30, 2022); *see also* 1 ch. KONKURRENSLAGEN [COMPETITION ACT] (Svensk författningssamling [SFS] 2008:579) (Swed.); Federal'nyĭ Zakon RF o Konkurentsii i Ogranichenii Monopolisticheskoĭ dei atel'nosti na Tovarnykh Rynkakh [Federal Law of the Russian Referation on Competition and Limitation of Monopolistic Activity in Commodities Markets], VEDOMOSTI SEZDA NARODNYKH DEPUTATOV ROSSIĬSKOĬ FEDERATSII I VERKHOVNOGO SOVETA ROSSIĬSKOĬ FEDERATSII [VED. RF] [Bulletin of the Cong. of People's Deputies of the Russian Federation & Supreme Council of the Russian Federation] 1991, No. 16, Item 499 (Russ.).

[155] Radostina Parenti, Eur. Parliament, *Fact Sheets on the European Union: Competition Policy*, at 1 (Oct. 2021), https://www.europarl.europa.eu/ftu/pdf/en/FTU_2.6.12.pdf; *see also* § 1, ¶ 1 KILPAILUAKI KONKURRENSLAG [COMPETITION ACT] (Sähköinen Säädöskokoelma 948/2011) (Fin.).

[156] AML, *supra* note 94, art. 1, *translated in Anti-Monopoly Law of the People's Republic of China*, STATE COUNCIL PEOPLE'S REPUBLIC OF CHINA, http://english.www.gov.cn/services/

Both the E.U. competition regime and the Chinese antimonopoly regime look beyond market competition and economic efficiency and aim to protect both consumer and social welfare. China goes further by including public interests and the healthy development of its socialist market economy as goals for its antimonopoly law.[157]

B. Identifying Essential Technologies

The government or its designated agency may establish criteria and processes for identifying what constitutes essential technologies, thereby improving access to them (e.g., through antitrust regulations). Section I.B.3 has provided exemplary definitions of essential technologies. The fundamental notion is that a government itself can define the scope of essential technologies, which may include applied science, knowledge, information, data, and materials. The WHO has set up a good

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doingbusiness/202102/24/content_WS6035f1ddc6d0719374af97b6.html (Feb. 24, 2021, 2:27 PM).

[157] China's recent antimonopoly scrutiny on its big tech companies may be read as addressing the big tech companies' anticompetitive behaviors. It also may be read as implementing the Chinese government's social agenda, i.e., broadening wealth sharing and promoting the healthy development of a socialist economy. China's latest Five-Year Plan for National Development noted:

> We must be committed to the new development philosophy of innovation, coordination, green development, opening-up, and sharing; . . . and make reforms and innovation the primary force in our endeavor to meet the fundamental goal of satisfying the people's growing needs for a better life. . . . We should also modernize China's system and capacity for governance and realize long-term and stable economic development and social stability and harmony. By doing so, we will set the stage for building a modern socialist country in all respects.

The Plan further stresses the need to regulate parts of the economy in order to achieve "social fairness and justice" and to boost the "well-being of the people." *See* Zhonghua Renming Guomin Jingji he Shehui Fazhan di Shisi ge wu Nian he Nian Yuanjing Mubiao Gangyao (中华人民共和国国民经济和社会发展第十四个五年规划和2035年远景目标纲要) [The 14th Five-Year Plan for National Economic and Social Development of the People's Republic of China and Outline of the Vision for 2035], XINHUA SHE (新华社) [XINHUA NEWS AGENCY] (Mar. 13, 2021, 7:16 AM), http://www.gov.cn/xinwen/2021-03/13/content_5592681.htm, *translated in* TRANSLATION & PUBL'N PORTAL FOR CHINESE KEY TERMS & EXPRESSIONS, http://tppckte.org.cn/2021-08/04/content_77671903.html. Other jurisdictions also list national economic development as part of their objectives for antitrust laws. *See, e.g.*, Dogjeomgyuje Mich Gongjeong-Geolaee Gwanhan Beoblyul [Monopoly Regulation and Fair Trade Act] ch. 1, art. 1, *amended by* Act No. 4198, Jan. 13, 1990 (S. Kor.) ("The purposes of this Act are . . . to strive for balanced development of the national economy."); Shiteki Dokusen no Kinshi Oyobi Kōsei Torihiki no Kakuho ni Kansuru Hōritsu [Act on Prohibition of Private Monopolization and Maintenance of Fair Trade], Act No. 54 of 1947, art. 1 (Japan) ("The purpose of this Act is to . . . promote the democratic and wholesome development of the national economy as well as secure the interests of general consumers.").

example by identifying a list of essential medicines.[158] WHO requires functioning health systems to provide adequate information and to make such medicines available "at all times in adequate amounts, in the appropriate dosage forms, with assured quality, and at a price that individuals and communities can afford."[159] Meanwhile, WHO also lets countries decide which other medicines should be essential and considers the implementation of the concept of essential medicines to be flexible and adaptable to different situations.[160] Identifying essential medicines has become critical during public health crises. For example, the U.S. president signed an Executive Order in 2020 asking the U.S. government to identify a list of essential medicines and medical supplies to be supplied by the U.S. industries.[161]

There are different criteria to determine what constitutes essential technologies. Technology may become essential due to its essentiality for fulfilling a social need or because of its technical merit or commercial importance.

One way to identify essential technologies is to determine what technologies are essential for fulfilling the most important social objectives in a given situation. Professor Abbe Brown proposes to define essential technology by deciding its impact on society;[162] that is, identifying the fundamental objective the society has in a situation, identifying the relevant market, and then deciding what technologies are essential in the relevant market for reaching the particular social objective.[163] The Author considers this strategy—identifying essential technologies based on their importance to addressing a social need—to be effective in the context of improving access to technologies that are essential for addressing social welfare and public interests.

Other ways to identify essential technologies are based on the technology's merit in technical and commercial implementation. A government can learn from patent pools and standards development organizations ("SDOs") in their processes for determining essential patents. Because patents cover most essential technologies, access to essential technologies often is about getting a license to essential patents—patents covering these essential technologies.[164] According to Professor Jorge Contreras, patent pools and SDOs identify essential patents by assessing a patent's

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[158] World Health Org. [WHO], *Model List of Essential Medicines*, WHO/MHP/HPS/EML/2021.02 (22d List 2021).

[159] World Health Org. [WHO], *Report of the WHO Expert Committee on the Selection and Use of Essential Medicines*, at 15, WHO Tech. Rep. Series, No. 914 (2003).

[160] *Id.* at 15–16 (quoting World Health Org. [WHO], *The Use of Essential Drugs: Ninth Report of the WHO Expert Committee*, WHO Tech. Rep. Series, No. 895, at 1 (2000)).

[161] Exec. Order No. 13,944, 85 Fed. Reg. 49,929 (Aug. 14, 2020).

[162] BROWN, *supra* note 30, at 47–50.

[163] *Id.*

[164] Indeed, it should be essential patent *claims*, as a patent contains multiple claims, and not all claims cover an essential technology.

technical and commercial essentiality.[165] The technical essentiality of a patent exists when a patent claim covers "a technology that must, as a technical or engineering matter, be included in a product implementing a standard."[166] The commercial essentiality of a patent exists when a patent claim covers a technology that may "not [be] strictly required as a technical matter, [but] is the only *commercially feasible* way that the standard can be implemented (i.e., considering factors such as manufacturing cost, efficiency, reliability, manufacturability, etc.)."[167] Generally, fewer patents can be considered essential to implementing a standard in the technical essentiality approach than in the commercial essentiality approach.

Process wise, the government may first identify the crucial social objectives at stake, identify the relevant markets, and then decide what the essential technologies would be in a relevant market for fulfilling the crucial social objectives. At the technical level, as suggested in Section I.B.3, the government then may emulate the processes that patent pools and SDOs use in deciding essential patents to determine essential technologies based on their technical and commercial merits.

It likely would be resource-consuming for governments to acquire expertise in deciding what constitutes essential technologies. In practice, patent pools often engage independent experts to analyze the essentiality of patents.[168] The SDOs mostly avoid the independent experts' high fees by developing the standard in an environment "in which patent essentiality determinations are made by patent holders with no external verification."[169] Governments may establish committees that involve both policymakers and industry experts to make the recommendations. For example, once the policymakers identify the crucial social objective(s) that the industry and its relevant markets need to address, the industry experts may take over to identify the corresponding essential technologies. A government may also guide essential technologies into standards or patent pools to ease their licensing process.[170]

C. Leveraging the Abuse-of-a-Dominant-Position Scrutiny

The third main aspect of this possible approach is to design the abuse-of-dominant-position scrutiny in the antitrust law so that it facilitates access to essential technologies. Anticompetitive IP licensing behaviors—such as unreasonable unilateral refusal to license and abusive or excessive pricing—that developing

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[165] Jorge L. Contreras, *Essentiality and Standard-Essential Patents*, *in* THE CAMBRIDGE HANDBOOK OF TECHNICAL STANDARDIZATION LAW: COMPETITION, ANTITRUST, AND PATENTS 209, 217–18 (Jorge L. Contreras ed., 2018).

[166] *Id.* at 217.

[167] *Id.*

[168] *Id.* at 215.

[169] *Id.*

[170] Reichman, *supra* note 151, at 1137 (stating that "[a]n 'essential facilities' doctrine . . . would allow the pooling of overlapping patents within a platform technology").

countries often complain about, fall within the typical coverage of the abuse-of-a-dominant-position scrutiny.[171] This Article explores how a country may approach abuse-of-a-dominant-position scrutiny in antitrust law to address these complaints and improve access to essential technologies.

A jurisdiction should explicitly subject anticompetitive refusal to license and excessive pricing to antitrust law regulation, even for IP-protected technologies. The jurisdiction may even consider IP as essential facilities—the anticompetitive refusal of accessing such facilities would then fall under antitrust law scrutiny. However, in implementing this, the jurisdiction needs to act carefully, observing the balance in the implementation so as not to negatively impact the incentive to invest in innovation. The upcoming Section III.A will discuss in more detail the balancing considerations. Meanwhile, implementing this aspect of the suggested approach for IP-protected technologies likely needs to be industry-specific, as different industries may be at varying stages of innovation sophistication, and therefore be in varying stages of dependence on IP protection (hence the tension with antitrust regulations).

1. Abuse of a Dominant Position

Abuse of a dominant position occurs when a dominant firm engages in anticompetitive conduct to maintain or enhance its position in the market and therefore harm market competition and consumer welfare. Different jurisdictions may have varying definitions and approaches to this concept.

The United States provides a general prohibition of abuse of a dominant position; that is, prohibiting anticompetitive ways to conspire for, establish, or maintain monopolization.[172] In the United States, a business is in a dominant position in a relevant market when it has the market power to keep its prices above competitive market prices for a substantive period.[173] A relevant market must be specified in order to determine a business's market power (hence a dominant position in the relevant market). A relevant market should include all products that

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[171] In addition to refusal to deal and abusive pricing, the abuse-of-dominant-position scrutiny can also address other anticompetitive conducts such as exclusive dealing requirements, grant-backs, tying arrangements, and geographical market restrictions. *See* Richard Gilbert & Carl Shapiro, *Antitrust Issues in the Licensing of Intellectual Property: The Nine No-No's Meet the Nineties*, *in* BROOKINGS PAPERS ON ECONOMIC ACTIVITY: MICROECONOMICS 283, 285 (Martin Neil Baily, Peter C. Reiss & Clifford Winston eds., 1997); WORLD BANK & ORG. FOR ECON. COOP. & DEV. [OECD], A FRAMEWORK FOR THE DESIGN AND IMPLEMENTATION OF COMPETITION LAW AND POLICY 72 (1999). As developing countries have not cited these conducts frequently in their complaints regarding challenges in accessing needed technologies, the discussion here does not cover these other anticompetitive conducts.

[172] Sherman Act, 15 U.S.C. § 2.

[173] U.S. ANTITRUST–IP GUIDELINES, *supra* note 76, § 2.2. A firm may keep the price up for its offerings by high pricing or low output of the offerings. *Id.* n.15.

consumers can reasonably interchange to achieve the same purposes.[174] The threat that a business with a dominant position poses in a market is that consumers may have no viable alternatives.

While recognizing that IPR does enable its owner a legitimate monopoly power (generally with a time limitation) to exclude others from using the IP-protected subject matter without permission, the U.S. antitrust regime considers that IP ownership does not necessarily confer market power on the owner.[175] This is because the market likely provides "sufficient actual or potential close substitutes . . . to prevent the exercise of market power."[176]

The U.S. antitrust regime does not penalize a business for acquiring a dominant position in a market through legitimate means. Such legitimate means can include "[business] growth or development as a consequence of a superior product, business acumen, or historic context."[177] However, a business violates antitrust law if it acquires the dominant position through anticompetitive means or abuses such a position. The same applies to an IP owner that illegally acquires, maintains, or abuses market power created through owning the IP.[178]

In the European Union, Article 102 of the TFEU forms the basis for the European Union's approach to abuse of a dominant position. Unlike the United State's general prohibition on abuse of a dominant position, Article 102 of the TFEU identifies the exemplary conduct for abuse of a dominant position: excessive pricing, limitation of production or technical development, and discriminatory treatment and bundling.[179] The European Union considers the dominant position as a position of economic strength that enables the entity to prevent effective competition in the relevant market, e.g., via the entity's ability to control price when facing competitive pressure and to create barriers for entry into the relevant market.[180] High market share is a key indicator of dominance, and technological superiority may also be considered evidence of dominance.[181]

Similar to the United States, the European Union does not consider IPR as creating market power per se. The CJEU looks for further evidence that the IPR

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[174] United States v. Microsoft Corp., 253 F.3d 34, 51–52 (D.C. Cir. 2001) (quoting United States v. E.I. du Pont de Nemours & Co., 351 U.S. 377, 395 (1956)).

[175] U.S. ANTITRUST–IP GUIDELINES, *supra* note 76, § 2.2.

[176] *Id.*

[177] United States v. Grinnell Corp., 384 U.S. 563, 570–71 (1965).

[178] Walker Process Equip., Inc. v. Food Mach. & Chem. Corp., 382 U.S. 172, 176–77 (1965) (ruling that enforcing a patent procured by fraud may violate U.S. antitrust law (e.g., in producing economic coercion)).

[179] TFEU, *supra* note 85, art. 102.

[180] HOVENKAMP et al., *supra* note 39, § 45.5, at 60–61 (citing Case C-250/92, Gøttrup-Klim Grovvareforening v. Dansk Landbrugs Grovvareselkab AmbA, 1994 E.C.R. I-5641, I-5690).

[181] *Id.* § 45.5, at 61.

owner has "the power to impede the maintenance of effective competition over a considerable part of the relevant market."[182] Abuse of a dominant position occurs when the entity of dominance acts beyond normal practice. Exercise of IPR can be an abuse of a dominant position only in exceptional circumstances.[183]

Under China's AML regime, a business operator is in a dominant market position when the business operator is capable of "controlling the prices or quantities of commodities or other transaction terms in a relevant market, or preventing or exerting an influence on the access of other [business operators'] undertakings to the market."[184] Article 18 of the AML enumerates the factors for determining whether a business operator holds a dominant market position:

1. Its share on a relevant market and the competitiveness on the market;
2. Its ability to control the sales market or the purchasing marker for raw and semi-finished materials;
3. Its financial strength and technical conditions;
4. The extent to which other business operators depend on it in transactions;
5. The difficulty that other undertakings find in entering a relevant market; and
6. Other factors related to the determination of the dominant market position held by an undertaking.[185]

Article 19 of the AML provides an analytical framework for deducing whether an undertaking holds a dominant market position from specific circumstances:

1. The market share of one undertaking accounts for one half of the total in a relevant market;
2. The joint market share of two undertakings accounts for two-thirds of the total, in a relevant market; or
3. The joint market share of three undertakings accounts for three-fourths of the total in the relevant market.[186]

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[182] *Id.* (quoting Case 78/70, Deutsche Grammophon Gesellschaft mbH v. Metro-SB-Großmärkte GmbH & Co. KG, 1971 E.C.R. 487, 501).

[183] Joined Cases C-241/91 P & C-242/91 P, Radio Telefis Eireann v. Comm'n, 1995 E.C.R. I-808, I-822–23.

[184] AML, *supra* note 94, art. 17. The discussion on China's Anti-Monopoly Law is an update to the discussion in a previous writing. *See* Xiang, *supra* note 101, at 15–16.

[185] AML, *supra* note 94, art. 18.

[186] AML, *supra* note 94, art. 19.

Under the circumstance specified in (2) or (3), "if any of the business operators has a market share of less than 10 percent, that business operator shall not be considered to have a dominant position."[187]

Meanwhile, an undertaking that is considered to hold a dominant market position may provide evidence to the contrary. If the evidence is convincing, the AML will not consider this undertaking to hold a dominant market position.[188]

The AML considers a relevant market to be the "range of commodities for which, and the regions where, undertakings compete each other during a given period for specific commodities or services."[189] In considering AML enforcement against monopolies involving IP licensing, the AML regime considers the relevant product market to be the technology market or the product market containing the particular IPR. The AML regime considers the relevant technology market to be the market formed by competition between the technologies involved in the exercise of the IPR and the existing interchangeable technologies of the same kind.[190]

Upon defining the relevant market and finding that a business operator has a dominant market position, the AML provides that the following practices may constitute abuse of a dominant position: excessive pricing, predatory pricing, refusal to deal, exclusive dealing, tying, unfair trading conditions, discrimination, and others.[191] China's approach here is similar to that of the European Union in identifying the exemplary conduct that is deemed as abuse of a dominant position.

Meanwhile, similar to the United States and the European Union, China's AML regime will not infer a dominant position just because the business operator owns IP.[192] IP ownership is one factor for determining market dominance, but not the only factor.[193] Article 14 of the AML-IPR Guidelines discusses IPR's presence in the determination of dominant market position:

> An undertaker's ownership of IPRs does not necessarily mean that it has a dominant market position. In the determination of whether an undertaker that owns an IPR has a dominant position in the relevant market, analysis shall be conducted based on the factors and circumstances for determining or presuming its dominant market position as prescribed in Articles 18 and 19 of the Anti-Monopoly Law.[194]

Article 14 further enumerates factors that may be considered in making the determination. They include:

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187 *Id.*

188 *Id.*

189 *Id.* art. 12.

190 Provisions on IPR Abuse, *supra* note 46, art. 3(2).

191 AML, *supra* note 94, art. 17.

192 AML–IPR Guidelines, *supra* note 95, art. 2.

193 Provisions on IPR Abuse, *supra* note 46, art. 6.

194 AML–IPR Guidelines, *supra* note 95, art. 14.

1. The possibility that the transaction counterparty switches to substitutable technologies or goods, among others, and the switching costs;
2. The degree of dependence of the downstream market on the goods provided by using the IPR; and
3. The transaction counterparty's capacity of checking and balancing the undertaker.[195]

In summary, the United States provides a general prohibition on abuse of a dominant position while the European Union and China identify exemplary conduct that constitutes such an abuse. Meanwhile, all three jurisdictions do not consider IP ownership to automatically imply market power or a dominant position in the market. Developing countries may heed this uniformity among the three jurisdictions.

The Article now discusses the U.S., the E.U., and the Chinese approaches to adjudicating anticompetitive unilateral refusal to license and excessive pricing, the two issues most complained about by access seekers of essential technologies and that are typically under the coverage of the abuse-of-a-dominant-position scrutiny.

2. Unilateral Refusal to License

The antitrust law can be explicit in subjecting anticompetitive refusal to license to antitrust scrutiny, even for IP licensing. Unilateral refusal to license means the owner of the asset independently decides not to license. Potentially, a refusal to license claim could be implied from the circumstance, e.g., the monopolist sets the licensing conditions so high that it equals a refusal to license.

As indicated in the Introduction, some developing countries have complained that technology owners in developed countries refused to license IP-protected technologies. Generally, IPR owners have no affirmative duty to license and have the freedom to decide whether to license the IPR or not.[196] However, refusal to license IPR can be deemed anticompetitive under some circumstances, for example, when the refusal may prevent the development or exploitation of significant technological advancement. Article 31(l) of the TRIPS Agreement allows a member country to grant a compulsory license against a first patent if the implementation of a technology advancement covered by a second patent depends on the technology protected by the first patent.[197]

The anticompetitive effect of refusal to license depends on the context and may differ in the relevant market of a developed country from that of a developing country. The evolved local R&D infrastructure or the availability of alternative

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[195] *Id.*

[196] *See, e.g.*, 35 U.S.C. § 271(d)(4) (stating that a patent owner cannot be deemed guilty of misuse by virtue of its refusal to use or license the patent.).

[197] TRIPS Agreement, *supra* note 17, art. 31(l)(i).

technical solutions in a developed country may offset the anticompetitive effect. The same may not occur in the relevant market of a developing country, and the anticompetitive effect may even injure consumer welfare.[198] For example, consumers in developing countries may be too poor and vulnerable to endure even temporary excessive pricing on an essential medication.[199]

U.S. antitrust laws and E.U. competition laws provide that the refusal to license is actionable in some circumstances, though such circumstances have been deemed exceptional. China explicitly states that refusal to deal without justifiable reasons is actionable under the AML.

The U.S. antitrust regime considers an IP owner free to decide whether to use the IP, regardless of the motivation.[200] This freedom means an IP owner has no obligation to license the IP.[201] Exceptions to this general approach are available, though rare. For example, in a case involving Xerox Corporation, the U.S. Court of Appeals for the Federal Circuit ruled that a patentee has the legal right to refuse to license a patent on any terms, and declined to examine a patentee's subjective intent in refusing to deal with a competitor.[202] However, the court identified three exceptions to the antitrust immunity: (1) tying patent and unpatented products, (2) obtaining a patent through knowing and willful fraud, and (3) engaging in sham litigation.[203]

In general, exceptions to the antitrust immunity of IP licensing activities typically arise in the United States when an IP owner has attempted to expand the IPR beyond the scope granted by the relevant IP law, as such conduct is deemed anticompetitive.[204] Meanwhile, proof that the IP owner has or is likely to secure a dominant position is necessary for an exception to apply.[205]

The European Union takes a similar approach. A proprietor's refusal to license cannot itself be treated as an abuse of a dominant position, even with a return for reasonable royalties and even if the proprietor holds a dominant position.[206] Like the United States, the E.U. competition law deems refusal to license as abusive conduct

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198 Abbott et al., *supra* note 103, at 84.

199 *Id.* at 30–31.

200 Cont'l Paper Bag Co. v. E. Paper Bag Co., 210 U.S. 405, 429 (1908).

201 U.S. ANTITRUST–IP GUIDELINES, *supra* note 76, § 2.2.

202 *In re* Indep. Serv. Orgs. Antitrust Litig., 203 F.3d 1322, 1327–28 (Fed. Cir. 2000).

203 *Id.* at 1326–27.

204 HOVENKAMP et al., *supra* note 39, § 13.3, at 10; MICHAEL A. CARRIER, INNOVATION FOR THE 21ST CENTURY: HARNESSING THE POWER OF INTELLECTUAL PROPERTY AND ANTITRUST LAW 85 (2009) (noting that the *Xerox* case "is consistent with a line of cases that grants [refusal to deal] immunity as long as the challenged activity lies within the 'scope' of the patent." (citations omitted)).

205 HOVENKAMP et al., *supra* note 39, § 13.3, at 11.

206 Case 238/87, AB Volvo v. Veng (UK) Ltd., 1988 E.C.R. 6211, 6236–37; Joined Cases C-241/91 P & C-242/91 P, Radio Telefis Eireann v. Comm'n, 1995 E.C.R. I-808, I-823.

only in exceptional circumstances.[207] The CJEU has set three cumulative conditions for finding the exceptional circumstances: (1) the refusal prevents the emergence of a new product or service that has a potential consumer demand; (2) the refusal is objectively unjustified; and (3) the refusal excludes all competition in a secondary market where the proprietor is a participant.[208] Subsequently, the CJEU suggested that exceptional circumstances may be more readily met in Standard Essential Patents ("SEP") cases, as access to SEP-protected technologies is indispensable to competitors who may plan to produce standard-compliant goods and the patent owner has promised a Fair, Reasonable, and Non-Discriminatory ("FRAND") license in order for the patent to obtain its SEP status.[209]

Further, the European Union finds abuse of a dominant position if the refusal to license harms future (e.g., follow-on) innovation, competition in the downstream market, and consumer welfare.[210] For instance, in the antitrust investigation concerning Microsoft's activities in maintaining a monopoly on its Windows operating system, the European Commission concluded that Microsoft's refusal to supply its rivals with the information necessary to interoperate with its workgroup server operating systems was an abuse of a dominant position. The European Commission deemed such conduct as hindering innovation and product differentiation to the detriment of consumers.[211] The General Court[212] of the European Union agreed with the E.U. Commission, concluding that the refusal to license covered indispensable information for achieving interoperability between non-Microsoft workgroup servers and Microsoft Windows computers and servers.[213] It also found such refusal threatened to eliminate competition in the relevant market—the market for workgroup server operating systems—and that such refusal limited technical development.[214]

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[207] *Radio Telefis Eireann*, 1995 E.C.R., at I-823.

[208] Case C-418/01, IMS Health GmbH & Co. OHG v. NDC Health GmbH & Co. KG, 2004 E.C.R. I-5069, I-5082 (citing Case C-7/97, Oscar Bronner GmbH & Co. KG v. Mediaprint Zeitungs- und Zeitschriftenverlag GmbH & Co. KG, 1998 E.C.R. I-7817, 1-7830–31).

[209] Case C-170/13, Huawei Techs. Co. Ltd. v. ZTE Corp., ECLI:EU:C:2015:477, ¶¶ 47–50 (July 16, 2015).

[210] CARRIER, *supra* note 204, at 89–92. *See generally* Case T-201/04, Microsoft Corp. v. Comm'n, 2007 E.C.R. II-3619.

[211] *Microsoft Corp.*, 2007 E.C.R. at II-3946–47.

[212] The General Court in the E.U. system includes two judges from each E.U. member state. Its rulings are subject to the review by the European Court of Justice. Before 2009, the General Court was called the Court of First Instance. *General Court*, CT. JUST. EUR. UNION, https://curia.europa.eu/jcms/jcms/Jo2_7033/en/ (last visited Dec. 30, 2022).

[213] *Microsoft Corp.*, 2007 E.C.R. at II-3795, II-3797, II-3865–66.

[214] *Id.* at II-3610.

In China, refusal to license without reasonable justification may constitute abuse of a dominant position when the refusal by a business operator in a dominant market position is deemed anti-competitive, i.e., excluding or restricting competition.[215] China considers the following factors in the determination:

1. The commitments made by the undertaker on the IPR licensing;
2. Whether other undertakers must obtain the licensing of the IPR for entering the relevant market;
3. The impact of refusal to license the relevant IPR on market competition and the innovations by undertakers and the degree thereof;
4. Whether the rejected party lacks the will and ability, among others, to pay reasonable licensing fees;
5. Whether the undertaker has ever made a reasonable offer to the rejected party; and
6. Whether the refusal to license the relevant IPR may damage the interests of consumers or public interest.[216]

China's approach may be a distant cousin of the E.U. approach, which scrutinizes refusals to license, e.g., when they restrict innovation. China's threshold for finding a refusal to license to be anticompetitive seems much lower; therefore, China's approach to refusal to license is more distant from that of the U.S., which considers refusal to license as an IP owner's right and should be upheld in order to promote investments in innovation. A similar comparison shows up in the three jurisdictions' attitudes toward the debated essential facilities doctrine.

a. Refusing Access to Essential Facilities

To facilitate access to essential technologies, an antitrust law may acknowledge that refusal of access to essential facilities is a type of refusal to license and is actionable if deemed anticompetitive, and that even IP can be considered an "essential facility."

The essential facilities doctrine is an exception to the general approach that a resource owner, especially an IP owner, is free to choose whether to license the resource or not. In the relevant market, "[a] good, service, or technology developed by a private-sector (or public-sector) firm may become so widely adopted that third-party access to it becomes necessary as a condition of doing business."[217] A facility is essential if a competitor of the facility owner needs access to the facility to compete.

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[215] AML–IPR Guidelines, *supra* note 95, art. 16.

[216] *Id*.

[217] Abbott et al., *supra* note 103, at 83 ("In the technology area, this phenomenon is sometimes referred to as the 'network effect' in the sense that the more widely adopted a technology becomes, the more important it becomes to doing business.").

Such a need must be substantial, i.e., more than an inconvenience or rising cost resulting from the lack of access.[218] Generally, "unilateral refusals to deal with specific customers on nondiscretionary terms are generally illegal only if the subject of the refusal is an 'essential facility.'"[219] The essential facilities doctrine negates an IP owner's exclusive right to an invention and refusal to deal when applied to the IP context.

Unlike the refusal to license approach discussed above, the essential facilities doctrine focuses on the resource owner's status in the market, instead of its conduct. When the resource owner in a dominant position covers an essential facility for competition and the owner is a competitor in the relevant market that relies on the facility, restricting access to the essential facility may invite antitrust law scrutiny.

Application of the essential facilities doctrine requires the determination that the resource at issue is essential. The eligible content of the resource can be broad, including technology, data, or material, whether IP-protected or not.[220] Correspondingly, compelled or statutory licensing—a possible remedy upon a finding of an antitrust violation in refusing to license essential facilities—covers such broad eligible content. This is in contrast to the compulsory licensing remedy provided by the IP regime (e.g., via the TRIPS Agreement). The latter covers content under the protection of patent and copyright laws.[221]

In the United States, an essential facility owner may be required to provide access to the facility to competitors on fair terms, unless the facility precludes shared access.[222] Refusing access to essential facilities is illegal if such a restriction forecloses competition in the relevant market and helps the facility owner acquire or maintain a market monopoly.[223] One U.S. court formulated the test for a claim of essential facilities as: "(1) control of the essential facility by a monopolist; (2) a competitor's inability practically or reasonably to duplicate the essential facility; (3) the denial of

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[218] HOVENKAMP et al., *supra* note 39, § 13.3, at 13 (citing Alaska Airlines, Inc. v. United Airlines, Inc., 948 F.2d 536, 544–46 (9th Cir. 1991)).

[219] *Id.* § 13.2, at 8; *see also* Allen Kezsbom & Alan V. Goldman, *No Shortcut to Antitrust Analysis: The Twisted Journey of the "Essential Facilities" Doctrine*, 1996 COLUM. BUS. L. REV. 1, 2 (1996) ("[W]hen a monopolist or near-monopolist controlling what is deemed an 'essential facility' denies an actual or potential competitor access to that facility, where the facility cannot reasonably be duplicated and where there is no valid . . . justification for denying access, then the doctrine is applied.").

[220] Sally Van Siclen, *Background Note* to ORG. FOR ECON. COOP. & DEV. [OECD], POLICY ROUNDTABLES: THE ESSENTIAL FACILITIES CONCEPT 7–9 (1996).

[221] *See, e.g.*, TRIPS Agreement, *supra* note 17, arts. 9, 31; *see* discussion *supra* Section I.B.2.

[222] HOVENKAMP et al., *supra* note 39, § 13.3, at 12–13.

[223] *Id.* § 13.3, at 14.

the use of the facility to a competitor; and (4) the feasibility of providing [access to] the facility."[224]

The essential facilities doctrine originated in the United States; however, use of the doctrine currently is not popular in the U.S. courts. The Supreme Court of the United States ("SCOTUS") claimed in 2004 that it had never recognized nor approved this doctrine.[225] SCOTUS reasoned that "[c]ompelling such firms to share sources of their advantage is in some tension with the underlying purpose of antitrust law, since it may lessen the incentive for the monopolist, the rival, or both [i.e., the firm and its competitors'] to invest in those economically beneficial facilities."[226] Forced sharing is deemed to require a court or an antitrust authority to function as "central planners, identifying the proper price, quantity, and other terms of dealing"; such a role may be ill-fitting for the agencies who rarely practice it, nor desirable in a market economy. And compelled negotiation between competitors may facilitate collusion, "the supreme evil of antitrust."[227] Prominent antitrust law scholars in the United States have also questioned this doctrine.[228]

The United States currently considers the application of the essential facilities doctrine to IP as undermining an IP owner's inherent right to decide whether to unilaterally license the IP or not.[229] In the United States, with limited exceptions, the owner of an IP, like any other property, may refuse to license that property. SCOTUS further held that when a defendant has no duty to deal with a rival, it may set the price as it pleases, including a price that makes it impossible to compete with.[230]

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[224] MCI Commc'ns Corp. v. Am. Tel. & Tel. Co., 708 F.2d 1081, 1132–33 (7th Cir. 1983) (citations omitted).

[225] Verizon Commc'ns Inc. v. Law Offs. of Curtis V. Trinko, L.L.P., 540 U.S. 398, 411 (2004) (citation omitted).

[226] *Id.* at 407–08.

[227] *Id.* at 408.

[228] *See, e.g.*, Phillip Areeda, *Essential Facilities: An Epithet in Need of Limiting Principles*, 58 ANTITRUST L.J. 841 (1990); Herbert J. Hovenkamp, *Unilateral Refusals to Deal, Vertical Integration, and the Essential Facility Doctrine* (July 14, 2008) (Fac. Scholarship at Pa. L.), 1779.

[229] HOVENKAMP et al., *supra* note 39, § 13.3, at 15. In previous lower U.S. court cases, however, at least agreed that the essential facilities doctrine was applicable to copyrighted or copyrightable materials. *See* Associated Press v. United States, 326 U.S. 1, 12–18 (1945); Poster Exch., Inc. v. Nat'l Screen Serv. Corp., 198 F. Supp. 557, 561–62 (N.D. Ga. 1961); BellSouth Advert. & Publ'g Corp. v. Donnelley Info. Publ'g, Inc., 719 F. Supp. 1551, 1565–66 (S.D. Fla. 1988), *rev'd on other grounds*, 999 F.2d 1436 (11th Cir. 1993); Rural Tel. Serv. Co., Inc. v. Feist Publ'ns, Inc., 737 F. Supp. 610, 617–20 (D. Kan. 1990), *rev'd on other grounds*, 957 F.2d 765 (10th Cir. 1992); Serv. & Training, Inc. v. Data Gen. Corp., 737 F. Supp. 334, 343–44 (D. Md. 1990); Data Gen. Corp. v. Grumman Sys. Support Corp., 761 F. Supp. 185, 191–92 (D. Mass. 1991).

[230] Pac. Bell Tel. Co. v. Linkline Commc'ns, Inc., 555 U.S. 438, 449–52 (2009).

The E.U. test (formulated by the CJEU) for applying the essential facilities doctrine examines whether the alleged offense meets four factors. The first factor is indispensability—i.e., the essential facility is indispensable to the user and the market offers no actual or potential substitute. The second factor is impossibility—i.e., the competitor cannot offer a new product or service for potential consumer demand without the essential facility.[231] The remaining two factors are that the refusal would likely eliminate all competition in the downstream market from the person requesting the access, and that the refusal is not objectively justified.[232]

Unlike the United States, which walked away from recognizing IP as an essential facility, the E.U. competition regime may consider IP an essential facility. The European Union may require a dominant business to supply access to an IP-protected resource when the exercise of IPR would permanently exclude competition in a relevant market. The European Union, however, emphasizes that such a requirement be imposed only when the dominant business has an absolute stranglehold on the relevant market, i.e., beyond the fact that it merely obtains a competitive advantage by its control of the essential facility.[233] For example, the CJEU has suggested that access to technologies protected by SEPs is indispensable to competitors who may plan to produce standard-compliant goods.[234] The fact that the SEP owner has promised a FRAND license in order for the patent to obtain its SEP status would further support a finding of an exceptional circumstance for concluding abuse of a dominant position upon the SEP owner's refusal to license.[235]

China explicitly recognizes that IP can constitute essential facilities in its Provisions on IPR Abuse.[236] In China, IP can be essential facilities and subject to AML regulations when: (1) the IP at issue has no reasonable substitute and is essential for other operators to compete in the relevant market; (2) refusing to license the IP will negatively impact competition and innovation in the relevant market, and will be detrimental to consumer welfare and/or the public interest; and (3) licensing the IP would not cause the IP owner unreasonable harm.[237] Please note that the second consideration involves consumer welfare and the public interest; one can thus argue that when the IP-protected technology is relevant or essential to

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[231] Case C-7/97, Oscar Bronner GmbH & Co. KG v. Mediaprint Zeitungs-und Zeitschriftenverlag GmbH & Co. KG, 1998 E.C.R. I-7817, I-7830–31 (citing Joined Cases C-241/91 P & C-242/91 P, Radio Telefis Eireann v. Comm'n, 1995 E.C.R. I-808, I-824).

[232] *Id.*

[233] *Id.* at I-7832.

[234] Case C-170/13, Huawei Techs. Co. Ltd. v. ZTE Corp., ECLI:EU:C:2015:477, ¶¶ 49–50 (July 16, 2015).

[235] *Id.* ¶¶ 53–59, 71.

[236] Provisions on IPR Abuse, *supra* note 46, art. 7.

[237] *Id.*

consumer welfare or the public interest, refusing to license the IP may be deemed as detrimental.

The Provisions on IPR Abuse declare that when an IP is deemed an essential facility for production and operation activities, the owner (who is thus deemed to be in a dominant position) shall not refuse other business operators, without justifiable reasons, to use the IP under reasonable conditions.[238] Here, key terms are yet to be disputed and interpreted; for example, would a business operator holding an essential facility necessarily be in a dominant market position? What would be a "reasonable substitute" for the IP at issue? What would be a "justifiable reason" for refusal to license the IP? What would be "reasonable conditions" for the license? What would be deemed as causing the IPR owner no "unreasonable harm"?

In April 2021, within five months of the publication of the Provisions on IPR Abuse, Chinese courts issued a first-instance judgment in a case in which plaintiffs had requested the Ningbo Intermediate People's Court to license non-SEPs based on the essential facilities doctrine.[239] The plaintiffs argued that the defendant Hitachi Metals' patent portfolio on neodymium-iron-boron ("NdFeB") magnets should be deemed an essential facility for the industry because the patent portfolio could not be substituted and avoided. The court determined that Hitachi Metals had a dominant position in the relevant technology market.[240] The court concluded that Hitachi Metals' patent portfolio of NdFeB magnets was an essential facility in the industry based on the following reasons: (1) the facilities were essential for other undertakings to compete; (2) the defendant, as the holder of IPR, controlled access to the facilities in dispute; (3) other competitors could not duplicate the same facilities within a reasonable scope; (4) the defendant refused to let a competitor use the facilities when the plaintiff had expressly requested a license and was willing to pay reasonable royalties; and (5) it was possible for the defendant to grant the patent license to the plaintiff, and there was no justifiable reason for the defendant's refusal

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[238] *Id.*

[239] Haifeng Huang, *Hitachi Metals: Chinese Court Enforces Mandatory Licensing for "Essential Facility" Patents in Antitrust Case*, MKT. SCREENER (June 22, 2021, 2:11 AM), https://www.marketscreener.com/quote/stock/HITACHI-METALS-LTD-6492030/news/Hitachi-Metals-Chinese-Court-Enforces-Mandatory-Licensing-For-Essential-Facility-Patents-In-Anti-35664380/; Nathan Bush & Ray Xu, *Framing Patents as Essential Facilities in Chinese Antitrust:* Ningbo Ketian Magnet Co., Ltd. v. Hitachi Metals, DLA PIPER (Sept. 7, 2021), https://www.dlapiper.com/en/us/insights/publications/2021/09/antitrust-matters-september-2021/framing-patents-as-essential-facilities-in-chinese-antitrust/.

[240] The court made its determination upon considering the following factors: (1) Hitachi Metals had the ability to control price and other trading conditions in the relevant upstream market; (2) Hitachi Metals had the ability to exclude others from entering the relevant upstream market; (3) Hitachi Metals had obvious control over unauthorized producers; and (4) Hitachi Metals had a strong influence on the downstream market through the agreement relationship formed by the patent license. Bush & Xu, *supra* note 239.

to license. The court, therefore, held that Hitachi Metals' relevant conduct constituted a refusal to license under the AML.[241]

In reality, IP may rarely be considered an essential facility, as markets often provide substitutes for subject matters covered by the IPR, and a lack of viable alternatives is a crucial characteristic of essential facilities.[242] The United States overall has rejected the essential facilities doctrine, and the European Union uses it only in exceptional circumstances. What would the effect of China's approach be? We need to watch attentively.

Meanwhile, in devising their approaches to address IP owners' refusal to license essential technologies, developing countries may consider leveraging the essential facilities doctrine to improve access to essential technologies or resources owned by domestic or foreign entities. In this regard, China's explicit endorsement of potentially treating IP as essential facilities and the E.U.'s openness to regarding IP as essential facilities may be examples for developing countries to consider. However, as will be discussed in detail in Section III.A, a government should apply the essential facilities doctrine with extreme care.

3. Abusive or Excessive Pricing

To facilitate access (e.g., reasonable prices) to essential technologies, a jurisdiction may be explicit in subjecting abusive or excessive pricing to antitrust scrutiny.

The second major complaint developing countries have expressed regarding access to needed technologies is that the prices charged by technology owners are too high.[243] Such a claim should be verified on a case-by-case basis. Meanwhile, excessive pricing may be actionable conduct under abuse-of-a-dominant-position scrutiny.[244]

Excessive pricing occurs when the commodity's price is so high that it has no reasonable connection with the cost of developing and making the product, i.e., a good, service, or technology.[245] Such pricing conduct constitutes abuse of a

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[241] Huang, *supra* note 239. This case is China's first case involving non-SEP holders abusing a dominant market position. The first-instance judgment may not be the final one, however, as Hitachi Metals has appealed the ruling to the Supreme People's Court—the highest court in China. *Id.*

[242] Huang et. al., *supra* note 45, at 1116.

[243] TRADE CAPACITY BLDG. PROJECT, USAID BRIEFING PAPER, INTELLECTUAL PROPERTY AND DEVELOPING COUNTRIES: AN OVERVIEW 8–10 (Dec. 2003).

[244] Abuse-of-a-dominant-position scrutiny can also cover pricing conduct that sets the price so low—for example, to force out existing or potential competitors—that it bears no reasonable relationship with the cost of developing and making the product. Abbott et al., *supra* note 103, at 77. As below-cost pricing has not been a complaint from developing countries regarding access to needed technology, this Article will not discuss this further.

[245] *Id.* at 77–78.

dominant position if the consumers have no viable alternatives. It is necessary to meet two criteria to condemn IPR-related excessive pricing as an abuse of a dominant position: first, the IPR owner must have a dominant position in the market, and second, the price must be objectively excessive.[246]

As a general matter, monopolists in the United States are free to charge a monopoly price; this is especially true regarding IP, which is designed to provide its owner the ability to charge a fee to generate revenue to recover the initial R&D investment.[247] The U.S. antitrust regime looks at the conduct by which a monopolist acquires or maintains its dominant position, but it does not regard excessive pricing as one of these practices.[248] The U.S. antitrust agencies have indicated that they will rarely, if ever, intervene concerning the question of the appropriate price to be charged for IP.[249]

In the European Union, excessive pricing may be an abuse of a dominant position. The CJEU suggested that antitrust law scrutiny should come in when a dominant entity charges an exorbitant price that has no reasonable connection to the economic value of the product supplied.[250] However, the CJEU does engage in a balancing consideration when the pricing concerns IP, as IP entitles its owner to recover R&D investment.[251] Meanwhile, some scholars view that we should not calculate the price on the return of an R&D investment return ex-post after success has been achieved.[252] They advocate for incorporating into the price the risks (e.g., the actual and potential failures) the technology owner has taken in investing in the R&D that results in the product offering.[253]

China explicitly declares unfairly high prices charged against a product or service as an abuse of a dominant market position.[254] In determining whether there is abusive pricing (unfairly high or unfairly low), in general, China considers the following factors:

1. Requiring the transaction counterparty to exclusively grant back the technologies improved by the latter.

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[246] NGUYEN, *supra* note 51, at 298.

[247] HOVENKAMP et al., *supra* note 39, § 13.5, at 54.

[248] *Id.* § 13.5, at 54–55; *see also* Brulotte v. Thys Co., 379 U.S. 29, 33–34 (1964).

[249] However, in some circumstances, it may be unlawful to collect royalties that extend beyond the scope of the IPR, or extend past the IPR's expiration. *See* Kimble v. Marvel Ent., LLC, 576 U.S. 446, 453 (2015).

[250] Case 27/76, United Brands Co. v. Comm'n, 1978 E.C.R. 209, 299.

[251] HOVENKAMP et al., *supra* note 39, § 45.5, at 105.

[252] *See, e.g.,* Huang et al., *supra* note 45, at 1119–20.

[253] *Id.* at 1120.

[254] AML, *supra* note 94, art.17 ("Undertakings holding dominant market positions are prohibited from doing the following by abusing their dominant market position: (1) selling commodities at unfairly high prices or buying commodities at unfairly low prices; . . .").

2. Prohibiting the transaction counterparty from questioning the validity of its intellectual property rights.
3. Restricting the transaction counterparty from using competing products or technologies without infringing upon any intellectual property rights after the licensing agreement expires.
4. Continuing to exercise any intellectual property rights with an expired term of protection or determined as invalid.
5. Prohibiting the transaction counterparty from trading with any third party.
6. Requiring the transaction counterparty to attach any other unreasonable restriction.[255]

In analyzing whether the licensing of IP is at an unfairly high price, China considers the following factors:

1. The calculation method for license fees and the contribution of the IPR to the value of related goods;
2. Commitments made by the undertaker for the licensing of the IPR;
3. The licensing history of the IPR or comparable licensing fee rates;
4. The terms of franchise that result in unfairly high price, including collecting licensing fees that exceed the geographical scope of the IPR or the scope of goods covered; and
5. Whether license fees for any expired or invalid IPR are collected at the time of package licensing. [256]

China also analyzes whether a business operator licenses SEPs at an unfairly high price with considerations such as the overall license fees borne by the commodities that meet the relevant standards and their impact on the normal development of related industries.[257] Meantime, China's Interim Regulations on National Standards Involving Patents, which went into effect in 2014, require patents included in national standards to be licensed on FRAND terms.[258] The Interim Regulations also provide that relevant authorities must negotiate with the patent holder regarding a method for the patent holder to divest the relevant patents

[255] Provisions on IPR Abuse, *supra* note 46, art. 10.

[256] AML–IPR Guidelines, *supra* note 95, art. 15.

[257] *Id.*

[258] Zhuanli Guojia Biaozhun Guanli Zan Xing Guiding (专利国家标准管理暂行规定) [Interim Provisions on the Administration of National Standards Involving Patents] (promulgated by the Nat'l Standardization Admin. Comm. & State Intell. Prop. Off., Dec. 19, 2013, effective Jan 1, 2014), art. 9, available at https://wipolex.wipo.int/en/text/318758.

if an essential patent holder for mandatory national standards does not agree to license on FRAND terms.[259]

Though China published the AML-IPR Guidelines and the Provisions on IPR Abuse only in late 2020, drafts of these regulations had been circulating since 2010.[260] Decisions made by the Chinese jurisdiction likely are in line with the essence of these regulations. For example, in its October 2013 judgment for one of the two *Huawei Technologies v. InterDigital* cases, the Guangdong High Court of China held that U.S.-based InterDigital ("IDC") abused its dominant market position by refusing to license SEPs for 3G wireless communication devices on FRAND terms.[261] The High Court affirmed the lower court's finding that IDC set a discriminatory and unreasonably high royalty rate for its Chinese SEPs and non-SEPs, ordered that IDC cease the conduct, and awarded the $3.1 million in damages that Huawei claimed.[262] Here, the High Court deemed the royalties charged by IDC to Huawei to be unfairly high, in part because they were significantly higher than those that IDC offered to other licensees such as Apple, Samsung, and RIM.[263] In the corresponding administrative proceeding, China's National Development and Reform Commission ("NDRC") eventually suspended its investigation into whether IDC abused its dominant position by seeking discriminatorily high royalties on Chinese essential patents upon receiving IDC's commitments of compliance.[264]

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[259] *Id.* art. 14.

[260] For example, the Provisions on IPR Abuse had an earlier version published in 2015. *See* Guanyu Jinzhi Lanyong Zhishichanquan Paichu Xianzhi Jingzheng Xingwei de Guiding (关于禁止滥用知识产权排除、限制竞争行为的规定) [Provisions on Prohibition of Abuse of Intellectual Property Rights to Exclude and Restrict Competition] (promulgated by Order No. 74 of the St. Admin. for Indus. & Com., Apr. 7, 2015, effective Aug. 1, 2015), available at https://gkml.samr.gov.cn/nsjg/fgs/202011/t20201103_322857.html.

[261] *Chinese Court Publishes Decisions Finding that InterDigital Violated AML Through Discriminatory Pricing, Sets FRAND Rate for Licensing InterDigital's SEPs Under Chinese Standards*, ORRICK ANTITRUST WATCH (June 6, 2014), https://blogs.orrick.com/antitrust/2014/06/06/chinese-court-publishes-decisions-finding-that-interdigital-violated-aml-through-discriminatory-pricing-sets-frand-rate-for-licensing-interdigitals-seps-under-chinese-standards/ [hereinafter *Huawei v. IDC Cases*] (citing InterDigital Commc'ns Co., Ltd. v. Huawei Techs. Co., Ltd. (Guangdong Higher People's Ct., No. 305 of Mingsanzhongzi, Dec. 16, 2013); Huawei Techs. Co., Ltd. v. InterDigital Commc'ns Co., Ltd. (Guangdong Higher People's Ct., No. 306 of Mingsanzhongzi, Dec. 21, 2013)).

[262] *Id.*

[263] Michael Han & Kexin Li, Huawei v. InterDigital*: China at the Crossroads of Antitrust and Intellectual Property, Competition and Innovation*, COMPETITION POL'Y INT'L (2013), https://www.competitionpolicyinternational.com/assets/Uploads/AsiaNovember3.pdf.

[264] Guojia Fagaiwei Guanyu Jiage Jiang he Fan Longduan Gongzuo de Xinwen Fabu Hui (国家发改委关于价格监管和反垄断工作的新闻发布会) [National Development and Reform Commission Press Conference on Price Supervision and Anti-Monopoly Work], ZHONGGUO

Therefore, again, developing countries may learn from the E.U. and Chinese approaches toward excessive pricing, treating excessive pricing as actionable conduct under abuse-of-a-dominant-position scrutiny.

D. Tailoring Remedies

Remedy-wise, when an owner of an essential technology refuses to license without justifiable reasons, the government can facilitate a voluntary license or order a mandatory license on the essential technology.[265] In the event that the technology owner requests injunctive relief against an alleged infringer, the judicial system may refuse such a request.

Among the various remedies for finding an abuse of a dominant position, compelled or statutory licensing and injunctive relief are probably most relevant for accessing needed technologies or essential facilities for technology development and deployment. The scope of compelled or statutory licensing is likely broader than the compulsory licensing remedy provided by multilateral IP instruments. As discussed in Section I.B.2, multilateral IP agreements, such as the TRIPS Agreement and the Paris Convention, allow a country to use compulsory licensing to address abusive IPR use or restrictive licensing practices. However, the TRIPS Agreement only explicitly allows compulsory licensing against patents and copyrights and prohibits compulsory licensing against trademarks, while being silent on compulsory licensing against other forms of IP.[266] The Paris Convention is only explicit about compulsory licensing to address patent abuses.[267] Compelled or statutory licensing may cover all forms of IP and non-IP protected subject matters such as materials, data, and infrastructures.

Further, a court may also deny injunctive relief requested by the abuser if, for example, the abuser sues for alleged infringement of its IPR by entities that it has blocked from accessing the resource at issue. A patentee's lack of participation in the

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HULIANWANG XINWEN ZHONGXIN (中国互联网新闻中心) [CHINA INTERNET NEWS CTR.] (Feb. 19, 2014, 9:30 AM), http://www.china.com.cn/zhibo/2014-02/19/content_31502397.htm. After NDRC concluded its investigations, "IDC agreed (1) to offer a worldwide portfolio license of only its SEPs and to comply with FRAND principles while negotiating license agreements with Chinese manufacturers; (2) to not require royalty-free, reciprocal cross licenses; and (3) to offer binding arbitration before seeking exclusionary or injunctive relief." *Huawei v. IDC cases*, *supra* note 261.

[265] *See* United States v. Terminal R.R. Ass'n of St. Louis, 224 U.S. 383, 384–85, 411–13 (1912). SCOTUS did not set the conditions or rates for access to the facility at issue but let the parties and the lower courts define adequate terms and organizational structures. The Court left a potential break-up on the table in case the defendant did not comply with the Court's expectations. The threat of a break-up served as an incentive for the defendant to reform its practice to include competitors.

[266] *See* TRIPS Agreement, *supra* note 17, arts. 9, 21, 31.

[267] Paris Convention, *supra* note 105, art. 5, § A, ¶ 2.

relevant market is the most common reason courts deny injunctive relief.[268] Scholars have also suggested that courts deny permanent injunctions for infringement when the public interest is at stake and allow compensation instead, preferably in the form of reasonable royalties.[269]

In the European Union, an SEP owner's refusal to license the SEP while seeking injunctive relief against an alleged infringer would make the abuse-of-a-dominant-position finding relatively easy if the SEP owner has failed to meet specific requirements. Such specific requirements include: (1) the SEP owner has given notice or consulted previously with the alleged infringer so that the alleged infringer has had an opportunity to show its willingness to take a license; (2) the SEP owner has provided the alleged infringer a specific written offer for a license on FRAND terms, identifying, among other terms, the amount of the royalty and the way the royalty is to be calculated; and (3) the alleged infringer has not been precluded from challenging the validity or essentiality of the SEP or prohibited from doing so in the future.[270] Meanwhile, if the SEP owner is not seeking injunctive relief, e.g., only claiming remedy for past infringement, the CJEU does not imply abuse of a dominant position.[271]

In China, most courts are unwilling to grant an injunction against the unlicensed use of SEP. Meanwhile, in *Iwncomm v. Sony*, an IP case regarding a SEP in a designated national standard wireless communication, for the first time, a Chinese Court broke away from the convention and granted injunctive relief for a SEP owner.[272] The Court here adjudicates injunctive relief by assessing which party should be held responsible for the failure to reach a license agreement for the SEP at issue.[273] No injunctive relief should be granted when both parties had no obvious fault, or when the SEP owner violated its FRAND obligation hence caused the failure to reach a license agreement and the SEP implementer had no obvious fault.[274] Injunctive relief should be granted when the SEP implementer had obvious fault and the SEP owner had not.[275] When both parties had faulted, the adjudication of injunctive relief should be the result of evaluating the degree of each party's fault and balancing each party's interests.[276]

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[268] HOVENKAMP et al., *supra* note 39, § 13.2, at 6.

[269] *See, e.g.*, Reichman, *supra* note 151, at 1139–40.

[270] Case C-170/13, Huawei Techs. Co. Ltd. v. ZTE Corp., ECLI:EU:C:2015:477, ¶¶ 60–69 (July 16, 2015).

[271] *Id.*, ¶¶ 73–76.

[272] *Xi'an Xidian Jietong Wireless Network Commc'n Co., Ltd. [Iwncomm] v. Sony Mobile Commc'n Products (China) Co., Ltd.* (Beijing Intell. Prop. Ct., No. 1194 of Zhiminchuzh, Mar. 22, 2017), available at http://www.pkulaw.cn.

[273] *Id.*

[274] *Id.*

[275] *Id.*

[276] *Id.*

In summary, avenues are available in the antitrust regime to address anticompetitive IPR practices such as unreasonable refusal to license or excessive pricing; both are impediments that developing countries most often complain of when attempting to access needed technologies. Countries hence may design their antitrust laws to address these challenges unilaterally to improve access to essential technologies by utilizing, for example, the four aspects discussed above.

III. IMPLEMENTATION CONSIDERATIONS

Due to the considerable gap between developed and developing countries' ownership of technologies, developing countries likely design their laws to encourage and promote needed technology transfer. Offering adequate IP protection at least helps developing countries attract advanced foreign technologies. Hence, developing countries probably should not remove or weaken IP protection. Meanwhile, developing countries may leverage their antitrust laws to address abusive behaviors in voluntary licensing of essential technologies. Technology-transfer-oriented antitrust laws may help developing countries to access needed technology under reasonable terms and at affordable prices. However, developing countries need to pay attention to the necessary balance in implementing such an antitrust law and overcoming internal and external hurdles for the implementation.

A. Necessary Balance

Antitrust law and regulations can contribute to a country's economic development. Yet, they may "raise controversial questions of the role of [government] regulation, markets and private enterprise."[277] Developing countries need to balance important considerations when designing and implementing antitrust regimes that reflect their national needs and improve access to essential technologies.

The primary balance would be that between government regulatory power and the market mechanism. How far should we let government power regulate voluntary licensing, e.g., IP licensing? Should we let the government regulate the market for social welfare considerations? Relatively untethered discretion by the government in regulating the market economy would be a dangerous route to proceed. Therefore, such regulation should only be limited to scenarios of extreme necessity. For example, such regulation may apply when there is the need to access essential medical technologies to address public health emergencies such as the COVID-19 pandemic or essential clean technologies for managing food shortage or safety caused by climate change. Antitrust regulations against IP licensing should probably

[277] ABBE BROWN, ANDRES GUADAMUZ & JORDAN HATCHER, AHRC RSCH. CTR. FOR STUD. IN INTELL. PROP. & TECH. L., UNIV. OF EDINBURGH, THE IMPACT OF FREE TRADE AGREEMENTS ON INFORMATION TECHNOLOGY BASED BUSINESS 48 (2007).

avoid addressing social welfare considerations going beyond scenarios demanding life-saving interventions.

Meanwhile, in providing WTO member countries a venue to regulate IPR abuse, Article 40 of the TRIPS Agreement does require the venue to be used consistently with other provisions in the TRIPS Agreement.[278] That is, this venue is not to be used casually. For example, it should not be used as a unilateral means to chip away at, hence destabilize, the negotiated and established multilateral IP regime.

Thirdly, antitrust regulation may adversely impact foreign direct investment. When antitrust law becomes overly restrictive on the exercise of IPR or the pricing of its associated goods, services, or technologies, IP owners may limit the distribution of both the IP and the related goods, services, or technologies in the local market or even exit the market.[279]

Further, antitrust enforcement may produce an unequal effect on foreign and local entities in developing countries. Antitrust law is to be applied equally to domestic and foreign entities without discrimination.[280] However, most local entities in developing countries are often less likely to reach dominant positions in the relevant markets or have built formidable IP portfolios. Hence, foreign technology owners likely would experience a larger share of the enforcement of local antitrust law, which may further deter their willingness to deploy essential technologies to the local jurisdiction or even participate in the local markets. The latter effect may also negatively impact the desired economic development in the local jurisdiction; for example, by reducing local employment as dominant businesses likely employ a significant local workforce.

Most importantly, the essential facilities doctrine should be applied with much care, especially toward IP licensing. First, an antitrust authority or a court applying this doctrine likely needs to facilitate a compelled license and determine its price, which probably is not the expertise of the antitrust authority or the court.[281] Second, a refusal to license likely is motivated by efficiency, and not exclusion, as the refusal removes additional profits the refuser could have made.[282] More importantly, liberal use of essential facilities doctrine on IP would likely discourage investments in the subject matter upfront or demotivate competitors from finding alternative solutions

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[278] TRIPS Agreement, *supra* note 17, art. 40(2) (providing that a WTO member "may adopt, consistently with the other provisions of this Agreement, appropriate measures to prevent or control such practices . . . in the light of the relevant laws and regulations of that Member").

[279] *See* James F. Rill & Mark C. Schechter, *International Antitrust and Intellectual Property Harmonization of the Interface*, 34 LAW & POL'Y INT'L BUS. 783 (2003).

[280] *See generally* CHENG, *supra* note 42, ch. 10, at 357–97.

[281] Verizon Commc'ns Inc. v. Law Offs. of Curtis V. Trinko, L.L.P., 540 U.S. 398, 407–08 (2004).

[282] *See* Zachary Abrahamson, Comment, *Essential Data*, 124 YALE L.J. 867, 873 (2014).

or producing follow-on innovation, which would hamper innovation, and therefore hamper market competition and consumer welfare.[283]

Meanwhile, developing countries may apply the essential facilities doctrines in a different context than full-fledged market economies. Developing countries likely are net IP importers, and hence may have a less favorable view of the importance of IPR.[284] In addition, developing countries' markets likely are highly concentrated and not competitive; granting access to a dominant player's resources likely increases market competition and, therefore, consumer welfare.[285] Meantime, the dominant players in developing countries often benefit from government subsidies or other forms of support via political connection if they are not state-owned enterprises. Hence, the forced sharing of resources with potential competitors may not seriously undermine the incentive to innovate.[286]

One concern for regulating abusive or excessive pricing is that an antitrust authority needs to establish a reasonable price, which requires from the patent holder or the product producer reliable information concerning the costs of development and production.[287] In addition, compelling an IPR owner to license also means that the court or the government needs to monitor the price the IPR owner sets on the license. Otherwise, an unwilling IPR owner may charge a high price to discourage the licensing.[288]

In implementation, price regulation need not be that difficult, as a court or an antitrust authority only needs to decide whether the price charged is out of proportion to the resource's intrinsic value.[289] The antitrust regime does not need to provide its valuation or a specific substitute price for the market. An antitrust authority may also deem the resource owner's refusal to supply cost information for determining the existence of excessive pricing as grounds for finding abuse of a dominant position.[290]

However, in developing countries, it may be necessary for an antitrust authority to take on price regulation. The markets in developing countries may lack the ability to self-correct excessive pricing. In addition, consumers in these markets may be too

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[283] *Communication from the Commission—Guidance on the Commission's Enforcement Priorities in Applying Article 82 of the EC Treaty to Abusive Exclusionary Conduct by Dominant Undertakings*, 2009 O.J. (C 45) 7, 18–20, ¶¶ 75, 89.

[284] Salil Mehra & Yanbei Meng, *Essential Facilities with Chinese Characteristics*: *A Different Perspective on the Conditional Compulsory Licensing of Intellectual Property*, 3 J. ANTITRUST ENF'T, at i194, i196 (Supp. 2015); TRADE CAPACITY BLDG. PROJECT, *supra* note 243, at 4–10.

[285] *See* CHENG, *supra* note 42, at 376–77.

[286] *Id.* at 377.

[287] Abbott et al., *supra* note 103, at 78.

[288] HOVENKAMP et al., *supra* note 39, § 13.2, at 10.

[289] *See* ROBERT P. MERGES, JUSTIFYING INTELLECTUAL PROPERTY 185 (2011).

[290] Abbott et al., *supra* note 103, at 78.

vulnerable to bear such excessive prices for basic necessities such as food or medicine, even for a short period.[291]

Meanwhile, a country should judiciously use the remedies discussed in Section II.D such as compelled or compulsory licensing, statutory licensing, or denial of injunctive relief, when necessary. Overusing them may scare away foreign technology owners or stifle incentives for domestic technology innovation.[292]

B. Developing Countries' Hurdles

Despite the need to carefully balance important considerations when leveraging antitrust law to improve access to essential technologies, this approach remains a better approach than reforming the IP regime under negotiated and established multilateral treaties. In reality, developing countries have been paying attention to the antitrust law venue. In 2020, more than 125 jurisdictions offer an antitrust law regime, growing from 12 in 1970, and more developing countries are in the process of doing so.[293]

In implementing antitrust law to foster innovation and technology transfer, a developing country may need to overcome certain hurdles. For example, while many developing countries have installed antitrust laws, the subsequent enforcement efforts may not be there.[294] Consequently, the full effect of antitrust law is not in place in most developing countries. UNCTAD has also concluded that the antitrust authorities in many developing countries were ill-equipped to handle antitrust law's interlace with IP law.[295] Further, developing countries may lack an antitrust law culture or political will for establishing and enforcing an antitrust regime.[296] They may also need to build up internal capacities such as skilled antitrust law experts and

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[291] CHENG, *supra* note 42, at 386.

[292] The focus of this Article is on whether and how we may leverage countries' relative regulatory autonomy in antitrust laws to address IPR abuse and improve access to essential technologies. The Author sees such leverage as an alternative or parallel means to reform the well-established multilateral IP regime for improving technology transfer. Meanwhile, such leverage may elicit concern about its impact on the coherency among IP, antitrust law, innovation, and industry development. The Author plans to examine how to construct and maintain such coherency in upcoming research on IP, antitrust, and innovation in developing countries.

[293] *See* Org. for Econ. Coop. & Dev. [OECD], *OECD Competition Trends*, at 11 (2020), https://www.oecd.org/daf/competition/OECD-Competition-Trends-2020.pdf; NGUYEN, *supra* note 51, at 165 n.24 (citing COMPETITION REGIMES IN THE WORLD: A CIVIL SOCIETY REPORT, at xxvii–xxxi (Pradeep S. Mehta ed., 2006)). Globally there are about 61 developed countries and 134 developing countries. *See* XIANG, *supra* note 15, at 10–25.

[294] Carsten Fink, *Promoting Checks and Balances*, *in* INTELLECTUAL PROPERTY AND SUSTAINABLE DEVELOPMENT 363 , 363 (Ricardo Meléndez-Ortiz & Pedro Roffe eds., 2009).

[295] U.N. Conference on Trade and Development, *UNCTAD Perspective on Competition and Consumer Policy*, 28 (2013).

[296] *See generally* NGUYEN, *supra* note 51, § 3.4, at 244.

adequate resources to formulate and implement antitrust laws and policies effectively.[297] These hurdles should be addressed for antitrust law to facilitate technology development and deployment successfully.

Meanwhile, developing countries likely experience pressures from trading partners—mostly developed countries—when attempting to leverage domestic antitrust law to enhance technology transfer. For example, in negotiating for trading advantages, developing countries may formally relinquish their options to leverage the TRIPS Agreement's flexibilities, including the ability to implement measures such as antitrust law and policy, to address restrictive business practices.[298]

CONCLUSION

Both intellectual property law and antitrust law can encourage innovation and improve access to essential technologies. Intellectual property law may incentivize investment in the R&D for technology advancements, and the attraction of patent protection in particular may enhance the disclosure of the resulting inventions. Antitrust law can enhance competition, and therefore innovation, in the relevant markets. In addition, antitrust laws addressing IPR abuses, such as anticompetitive refusal to license or excessive pricing, may improve access to essential technologies. Judiciously employing the essential facilities doctrine may enhance access to technologies deemed crucial or to essential infrastructures necessary for the development and deployment of needed technologies. As the current international framework allows a jurisdiction much freedom to unilaterally design and implement antitrust law, developing countries may leverage antitrust law to improve access to essential technologies. This approach is likely more effective and efficient than reforming the IP regime under the regulation of multiple multilateral treaties. In the long run, developing countries may transition their antitrust laws toward emphasizing innovation when their national developments have reached a certain maturity—that is, being more capable of independent innovation than relying heavily on access to advanced technologies.

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[297] U.N. Conference on Trade and Development, *Report of the Intergovernmental Group of Experts on Competition Law and Policy on Its Ninth Session*, U.N. Doc. TD/B/COM.2/CLP/72 (July 30, 2008).

[298] NGUYEN, *supra* note 51, at 251.