The Application of Essential Facilities Doctrine in Antitrust Regulation of IP Rights

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Abstract: The State Administration for Market Regulation has referred to the concept of "essential facilities" in two regulations, and some courts have utilized the essential facilities doctrine in their judgments to recognize a defendant's refusal to deal as an illegal act of monopolization. As a doctrine originally applicable only to tangible properties in the United States, the essential facilities doctrine has gradually evolved through case law to be applied in the context of intellectual property (IP) rights. Nevertheless, there remains significant controversy in China and other jurisdictions as to whether the essential facilities doctrine can be extended to IP rights. Given the fundamental differences between intangible and tangible properties, as well as the core mechanisms of IP laws, greater caution and limits must be exercised when applying the essential facilities doctrine to IP. Specifically, (1) compulsory licensing should only be implemented when the IP in question is deemed an essential facility; (2) Article 7 of the Provisions on the Prohibition of the Abuse of Intellectual Property to Eliminate or Restrict Competition should be interpreted as "harm the competition in the secondary market"; and (3) in cases involving compulsory licensing, the court should examine whether such licensing would have an unreasonable adverse impact on the rights holder.

Keywords: essential facilities, antitrust law, intellectual property, refusal to deal, compulsory licensing

1. Introduction

The essential facilities doctrine in antitrust law stipulates that if a company controls a vital facility or resource in the market that cannot be easily replicated, it has an obligation to allow others to access or use it on reasonable terms in order to ensure fair competition in the market. Failure to do so may constitute a violation of antitrust laws. The principle originated from the case of Terminal Railroad Association of St. Louis v. United States[1] and is now widely applied in the European Union.

China's application of the essential facilities doctrine has been relatively recent. In 2010, the former State Administration for Industry and Commerce (SAIC) first mentioned the essential facilities doctrine in the Provisions on Prohibiting Abuse of Market Dominance. In 2019, the State Administration for Market Regulation (SAMR) provided a definition of the doctrine and outlined the

[1] Terminal Railroad Association of St. Louis v. United States, 224 U.S. 383 (1912).

conditions and factors to consider when applying the doctrine. Regarding intellectual property that constitutes essential facilities, the SAMR issued the Provisions on the Prohibition of Abusing Intellectual Property Rights to Eliminate or Restrict Competition in 2020, which stipulates for the first time that a corporation with a dominant market position cannot refuse to license other undertakings to use its intellectual property that constitutes an essential facility for production and operation under reasonable conditions without a legitimate reason, which may exclude or restrict competition. Additionally, the provision outlines three conditions for the application of the doctrine: (1) the intellectual property cannot be reasonably replaced; (2) the refusal to license harms market competition; and (3) the compulsory license will not have an unreasonable adverse impact on the rights holder.

The first application of the essential facilities doctrine in the field of intellectual property in Chinese courts was in the Sintered NdFeB Case that began in 2014. [2]Four Ningbo enterprises sued Hitachi Metals for refusing to license its sintered NdFeB patent, claiming that Hitachi's sintered NdFeB technology constituted an essential facility and it abused its market dominant position. The Ningbo Intermediate Court stated in the reasoning of the judgment that Hitachi's sintered NdFeB technology constituted an essential facility. However, in the operative part of the judgment, the court only recognized the defendant's behavior as a refusal to deal that violated antitrust laws, requiring the defendant to sign a patent licensing agreement with the plaintiff on reasonable terms, without invoking the essential facilities doctrine.

Article 7 of the Provisions on the Prohibition of Abuse of IP rights to Eliminate or Restrict Competition acknowledges the connection and overlap between refusal to deal in antitrust law and compulsory licensing in IP laws, particularly when intellectual property constitutes essential facilities. However, it remains unclear whether the court should apply the refusal to deal clause or compulsory licensing clause only when a certain IP right constitutes an essential facility, and whether IP rights, particularly patent rights, should be exempted from the essential facilities doctrine due to the unique nature of these rights. These issues have generated significant controversy both in China and abroad, and are significant for understanding the application of the essential facilities doctrine in the field of IP rights. Therefore, it is crucial to clarify the relationship between the essential facilities doctrine, refusal to deal, and compulsory licensing in order to provide clear guidance for courts and practitioners.

2. An Overview of the Jurisprudence of Different Courts

2.1. United States

Since the Terminal Railroad Association case, US courts frequently invoked the essential facilities doctrine to handle antitrust cases. In 1983, the US Court of Appeals for the Seventh Circuit established four elements for applying the essential facilities doctrine to determine whether the defendant's behavior violate Section 2 of the Sherman Act: (1) control of the essential facility by a monopolist; (2) a competitor's inability practically or reasonably to duplicate the essential facility; and (3) the denial of the use of the facility to a competitor; and (4) the feasibility of providing the facility. [3]

The cases where essential facilities doctrine has been applied in the field of IP rights include BellSouth v. Donnelley case and Intergraph v. Intel case.

The BellSouth case is a notable example supporting the application of the essential facilities doctrine to intellectual property rights. In the case, BellSouth published a classified advertising telephone directory, and Donnelley copied BellSouth's telephone directory to generate a list of

[2] Zhejiang Province Ningbo Intermediate People's Court (2014) No. 579 Civil Judgment.
[3] MCI Communications Corp. v. AT&T Co., 708 F.2d 1081 (7th Cir. 1983).

commercial telephone users. BellSouth sued Donnelley for copyright infringement, and Donnelley counter-sued, claiming that BellSouth's telephone directory was an essential facility. The court stated that "Although the doctrine of essential facilities has been applied predominantly to tangible assets, there is no reason why it could not apply, as in this case, to information wrongfully withheld," and held that the essential facilities doctrine could be applied to intangible property, specifically copyrights, in this case. [4]

In the Intergraph v. Intel case, the district court recognized the application of the essential facilities doctrine to patent rights. Intergraph accused several of Intel's OEM customers of infringing Intergraph's Clipper patent and filed an antitrust lawsuit against Intel for attempting to cut off Intergraph's technical supply. The district court cited the Terminal Railroad and MCI cases and held that Intel's Advance Chips Samples' advanced design and technical information were essential products and information which were necessary for Intergraph to compete in its markets. Antitrust law requires enterprises that control essential facilities to license on non-discriminatory terms. Therefore, the court found that Intel violated the Sherman Act and issued a temporary injunction requiring Intel to license its patents and trade secrets to Intergraph on reasonable terms. Although the appeals court overturned this decision, it did not deny the feasibility of applying the essential facilities doctrine to patent rights. The appeals court only held that, to apply the essential facilities doctrine, there must be a market in which plaintiff and defendant compete, such that a monopolist extends its monopoly to the downstream market by refusing access to the facility it controls. In the case of Intel and Intergraph, there was no such competition. [5]

However, in the Trinko case, the U.S. Supreme Court severely limited the application of the essential facilities doctrine in the field of IP rights, stating that compulsory licensing under this doctrine requires the operator to assist its competitors, and that the essential facilities doctrine is strictly limited to "natural monopoly" industries. This case had an important impact on subsequent judgments. As a result, the Trinko decision greatly limited the application of the essential facilities doctrine in the field of IP rights in the United States. [6]

2.2. European Union

In the field of intellectual property, the EU's application of the essential facilities doctrine is more lenient than that of the United States. The first case in this regard was Magill v. EC Commission, which concerned copyright licensing. The case involved three television broadcasters who refused to license the copyright in the information contained in their television program schedules to the Irish publisher Magill. Magill published a comprehensive television program guide, which competed with the program guides of the three television broadcasters by previewing the TV programs for the upcoming week. The three television broadcasters sued Magill in Irish courts for copyright infringement. The case was eventually appealed to the EU Court of Justice, which found that the three television broadcasters had abused their IP rights. The court held that the television program listings of the three TV stations constituted an essential facility and should be licensed to Magill, because: (1) the only sources of the basic information on program scheduling which is the indispensable raw material for compiling a weekly television guide, (2) the appellants' refusal to provide basic information by relying on national copyright provisions thus prevented the appearance of a new product, a comprehensive weekly guide to television program, and (3) the three TV stations excluded all the competition in the secondary market. [7] This decision established that, under certain

[4] BellSouth Adv. & Pub. v. Donnelley Inf. Pub., 719 F. Supp. 1551, 1566 (S.D. Fla. 1988).

[5] Intergraph Corporation, Plaintiff-appellee, v. Intel Corporation, Defendant-appellant, 195 F.3d 1346 (Fed. Cir. 1999).

[6] Verizon Communications v. Law Offices of Curtis V. Trinko, LLP, 540 U.S. 398(2004).

[7] Magill v. EC Commission, Case C-241/91 P, [1995] ECR I-743.

circumstances, copyright holders can be required to license their copyrighted material under the essential facilities doctrine, in order to promote competition and prevent anti-competitive behavior.

In 1998, the Bronner v. Mediaprint case formally confirmed four conditions for the application of essential facilities doctrine in EU: (1) the product is indispensable for carrying out business; (2) there is no objective justification for the refusal; (3) the refusal would eliminate all competition on a secondary market; and (4) the refusal would impede the emergence of new products for which there is potential consumer demand. [8] In the 2004 Microsoft Corp. v. Commission case, the EU Commission clarified that a refusal to deal need not necessarily exclude all competition in a secondary market. Rather, the possibility of excluding effective competition would be sufficient to trigger the application of the essential facilities doctrine. [9]

The IMS case focused on the essential facilities doctrine in the copyright field and reinforced the concept of the "secondary market". IMS, the defendant, declined to provide a license for sales data related to a group of copyrighted drugs in Germany. The court concluded that the sales data constituted an essential facility, and emphasized that safeguarding market competition could take precedence over the protection of intellectual property rights only if refusing to license would hamper the development of a secondary market and harm consumers' interests. [10] For the essential facilities doctrine to apply, the refusal to deal must either eliminate all competition on a secondary market or potentially exclude competition, with the emphasis on the secondary market instead of the direct competition market.

2.3. China Mainland

In legal practice, possession of essential facilities by a business operator can be used to identify market dominance. For instance, in a case concerning the abuse of market dominance, the court held that "barriers to market entry are reflected significantly in two aspects: the heating pipes in the relevant market are essential facilities for transactions, and there are high capital and technical requirements for market entry. These barriers could exclude other businesses from entering the relevant market, delay them from entering the relevant market within a reasonable time, or increase the cost of entry, thereby making it difficult for other businesses to compete effectively in the market." [11] In another case involving disputes over monopoly pricing, the court held that "various barriers to market entry exist in reality, such as market access systems, possession of essential facilities, sales channels, capital and technical requirements, intellectual property rights, and costs." [12]

The two cases mentioned previously illustrate the use of the essential facilities doctrine in determining market dominance. The Sintered NdFeB Case of 2014 is currently the most typical case that applies the essential facilities doctrine in the field of IP rights. In this case, the plaintiffs, Ningbo Coercive Magnet and three other corporations, and the defendant, Hitachi Metals Ltd., are both companies that specialize in the production and sale of Sintered NdFeB, a type of permanent magnet. Hitachi owns a large number of method patents required for the production of Sintered NdFeB, and the plaintiffs' request for a license related to the patent was rejected. Consequently, the plaintiffs sued the defendant, alleging that the defendant's refusal to deal constituted an abuse of market dominance.

The court determined that the essential facilities doctrine is an optional method for analyzing the anti-competitive effects of a refusal to deal under antitrust law. The essential facilities doctrine requires the satisfaction of five elements: (1) the facility is essential for other undertakings to participate in competition; (2) the monopolist controls the essential facility; (3) competitors cannot

[8] Oscar Bronner GmbH & Co.KG v. Mediaprint [1998] E.C.R.at I-7791.
[9] Microsoft Corp. v. Commission, Case T-201/04, [2007] ECR II-3601.
[10] IMS Health GmbH & Co. OHG v NDC Health GmbH & Co. KG, Case C-418/01, [2004] ECR I-05039.
[11] Zhejiang Province Ningbo Intermediate People's Court (2013) No. 86 Civil Judgment.
[12] Zhejiang Province Ningbo Intermediate People's Court (2020) No. 182 Civil Judgment.

reasonably replicate the same facility within a reasonable effort; (4) the monopolist unreasonably refuses to allow competitors to use the essential facility; and (5) it is possible for the monopolist to provide the essential facility. The court concluded that the defendant's patents constituted essential facilities, and its refusal to license was an abuse of market dominance that had an anti-competitive effect. To remedy the competitive harm, the defendant was ordered to stop the behavior of refusing to transact and offer the plaintiff a licensing contract with fair, reasonable, and non-discriminatory terms. However, Hitachi Metals has appealed to the Supreme People's Court Intellectual Property Court, so the case has yet to be concluded.

The normative document for the application of the essential facilities doctrine in the field of IP is the Provisions on Prohibiting Abuse of IP rights to Eliminate or Restrict Competition issued by the SAMR in 2020, which is a departmental regulation. However, in China, the normative documents cited in the operative part of a civil judgment can only be laws, administrative regulations, local regulations, legal interpretations, and judicial interpretations, which do not include departmental regulations. Therefore, the essential facilities doctrine is mainly applied to determine market dominance or served as a condition of compulsory licensing in the reasons for judgement currently.

3. Comparison between the Doctrines

The above cases demonstrate a strong correlation between the essential facilities doctrine and both refusal to deal in antitrust law and compulsory licensing in IP laws. In the Sintered NdFeB case, the court required Hitachi Metals to license the plaintiff to use the patent on fair, reasonable, and non-discriminatory terms, which amounted to a compulsory license. It is necessary to analyze the provisions and significance of refusal to deal and compulsory licensing to clarify this correlation.

3.1. Refusal to Deal

Contractual freedom, protection of private property rights, and freedom of competition are the three pillars of a market economy. According to the general theory of a free economy, individuals can choose their trading partners and decide whether or not to engage in trade, and no one should be forced to trade with anyone else. Article 5 of the China’s Civil Code stipulates that parties to civil legal relations shall conduct civil activities under the principle of free will, and create, modify, or terminate civil legal relations according to their own wills. However, economic freedom has its limits. In the late 19th and early 20th centuries, the industrial revolution's impact became increasingly apparent, driving the growth and concentration of enterprises through large-scale production and technological innovation. In some industries, such as oil, steel, railways, and electricity, a few large companies held a monopoly position. These monopolies enjoyed market control by controlling key production resources, technological advantages, economic scale, and market share, resulting in significant impacts on market prices.

To prevent enterprises from restricting competitors and reduce monopolies' formation, Section 3(b) of the Clayton Act was enacted in the United States in 1914. It specifically prohibits monopolists from refusing to deal and setting discriminatory terms. Similarly, Article 22 of China's Anti-Monopoly Law stipulates a refusal-to-deal clause, prohibiting undertakings with a dominant market position from refusing to trade with counterparties without justifiable reasons. However, the autonomy of wills and freedom of transactions remain the fundamental framework of a market economy. This means that anti-monopoly laws' intervention is an exception rather than a norm. Therefore, it is widely accepted in different countries that identifying a dominant market position is a precondition for antitrust regulations on refusal-to-deal conduct. The identification of abusive conduct and the analysis of its impact on competition are the heart of such regulations [1].Only when

the operator "abuses its dominant market position" and "excludes or restricts competition" can the refusal-to-deal clause be applied.

Article 22 of the Anti-Monopoly Law does not exclude the application of refusal-to-deal clauses in the field of IP rights. Article 7 of the Provisions on Prohibiting the Abuse of IP Rights to Eliminate or Restrict Competition stipulates that an undertaking with a dominant market position cannot refuse to deal without justifiable reasons when their intellectual property constitutes essential facilities for production and business activities, and outlines three conditions. Therefore, in China, the refusal to license IP rights is a subset of the refusal-to-deal clause.

The doctrine of refusal-to-deal was originally formulated in the United States, not specifically with regard to IP rights, but rather in relation to monopolistic enterprises that exercised control over physical resources in heavy industries. However, due to the unique nature of intangible assets compared to tangible ones, the suitability of the refusal-to-deal doctrine for IP rights under antitrust law has generated controversy. While the Civil Code explicitly sets out the right of ownership over tangible property, including the rights of possession, use, profit, and disposal, IP laws not only recognize the right holder's use, licensing, and transfer of such rights, but also specifically prohibit third-party infringement, such as manufacturing, use, reproduction, distribution, and dissemination. Although unauthorized possession, use, or disposal of tangible property by third parties is prohibited, such behavior is not specifically forbidden by law. This is because IP rights concern intangible assets, and the right holder's active use of authorized rights does not preclude the possibility of infringement by others. For example, the owner of a cellphone can naturally exclude others by using or possessing their cellphone, which is a consequence of controlling tangible property. In contrast, a patent holder cannot naturally exclude others from using their patent, which is why IP laws need to contain prohibitive clauses that articulate the rights of the right holder. This also implies that IP rights are more vulnerable to infringement, and the right to say NO is crucial in protecting such rights.

Merely possessing IP rights does not necessarily imply a dominant position. Dominance in the market is achieved only when there are no sufficient substitutes or alternatives available for the IP in the relevant market [13]. Recognizing the differences between IP rights and tangible property rights, China has established a prerequisite for determining the refusal to license, which is that the IP right in question must be an essential facility and that the refusal to license must be anti-competitive.

3.2. Compulsory Licensing

Compulsory licensing of IP rights refers to the government allowing someone else to produce a patented product or process without the patent owner's consent or planning to use the patent-protected invention itself. The Paris Convention authorized member countries to grant compulsory licenses for patents. [14]However, as compulsory licensing involves government intervention in property rights, the TRIPS agreement strictly limits its use. Compulsory licensing can only be applied in the following circumstances: (1) emergency and extreme urgency, (2) anti-competitive practices, (3) public non-commercial use, and (4) dependent patents. [15]In accordance with the TRIPS agreement, China's Patent Law stipulates several situations for compulsory licensing of patent rights: (1) the patentee has no legitimate reason for not implementing the patent, (2) the patentee's exercise of patent rights is legally recognized as a monopolistic act, and to eliminate or reduce the adverse effects of such conduct on competition, (3) it involves significant public interests, and (4) it involves dependent

[13] Intergraph Corp. v. Intel Corp., 195 F.3d 1346 (Fed. Cir. 1999).
[14] See Paris Convention for the Protection of Industrial Property art. 5(1).
[15] See the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS) art. 31.

patents. [16]This article focuses on the compulsory licensing of the second provision, which involves compulsory licensing of anti-competitive practices.

The legal framework for IP rights grants legitimate monopolistic rights to right holders, enabling them to exclude others from using their patents or other IP rights. This gives right holders the discretion to determine whether, on what terms, and to whom to grant a license. As a result, the legitimate exercise of IP rights falls outside the purview of anti-monopoly laws. However, when rights holders go beyond the scope of "exercising their rights" and abuse such rights, they may be subject to anti-monopoly sanctions. The core of IP rights abuse lies in the improper exercise of these rights that violates the purpose of IP laws. By violating the principle of good faith and improperly exercising their rights, the rights holder breaches the public policy of protecting IP rights. Thisdamages the legitimate interests of others and the public interest [2]. Compulsory licensing is one of the consequences of the IP rights abuse which not only undermines the normal competitive mechanism of the market but also damages the public interest. Therefore, in China, the application of compulsory licensing related to monopolization generally requires three conditions: (1) the patent holder has a dominant market position, (2) the patent constitutes an essential facility, and (3) the rights holder has no legitimate reason to refuse to grant a license. One necessary condition for compulsory licensing of IP rights is that the IP constitutes an essential facility, and the determination that the use of IP rights is illegal monopolization is a prerequisite for compulsory licensing [3].

In China's current legal provisions and judicial practice, the essential facility doctrine is not a separate legal provision that directly produces a right of action in the field of intellectual property. Rather, it can serve as a standard for determining monopolies when applying the refusal-to-deal provision or as one of the prerequisites for compulsory licensing. The essential facility doctrine is more like an epithet than a doctrine [4]. The determination of illegal monopoly is a prerequisite of compulsory licensing, and the compulsory licensing is a consequence of intellectual property abuse.

4. Controversies over the Application

In the United States, there is a great deal of controversy surrounding the application of the essential facilities doctrine in the field of IP rights. Some argue that the doctrine has little independent value and is the most problematic, irrational, and difficult to apply principle in antitrust law. It is almost certain that abandoning the doctrine and deeply analyzing the refusal to deal doctrine would be a better approach for antitrust law [5]. The essential facilities doctrine introduces complexity into simple issues and requires answers to several complex questions, such as whether the facility was created by competitors together or unilaterally by a dominant enterprise, whether the facility has unlimited capacity, how many competitors there are in downstream markets, whether competition in downstream markets significantly affects prices, and what legitimate reasons there are for refusing to supply the facility. Obviously, there is no clear consensus on these questions in recent decades, and they have complicated theories about refusal to deal [6].

In the realm of IP rights, the controversy surrounding the application of essential facilities doctrine is particularly contentious. Notably, in cases such as BellSouth v. Donnelley, Magill v. EC Commission, and IMS, the copyrights involved had limited innovative capabilities and were ineligible for protection in various countries, including China. Additionally, a significant number of scholars argue that IP rights should be exempt from the essential facilities doctrine. The reasons are as follows.

[16] See Patent Law of the People's Republic of China art. 53-56.

4.1. The Essential Facilities Doctrine Conflicts with the Core Mechanism of IP laws

The essential facilities doctrine pertains to competition law, which fundamentally conflicts with IP law. The main purpose of IP laws is to stimulate innovation and creation, bestowing rights holders with a legitimate virtual monopoly power to prohibit the production of derivative products that depend on the original intellectual property, and providing incentives and prospects for businesses to invest in innovation. Since intellectual property needs substantial research and development expenses, market players will only invest in these endeavors if they can acquire reasonable returns [7]. Especially in the modern digital era, the research and development of intangible assets incurs significant costs, while the cost of replication is relatively low. As a result, it is essential to enable IP holders to earn considerable profits, which include not just licensing fees but also competitive advantages in market competition.

However, competition law is designed to ensure that monopolies do not hinder market efficiency, and it encourages companies to develop more efficient production methods and higher quality products, ultimately benefiting consumers. Consumer rights, the interests of competitors, and the competition order are all protected by competition law. First, it ensures that consumers can obtain new and improved products at lower prices. The focus of competition law enforcement is on exploitative abuses, such as setting horizontal or vertical price agreements, which seriously harm consumer interests. Second, competition law protects the interests of competitors, particularly small and medium-sized businesses, from monopolistic enterprises' undue influence. Finally, competition law maintains market competition order and prevents large companies from excluding or restricting competition [8].

The essential facilities doctrine in competition law fundamentally conflicts with the core mechanisms of intellectual property. IP protection relies on rewarding creative endeavors based on the value of the resulting content. Inventions that provide significant cost savings or meet consumer demand yield substantial economic returns for their inventors, while those of lower value receive less return, thus guiding innovation activities in a beneficial direction. On the other hand, the essential facilities doctrine is primarily a legal rule mandating sharing and transactions. The greatest conflict between the two is that the more unique, valuable, and difficult an invention is to make, the easier it is to constitute an essential facility, requiring the right holder to share it [9]. Even if the sharing is reasonably charged, it undermines the market power the right holder obtains through IP. Licensing is a crucial way for IP owners to realize the value of their rights, and the market power generated through exclusive use and refusal to license is what the right holder deserves. This is also a core component of IP laws.

4.2. Overburdening the Monopolists May Impede Innovation

In a free market, undertakings have no obligation to assist their competitors. These undertakings invest significant resources in creating intellectual property with the hope of obtaining a monopoly and market power. They typically do not license their intellectual property to direct competitors, as doing so would undermine their own monopolistic position. However, the essential facilities doctrine requires monopolists to do exactly that, which goes against the principles of a free market.

The United States' cautious stance towards the essential facilities doctrine can be traced back to the Trinko case of 2004. The US Supreme Court stated that "the essential facilities doctrine requires companies to share their monopoly position with their competitors, which is inconsistent with the basic goal of antitrust law to encourage competition. Forcing companies to share their achievements with competitors will reduce their willingness to invest in innovation. Even if we recognize the ‘essential facilities doctrine’ established by some district courts as case law, this conclusion will not change. IP laws grant IP owners certain exclusive rights, which helps them profit from the use of their

IP. Antitrust laws generally do not require companies that unilaterally refuse to assist their competitors to bear liability, in part because such a requirement would reduce the incentive to invest in innovation. The essential facilities doctrine only applies to natural monopolies, rather than competitive markets." [17]

5. Necessity of the Application

Despite the controversy, the application of the essential facilities doctrine in IP rights plays an important role in anti-monopoly regulation in China. However, the opposing views outlined above have some deficiencies.

5.1. The Common Goal of IP laws and Competitive Laws is to Maximize Public Economic Welfare

Opponents argue that the essential facilities doctrine is incompatible with IP laws, since the latter allow for monopolies and conflict with the core of essential facilities. Some scholars also propose that intellectual property should be immune from antitrust law unless the right holder abuses their IP rights. However, these views conflate two concepts: IP monopoly and illegal monopolization. An IP monopoly is a form of exclusive use which does not imply market power. The exclusive rights granted by IP laws and illegal monopolization are distinct. Even if a product of an undertaking is protected by patent law, there are likely many substitutes for it in the market. While the IP right holder may be able to sell the product at a higher price than the marginal cost, it does not necessarily imply they have monopoly power, as developing new products usually involves high costs [10]. However, if an IP cannot be replaced by a similar product with better quality and a lower price in a competitive market, it can enhance market power and create entry barriers, granting the undertaking with this IP right a dominant market position and forming a monopoly in the relevant market. Nonetheless, holding a monopoly position is not illegal per se, and antitrust law only intervenes when a monopolist abuses their dominant position through improper means. In short, the monopoly granted by IP rights is merely exclusive use, while monopolization refers to the abuse of market dominance, which is prohibited by antitrust law. Only when the exercise of IP rights exceeds the boundary of legitimate exercise of rights should it be considered as monopolization. Therefore, the core mechanism of IP rights is not in conflict with antitrust law, and neither is it "immune" from antitrust law. Abusing IP rights goes beyond the boundaries of IP laws protection and falls under the regulation of antitrust laws.

In fact, the fundamental purpose of antitrust law and IP law are not in conflict. IP law encourages innovation, which is a means of promoting public welfare. In the Mazer v. Stein case, the court pointed out that "the economic philosophy behind the clause empowering Congress to grant patents and copyrights is the conviction that encouragement of individual effort by personal gain is the best way to advance public welfare through the talents of authors and inventors in Science and useful Arts." [18] Antitrust law protects free competition, and IP law stimulates innovation. The fundamental purpose of both is to promote public welfare in the economy, although the paths chosen to achieve this goal are different.

A balance must be struck between these two approaches. On the one hand, strict antitrust policies may hinder future investment in innovation and erode the competitiveness of local industries in the global economy. On the other hand, the IP rights of a monopolistic undertaking may increase market barriers and reduce competition. Therefore, it is important to assess the overall damage to innovation incentives caused by antitrust sanctions and to free competition caused by monopolization. With

[17] Verizon Communications v. Law Offices of Curtis V. Trinko, LLP, 540 U.S. 398(2004).
[18] Mazer v. Stein, 347 U.S. 201 (1954).

regard to intellectual property, if a dominant enterprise with strong market power holds an IP right that constitutes an essential facility, it is important to consider whether compulsory licensing of that IP right can promote "public economic welfare".

Furthermore, given that China's market economy started relatively late, compulsory licensing of IP rights for foreign enterprises may have a negative impact on China's attractiveness to foreign investment. This is another important factor that needs to be considered in the weighing process.

5.2. The Consequence of Abusing the IP rights that Constitute Essential Facilities is Severe

Some argue that applying the essential facilities doctrine to IP rights unreasonably expands the obligations of monopolists, but this view is unfounded. When undertakings gain a monopoly position through IP rights that constitute essential facilities, they have greater market power than those who control physical essential facilities. This power can completely exclude free competition and harm the market economy.

5.2.1. The Way Essential Facilities Exercise Market Power

There is a consensus that businesses are not obligated to assist their direct competitors, namely businesses that offer similar products or services within the same market. However, it may be deemed unfair when the holder of an essential facility exercises market power over downstream markets. For example, they may refuse access to the essential facility, preventing competitors from entering the relevant market or doing so on unfavorable terms. They may also sign exclusive contracts with specific producers, preventing other competitors from establishing business relationships with them. When it is not economical to replicate the facility or find close substitutes, the production factors provided by upstream undertakings become essential facilities that can extend their monopoly power to the downstream market [11]. Traditional essential facilities include ports, railway lines, stations, electricity transmission, and telecommunications networks. In short, upstream essential facility holders exercise market power by making it uneconomical for downstream undertakings to physically replicate the essential facility or find a more economical substitute.

5.2.2. The Way Intellectual Properties Exercise Market Power

Intellectual property is a mechanism to incentivize innovation, allowing right holders to exclusively exercise their IP rights within the boundaries of the law. Although it may be feasible and convenient to physically replicate someone else's intellectual property without authorization or license, such behavior is regulated by intellectual property laws, and infringers may face consequences such as damages, punitive damages, administrative fines, or even criminal liability.

While producing similar products may be legally and physically feasible, due to the strict protection of patent rights, direct competitors or downstream undertakings still inevitably bear the risk of infringement. Taking all factors into account, purchasing a license is a more economical and safer choice. In short, the way IP holders exercise market power is by obtaining a competitive advantage among direct competitors by choosing to license or not license their IP rights, and charging fees through licensing according to IP laws.

5.2.3. IP Constituting Essential Facilities can Exercise Dual Market Power

In summary, market power associated with an essential facility arises due to the lack of a specific legal action to remove it, while market power associated with intellectual property arises due to the presence of a specific legal protection, such as patenting [12]. Therefore, this kind of IP rights has a dual nature of market power. Firstly, it is a protected IP right, mainly protected by patent law, and

any unauthorized use, whether by direct competitors or downstream undertakings, will be a violation of IP laws. Secondly, as an essential facility, even if legal limitations are not considered, the cost of physical replication is prohibitively high. In other words, intellectual property that constitutes an essential facility is both legally and physically non-replicable, but it is an indispensable factor for downstream undertakings. Taking Hitachi Metals as an example, it owns a large number of patents for producing Sintered NdFeB, and these production methods have significant quality and price advantages over competitors. As a result, these patents have made Hitachi a dominant player in the relevant market, making it the world's strongest producer of commercialized permanent magnet materials. Its market power can be fully exercised in the downstream market since there are no economical substitutes available either physically or legally.

As previously mentioned, having a monopoly position is not illegal, while monopolization is illegal because of the abuse of a dominant position by excluding and restricting competition. An upstream undertaking that owns a production factor constituting an essential facility will naturally have a market advantage over its competitors. This advantage is expected and even encouraged by the law as a reward for successful innovation. Hitachi Metals, for example, has become a dominant player in the market for producing Sintered NdFeB, and this is permitted under both IP laws and antitrust laws. However, improper exercise of market power in the downstream market, such as in the markets for electronic products, automobiles, and motors that require strong magnetic materials, can cause greater harm than that of a typical upstream monopolist. In particular, when a downstream operator cannot obtain a license and is forced to purchase more expensive production factors, it must increase product prices and lose market competitiveness. The upstream operator, such as Hitachi Metals, may then engage in vertical integration or mergers and acquisitions to directly exclude downstream competition and control the entire supply chain. This behavior is the focus of antitrust regulation.

In summary, it is necessary to apply the essential facilities doctrine in the field of intellectual property, and the opposing views mentioned above have some logical or factual deficiencies.

6. Suggestions for the Application

6.1. Set Prerequisite for Applying Refusal-to-License Clause

Article 17 of the Anti-Monopoly Law prohibits undertakings with dominant market positions from refusing to deal without justifiable reasons. Meanwhile, Article 53 of the Patent Law stipulates that a patentee's exercise of patent rights may be considered a monopolistic act subject to compulsory licensing. Take a literal approach to the language of these two statutes. If an IP rights holder is a dominant market player and unjustifiably refuses to license its IP rights to a counterparty, it would constitute a monopolistic act as defined by the Anti-Monopoly Law. In such cases, the court may rule for compulsory licensing. This interpretation does not exclude the possibility that, even if an operator with a dominant market position owns intellectual property that does not constitute essential facilities, its refusal to license could still be viewed as an abuse of IP rights.

However, the ultimate goal of both IP law and antitrust law is to promote "economic welfare." Therefore, in cases of conflict between the two, it is necessary to strike a balance between the harm to innovation incentives and the harm to free competition. If all the refusal to license is automatically classified as a refusal to deal under antitrust law, the scope of IP abuse would be too broad, which could seriously impede innovation as well as a free economy.

Therefore, rather than directly applying Article 17 of the Anti-Monopoly Law, stricter conditions should be attached to the refusal to license clause. In fact, the Provisions on Prohibiting the Abuse of Intellectual Property Rights to Eliminate and Restrict Competition recognizes this point to some extent, stating that an operator with a dominant market position shall not refuse to license their

intellectual property if it constitutes a necessary facility for production and operation without justifiable reasons. This provision restricts the application of Article 17 of the Anti-Monopoly Law in the field of intellectual property rights. The premise for applying the refusal to license clause is that the intellectual property constitutes an essential facility, which can exclude the possibility mentioned above from antitrust sanctions. Although this provision cannot serve as the basis for the judgment in the operative part, it can be used as a reason for argumentation.

6.2. Narrow the “Market” to the Secondary Market

A comparison between China and the EU's criteria for recognizing essential facilities reveals that China's criteria are more lenient, particularly in the lack of a limitation on "secondary markets." For instance, in the Sintered NdFeB case, both the plaintiffs and Hitachi Metals were producers of permanent magnetic materials, making them direct competitors rather than upstream or downstream enterprises. However, the Ningbo Intermediate Court recognized Hitachi's Sintered NdFeB as an essential facility, and its refusal to license was deemed an abuse of dominant market position. By contrast, both the EU and the US currently regard "refusal to license that may eliminate competition in secondary markets" as a prerequisite for applying the essential facilities doctrine.

Intellectual property, being intangible property, can create more value than its mere existence, such as in the manufacturing and sale of products, which is the primary means of obtaining economic benefits from IP [13]. As previously mentioned, gaining a competitive advantage over direct competitors is a crucial factor that incentivizes investment in intellectual property and innovation. If the law forces businesses to license their IP, which generates substantial profits, to their direct competitors, their innovation incentive would be diminished, encouraging them to resort to antitrust litigation to compel their competitors to license their intellectual achievements. The cost of legal action and compulsory licensing fees is much lower than the cost of investing in innovation, especially when competitors’ IP constitutes an essential facility, at least in China. Clearly, the harm to innovation outweighs the protection of competition, which is detrimental to economic welfare.

However, if an enterprise unreasonably refuses to license downstream operators to use its patents, which are essential to their business operation and almost impossible to duplicate, to achieve vertical integration or monopolistic high prices, antitrust laws should intervene. Therefore, when the court determines that intellectual property constitutes an essential facility, it needs to consider not only the three conditions explicitly stipulated in the Provisions on Prohibiting the Abuse of Intellectual Property to Exclude or Restrict Competition but also narrow the second condition of "refusal to license harmful to market competition" to "refusal to license harmful to competition in secondary markets." Otherwise, this provision will directly conflict with the core mechanism of intellectual property laws.

Moreover, for foreign investors, IP protection is a major concern, and if China's courts always invoke abstract antitrust clauses to compel them to license their IP, they may be deterred from investing in this market.

6.3. Compulsory Licensing will not Cause Unreasonable Adverse Effects on the Right Holder

Article 7 of the Regulations on Prohibiting Monopoly Agreements and Abuses of Dominant Market Positions outlines that compulsory licensing should not cause unreasonable adverse effects to the right holder. Understanding the meaning of "unreasonable adverse effects" is crucial for the effective implementation of this provision. Any compulsory license will have some adverse impact on the rights holder, at least infringing on their freedom to transact. However, in the context of antitrust law, certain adverse effects shall be tolerated to protect fair competition and consumer interests. Nevertheless, the scope of antitrust law intervention in free competition is limited. It never requires

operators to assist competitors, but rather aims to prevent monopolists from obtaining excessive monopoly profits.

Therefore, "reasonable adverse effects" refer to (1) the partial deprivation of the monopolist's freedom to transact; and (2) the difference between the price allowed and the monopoly price. When assessing "unreasonable adverse effects," the scope of the monopolist's obligations and the purpose of IP incentives for innovation must be considered. The main criteria for judgment are: (1) whether compulsory licensing would result in a significant loss of customers for the right holder; and (2) whether compulsory licensing would seriously harm the right holder's ability to innovate. The objects of compulsory licensing are divided into two categories: direct competitors in the same industry and downstream operators who require production factors provided by the right holder. Forcing the right holder to license its IP to direct competitors would lead to significant customer losses as competitors could manufacture identical products and sell them to downstream operators. Moreover, the innovation mechanism encouraged by IP laws would be severely disrupted, and operators would expect to acquire others' intellectual property through direct purchase or antitrust legal action. Therefore, forcing the right holder to license its intellectual property to direct competitors would clearly cause unreasonable adverse effects.

However, only forcing the right holder to license its intellectual property to downstream markets and requiring downstream operators to pay reasonable royalties is an "adverse effect" that monopolistic operators should tolerate. This type of compulsory licensing will not cause the loss of the right holder's customers because their products are still the best choice for downstream operators compared to their direct competitors. Additionally, compulsory licensing is only granted on a case-by-case basis, and the right holder can still obtain substantial profits through its intellectual property, thus not harming the right holder's innovation drive.

Take a second look at Sintered NdFeB Case. The case involves two direct competitors, Hitachi Metals and the plaintiffs, who are both professional companies engaged in the production and sale of sintered NdFeB. The court's ruling for compulsory licensing goes against Article 7 of the Provisions on Prohibiting the Abuse of Intellectual Property Rights to Eliminate or Restrict Competition, which prohibits compulsory licensing that causes unreasonable adverse effects to the right holder. Hitachi Metals' production method for sintered NdFeB has enabled it to gain a dominant market position, which is a well-deserved reward for innovation. Forcing Hitachi Metals to license its patent to the plaintiffs would lead to a significant loss of its customers and would discourage innovation. Such a requirement is akin to asking a monopolist to help its competitors, which goes beyond the scope of antitrust regulation.

7. Conclusion

In China, the essential facilities doctrine is an important component of antitrust regulation in the field of intellectual property. Although it remains controversial in the United States and the European Union, China should still allow the application of the essential facilities doctrine, but with certain limitations, in order to reconcile IP laws and competition laws and achieve the common goal of economic welfare. Firstly, before ruling on compulsory licensing, the court must determine that the intellectual property owned by a monopolist constitutes an essential facility. Secondly, while the Provisions on the Prohibition of the Abuse of Intellectual Property Rights to Eliminate or Restrict Competition only requires that the refusal to license be "harmful to market competition," when determining whether an intellectual property constitutes an essential facility, "market competition" should be limited to "secondary market competition," taking into account the core mechanism of IP laws. Thirdly, compulsory licensing should not result in unreasonable adverse effects on the IP rights holder.

In each case, the court must balance the values of "encouraging innovation" and "protecting free competition" to achieve the maximum economic welfare.

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