

**THE RECENT DEVELOPMENT OF CHINA’S ANTI-MONOPOLY
LAW ON STANDARD SETTING ORGANIZATION’S PATENT
POOLING ARRANGEMENTS AND THE ISSUES OF
INCORPORATING PATENT MISUSE DOCTRINE AS
THE ANTITRUST REVIEW STANDARD**

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I. INTRODUCTION

A. General Nature of Standard Setting Organization (SSO)

In the modern economy, standards are commonly adopted to facilitate the communication protocols, the format of shared files, or the interoperability within the components of a single device, and the interoperability and compatibility between different devices. For example, telephones depend on RJ-45 universal standard lines to connect to terminals; communication between internet users requires shared W3C standards; and even a small chip set within a computer needs numerous standards to ensure interoperability of components produced by different manufacturers.¹ The importance of standards is evinced by their ubiquitous existence in the present day.

On the bright side, standards “can make products less costly for firms to produce and more valuable to consumers. . . can increase innovation, efficiency, and consumer choice; foster public health and safety and serve as a fundamental building block for international trade.”² On the other hand, the inherent “network effect” may usually bring up antitrust concerns as more users use the standard. A network effect is the phenomenon that the value of a product would substantially increase in proportion to the number of users adopting it.³ If the standard is widely accepted, the network effect may in the end make only one dominant standard acceptable to a market, and it subsequently raises antitrust issues.⁴ Furthermore, the dominant position of the standard can exacerbate the problem if it is incorporated with patented technologies, and this is due to the *de jure* monopoly nature of the patent right granted by the United States Congress.

1. See for example, one single SSO, ISO, may issue more than 2000 standards for information technology, http://www.iso.org/iso/home/standards_development/list_of_iso_technical_committees.htm access 05/25 2015.

2. FTC Report, Antitrust Enforcement And Intellectual Property Rights: Promoting Innovation and Competition, 2007

3. Network effect refers to “the consumption value of a product or service derives from the number of product or service used by other people, i.e., the more people use a product or service, the more valuable it becomes.” Telephone is a good example. see Michael L. Katz & Carl Shapiro, Network Externalities, Competition, and Compatibility, 75 AM. ECON. REV. 424 passim (1985).

4. U.S. Dep’t of Justice, Competition and Monopoly: Single-Firm Conduct Under Section 2 of the Sherman Act (2008). P.21, “Following Alcoa and American Tobacco, courts typically have required a dominant market share before inferring the existence of monopoly power”

Traditionally, one patent alone generally does not have the de facto market power.⁵ However, the patentee's de jure monopoly power over the market dominated by a standard would be considerably augmented if the network effect goes hand in hand with the patent monopoly rights. Once the patent becomes a standard essential patent (SEP), the patentee acquires a de facto market power via the standard, and the standard is then subject to the potential threat of "patent holdup" and may become a "hijacked standard."⁶ The patentee may then prevent the industry it is in from implementing its technology or at least charge a higher license fee than the patentee should have obtained.⁷

A high switching cost to a design around a widely accepted standard further entrenches the situation.⁸ Designing around the "locked in" or the "hijacked standard" may become a commercially infeasible option.⁹ Firms may suffer loss for investment in equipment, R&D expenses, marketing delay, or other reasons. One commentator addresses this patent holdup problem as "one of the worst outcomes for consumers to buy into a standard that is widely expected to be open, only to find it 'hijacked' later, after they are collectively locked in."¹⁰ The hijacked standard may potentially

5. "A patent does not of itself establish a presumption of market power in antitrust sense." See *Abbott Laboratories v. F. Brennan*, 952 F.2d 1346, (1991) citing *Walker Process Eqpt., Inc. v. Food Machinery Corp.*, 382 U.S. 172 (1965)

6. Federal Trade Commission Decisions Complaint: IN THE MATTER OF DELL COMPUTER CORPORATION, 121 F.T.C. 616 (1996): A SSO's member, Dell, confirmed that the developing standard did not infringe its patent but filed patent infringement law suit against other members after the standard adopted the technology at dispute.

7. FTC Report, *The Evolving IP Marketplace: Aligning Patent Notice and Remedies with Competition* (March 2011) : "holdup was similarly defined as "a patentee's ability to extract a higher licensing fee after an accused infringer has sunk costs into implementing the patented technology than the patentee could have obtained at the time of design decisions, when the patented technology competed with alternatives."

8. Jorge L. Contreras, *Fixing FRAND: A Pseudo-Pool Approach To Standards-Based Patent Licensing*, 79 *Antitrust L.J.* 47, 2013; See FIGURE 1. *Switching Cost v. Stage of Standardization*. Switching cost rise sharply after the adoption of standard.

9. See U.S. Dep't of Justice & Fed. Trade Comm'n, *Antitrust Enforcement and Intellectual Property Rights: Promoting Innovation and Competition* 37-38 (2007); the implementer of standards may face high switching costs. Also, the high switching cost can raise price, discourage new entry, reduce market competitiveness, and yield monopoly power. See PAUL KLEMPERER, *Competition when Consumers have Switching Costs: An Overview with Applications to Industrial Organization, Macroeconomics, and International Trade*, *Review of Economic Studies* 62, 515-539 (1995)

10. James Bryce Clark, *Technical Standards and Their Effects On E-Commerce Contracts: Beyond the Four Corners*, *Bus. Law.* 345, footnote 83, 59 November, 2003

grant a patentee with a weak patent with a power to charge tolls on bridges collectively built by others SSO members.¹¹

Antitrust enforcement authorities seek to take actions to mitigate the standard setting organization (SSO) patent holdup problem, and expect SSO to impose on its members the fair, reasonable and non-discriminatory (FRAND) and the disclosure obligation, and they are the two major patent misused doctrines controversially migrated to antitrust law. The appropriateness of applying these two doctrines will be reviewed and discussed later in this article.

B. China's Recent SSO Antitrust Violations in Spotlight—FRAND

The US Federal Trade Commission (FTC) and the US Department of Justice (DOJ) have recognized SSO's holdup problem in their antitrust guideline,¹² and the Chinese government shares the same concern with the FTC and DOJ.

In 2013, Shenzhen Intermediate People's Court (IDC court) ruled that InterDigital Technology Corporation (IDC) possessed the market power in the WCDMA, CDMA2000, and TD—SCDMA SEP license markets and penalized IDC approximate 3 million USD for abusing its market power by committing unnecessary patent tying licensing, compelling licensee to grant back technology without consideration, and violating the FRAND obligation by discriminatorily charging Huawei SEP royalty rates higher than Apple and Samsung.¹³ It was the first time the FRAND obligation appeared in a Chinese SSO's SEP case. However, the FRAND obligation was not required by any Chinese law under its civil law system when the court ruled. It was not until December. 19, 2013, months after the court's ruling, the FRAND obligation formally appeared in the "Announcement of the Standardization Administration of China and the State Intellectual Property Office on Issuing the Interim Provisions on the Administration of National Standards Involving Patents" and became a required obligation for any Chinese national standard involving patents.

11. See Richard J. Gilbert, *Antitrust for Patent Pools: A Century of Policy Evolution*, STAN. TECH. L. REV. 3, 2004: discussed the anticompetitive effects of weak patents in SSO patent pool.

12. *Antitrust Enforcement and Intellectual Property Rights: Promoting Innovation and Competition*, issued by THE U.S. DEPARTMENT OF JUSTICE AND THE FEDERAL TRADE COMMISSION (April, 2007), P.37-P.40

13. Shenzhongfazhiminchuzi No. 858 (2011); (2011) 深中法知民初字第 858 号; yuegaofaminsanzhongzi no.306 (2013); (2013) 粤高法民三终字第 306 号

In 2015, a 16.6 billion -USD dollar merger proposed by Nokia to Acatel Lucent, both holding SEP of wireless communication standard, again invited the Chinese government's antitrust scrutiny. The Ministry of Commerce of People's Republic of China (MOFCOM) reviewed the merger and analyzed the potential concentration effects on the market. As consistently emphasized by the FTC, the MOFCOM also required Nokia to commit to the FRAND obligation since the mechanism may ameliorate the anticompetitive effect of SEP license market concentrations.

Once again in 2016, Qualcomm's SEP license practice in wireless communication license market raised antitrust concerns. National Development and Reform Commission of the People's Republic of China (NDRC) sanctioned Qualcomm approximate USD 1,000,000,000 (RMB 6 billion) for the abuse of its dominant position in China's CDMA, WCDMA, and LTE SEP license markets.¹⁴

This SEP antitrust issue seems to continuously draw the attentions of China's administrative agencies. Perhaps it is because of the influence and the complexity of the SSO standard, billion-dollar penalty, or because infringement damages usually occur when SSO's SEP is involved. No governmental authorities, China and the US, can afford to ignore potential anti-competitive effects.

Because hijacking of SSO patents is considered one of the worst situations for consumers, a situation which China's anti-monopoly law (AML) aims to protect, a study from consumers' perspective for a review of Chinese antitrust developing mechanism, a result of its enforcement, and the appropriateness of relevant regulations on SSO's patent pooling arrangements shall be necessary. This study summarized the recent Chinese antitrust enforcements and reviewed from consumer's perspective as will be discussed later.

C. The Incorporation of Patent Misuse Doctrine in Antitrust Enforcement and a Review on US Antitrust Law

China's AML enforcement authorities have continuously emphasized the importance of the FRAND and disclosure obligations since its first SEP case in the IDC Court in 2013, and have reiterated it in Microsoft, Nokia, and Qualcomm decisions made by administrative agencies.

14. The 6 billion RMB sanction on QUALCOMM by NDRC, 国家发展改革委对高通公司垄断行为责令整改并罚款 60 亿元 http://www.sdpc.gov.cn/xwzx/xwfb/201502/t20150210_663822.html access 05/25 2016

Nevertheless, the recent *Anti-Monopoly Guidelines on Abuse of Intellectual Property Rights (Draft for Comment)* issued by the NDRC, contrary to previous administrative decisions, does not specifically illicit the FRAND and disclosure obligations.

US American Intellectual Property Law Association (AIPLA) commented¹⁵ on the guideline, and reiterated the importance of using *FRAND* licensing terms to provide the balance between the SSO's contributors' incentives to invest in R&D and the implementers' access to technologies under reasonable terms. The AIPLA criticized the guideline for not addressing whether the antitrust law or contract law should intervene if the SEP holders fail the FRAND commitment.

The US-China Business Council (USCBC), although generally agreed with the consideration of pro-competitive effect by China's agencies under the guideline, also suggested an elimination of "the clean cut" analysis on the differential treatment evaluation caused by SEP holders' abusing their dominant positions.¹⁶

Because at least one of the comments relating to injunction remedy is in direct contradiction with the US law, this study includes a review on the US antitrust law to verify if the comments are biased.

The literature review finds the USCBC's position is consistent with the US law, but AIPLA's position may be debatable. It also finds the use of patent misuse doctrine FRAND, as promulgated by the AIPLA, is not without controversy. Rather, a contradictory development of the US antitrust law, i.e., the court's requirement for finding of the patent misuse conduct in proving the antitrust violation,¹⁷ is not consistent with the law almost enacted by the Congress.¹⁸

D. The Use of Economic Theories to Resolve Legal Issues

In order to determine whether the patent misuse doctrine is an appropriate standard for antitrust review and resolve legal disputes, this study resorts to economic theories.

15. <http://www.aipla.org/advocacy/intl/Docu-ments/AIPLA%20Comments%20on%20NDRC%20%20%209%2015%20%20FINAL.pdf> access 05/25 2016

16. <https://www.uschina.org/sites/default/files/USCBC%20Comments%20on%20State%20Council%20Antimonopoly%20Commission%20Draft%20Antimonopoly%20Guidelines%20on%20Abuse%20of%20IPR%20-%20Chinese.pdf> access 05/25 2016

17. See *Ill. Tool Works Inc. v. Indep. Ink, Inc.*, 547 U.S. 28, p.5, (2006): "it would be absurd to assume that Congress intended to provide that the use of a patent that merited punishment as a felony under the Sherman Act would not constitute "misuse.""

18. Intellectual Property Antitrust Protection Act, S. Res. 1595 100th Cong. §438 : which requires finding antitrust violation as a precondition before finding patent misuse.

While many papers on economics focus on the importance of complementary pooling, few papers discuss the influence of patent pool on manufacture quantities, which directly affect consumer surplus — showing why this is one of the major legitimate reason to apply antitrust penalty on firms under both Chinese and US laws.¹⁹ Additionally, the distinct interests of “Product-Centric Developers” and “Patent-Centric Developer,” although they have been recognized by at least one legal scholar,²⁰ are seldom put together to simulate the SSO’s negotiation process.

Following a review of various literatures, an economic model revised from traditional models to reflect two competing interests, Product-Centric Developers’ and Patent-Centric Developer’s interests, is introduced to evaluate the societal effect of the FRAND and Disclosure rule. The model focuses on analyzing whether the consumer surplus is enhanced by SSO’s SEP, i.e., whether the benefit outweighs its adverse effect in corresponding to the rule of reason standard (ROR) for reviewing patent pool arrangement by courts.

The calculation result resolves the dilemma of the recent controversial rulings, and demonstrates that the court’s ruling, which found the patent misuse conduct as one of elements to prove the antitrust violation in patent pooling case,²¹ is logically sound compared to the legislator’s bill—Intellectual Property Antitrust Protection Act.²² The result also points out that the comments provided by the USCBC and part of the AIPLA’s comments are beneficial to consumers.

II. THE DEVELOPMENT OF CHINA’S ANTITRUST REGULATIONS ON SSO’S PATENT POOLING

A. The Change of China’s Sentiment on SSO’s Patent Pools

China’s sentiment against patent system is best reflected by its once prosperous DVD industry. The Chinese DVD industry had 90% market share worldwide in 2002, but 79% of the companies soon went bankrupt

19. See Chinese AML article I. ShouWen Zhang, *Economic Law* 2nd edition, p. 241 Beijing: Renmin University Press, 2012. Also, Russell Pittman, *Consumer Surplus as the Appropriate Standard for Antitrust Enforcement*, EAG Discussion Papers, EAG 07-9, June 2007. Also see Robert H. Lande and Neil W. Averitt, *Consumer Sovereignty: A Unified Theory of Antitrust and Consumer Protection Law* *Antitrust Law Journal*, Vol. 65, p. 713, 1997: demonstrate both antitrust law and consumer protection law ensure the consumers to enjoy the fruit of competition.

20. Jorge L. Contreras, *Technical Standards And Ex Ante Disclosure: Results And Analysis of An Empirical Study*, *American Bar Association Jurimetrics Winter*, 53 *Jurimetrics J.* 163 2013.

21. see *Princo Corp. v. International Trade Com’n*, 616 F.3d 1318 (Fed. Cir. 2010): required conducts hurting competition and patent misuse by patentee to prove antitrust violations

22. S. Res. 1595 100th Cong. §438

after facing serious SEP patent infringement lawsuit by DVD SEP holders.²³ This DVD SEP wiped out almost the entire DVD industry in China and caused a fury against the “US patent litigation imperialism.” Subsequently, China passed its antitrust law in 2008, and this was considered as one of the more effective tool to prevent dominant foreign companies from abusing dominant positions when enforcing their rights of SEP in China. The antagonism against the enforcement of SSO's patent rights, however, has gradually and tremendously changed in recent years.

In 2011, China spent \$208 billion on R&D, compared to US' s \$429 billion and Japan' s \$146 billion. Furthermore, its share of the world' s R&D investment constituent increased from 14 percent to 15 percent.²⁴ China has now become one of the most dynamic innovation-driven economies in the world. The number of domestic patent applications increased three times from 112,088 in 2002 to 293,066 in 2010.²⁵

For the purpose of further boosting its industry toward advanced modern economy, Chinese government has repeatedly reinforced its policy of encouraging innovation and emphasizing the importance of protecting intellectual property right. In December 2015, the State Council issued “Opinion on Accelerating the Building of IP power under New Conditions”²⁶ (the Opinion) to encourage innovation, improve intellectual property right (IPR) protection mechanism, and increase IP infringement penalties. More specifically, the Opinion provides five major measures to achieve its IP strategy: promoting reform in IP administration system and mechanism, carrying its rigid IP protection, promoting IP creation and utilization, strengthening overseas IP layout and risk prevention in key industries, enhancing international cooperation level.²⁷

While recognizing the importance of IP rights, the Chinese government also noticed the anticompetitive nature of SSO's SEP patents. The Opinion protects domestic Chinese industry from SEP patent misuse, and requires lower-level administrative agencies to fully develop antitrust

23. http://www.sipo.gov.cn/ztl/zxhd/ggkf/bdpl/hg/200812/t20081218_430596.html access 05/25, 2016

24. Comparing with a dropp from 37 percent to 30 percent in US, from 26 percent to 22 percent in Europe
https://www.nsf.gov/nsb/news/news_summ.jsp?cntn_id=130380 access 05/25 2016

25. The statistic report by SIPO, available at <http://www.sipo.gov.cn/tjxx/> access 05/25, 2016

26. Editor-in-Chief: Wu Hui, *China vows to speed up building an IP Power*, China Report Intellectual Property, Dec 30, 2015 available at <http://english.sipo.gov.cn/news/ChinaIPNews/2015/201512/P020151230397526248167.pdf> access 05/25 2016 or http://www.sdpc.gov.cn/fzgggz/wzly/zcfg/201512/t20151231_770069.html access 05/25 2016

27. *Id.*

guidelines. To be more specific, it instructs lower-level administrative agencies to incorporate the FRAND rule to prevent patent misuse when formulating antitrust guidelines, and to apply the FRAND rule to supervise the SEP right enforcement in China.

From policy makers' perspective, the Chinese and US governments are quite similar when facing the SSO's SEP issue. Both governments share the general idea that SSO's patent pool may help reduce transactional cost for IP license and improve R&D efficiency, but they also have concerns about the anticompetitive effect being augmented via an influential industrial standard. The well-functioning policy must have an antitrust mechanism to control and prevent the SEP patent holdup problems, but the mechanism must not discourage the formation of SSO's patent pools. The next session discusses Chinese government's efforts to encourage SSO's patent pooling arrangement and promote mechanisms that limit anticompetitive effect. In general, implementing SSO's patent pool formation with mandatory FRAND and disclosure obligations is believed to be the most appropriate path.

B. Chinese Courts' Antitrust Enforcement and the FRAND Obligation on SEP Holders: *IDC v. Huawei*

The ruling of the Shenzhen Court on the IDC case in 2013 predates the Opinion. The court recognized the precompetitive effect embedded in SSO's nature that may enhance product interoperability, reduce production cost and replacement cost, protect consumer welfares, and promote innovation.

The court's opinion delineated that the SEP holder in 3G standard possesses power to hinder or affect the entry of other business operators into the market because any 3G SEP patent is a necessary patent without alternative substitutes in the market. The court held that the 3G SEP patent holder has dominant position under AML Article 17.²⁸ The court also found that IDC' abused its dominant position when it committed FRAND to the European Telecommunications Standards Institute (ETSI). IDC violated the FRAND requirement by charging Huawei a higher royalty rate than Apple and Samsung. The unofficial information indicated IDC could

28. AML article 17: "For the purposes of this Law, market dominant position shall mean the market position that gives a business operator the power to control product pricing. . .the power to hinder or affect the entry of other business operators into the relevant market."

have charged Huawei 10 times higher than Apple.²⁹ IDC required a mandatory grant back clause in the license agreement, which violated AML.³⁰ In addition, the injunction remedy sought by the IDC in the US International Trade Commission (ITC) was considered to be an improper method to impose royalty rates higher than reasonable.

The Shenzhen Court affirmed the lower court's sanction of RMB 20 million and reduced IDC's final offer royalty rate for Huawei to 0.019% after comparing IDC's offered rate with Samsung and Apple under the FRAND term.³¹

Comparing with the internal instruction received by the Higher People's Court of Liaoning Province in 2008,³² which required SSO's member to collect zero royalties or at a rate substantially lower than reasonable, the FRAND obligation vested by the court in the IDC case is indeed an advancement for both antitrust law development and IP right protection in China.

In 2015, China's Supreme Court further issued a new regulation removing the cap on damage awards if a patentee fails to successfully prove the damage amount, and the lower court may at its discretion order a damage award by multiplying a reasonable number with the reasonable royalty fee previously collected by patentee.³³ A simple utility patent can be

29. <http://china.caixin.com/2014-04-17/100666904.html>, access 05/25 2016, reported the 2% final offer by IDC; 2% is 100 times higher than the court's final decision.

30. IDC also required Huawei to license back all patents, including those not relevant to IDC's technology, for free.

31. see the annual report of Huawei, http://www.huawei.com/ucmf/groups/public/documents/attachments/hw_u_323372.pdf access 05/25 2016

32. *Letter of the Supreme People's Court on the Issue of Whether the Exploitation of a Patent in the Specification for the Design of Ram-compaction Piles with a Composite Bearing Base, an Industry Standard Issued by the Ministry of Construction, by Chaoyang Xingnuo Company Which Has Conducted Design and Construction according to the Standard Constitutes a Patent Infringement*, No. 4 [2008] of the Supreme People's Court. 最高人民法院于朝阳兴诺公司按照建设部颁发的行业标准《复合载体夯扩桩设计规程》设计、施工而实施标准中专利的行为是否构成侵犯专利权问题的函(2008),民三他字第4号,《关于季强、刘辉与朝阳市兴诺建筑工程有限公司专利侵权纠纷一案的请示》(2007)辽民四知终字第126号

33. *Decision of the Supreme People's Court on Modifying Several Provisions of the Supreme People's Court on Issues concerning Applicable Laws to the Trial of Patent Controversies* (2013), 《最高人民法院于审理专利纠纷案件适用法律问题的若干规定》, if the infringement damage is uncertain, at the lower court's discretion, it may multiply several times of reasonable royalties collected by patentee as the damage award (without 3 times royalty cap). If the patentee never license its patent before, the court may resort to 1 million RMB cap under patent law article 65. <http://www.court.gov.cn/zixun-xiangqing-13244.html> access 05/25 2016

awarded RMB 1 million yuan, which was considered as the cap for invention patents.³⁴ The new patent law, currently under the public review process, also allows treble damages. It also allows the court to order RMB 5 million yuan damage even when the patentee lacks the ability to produce enough evidence proving actual damages.³⁵ The trend obviously favors a patentee's intellectual property right and the FRAND requirement is just a limited antitrust obligation on SEP IP right holders.

C. Administrative Agencies' Antitrust Enforcement Developments and New Guidelines Issued for Regulating SSO's Patent Pooling Arrangement

Under Article 10 of China's Anti-monopoly Law (AML), the State Council is responsible for antitrust enforcement and may authorize its subordinate agencies to carry out the enforcement.³⁶ Under the State Council's authorization, the NDRC investigates and sanctions price related violations; the MOFCOM supervises merger or market share concentration issue; and the State Administration for Industry and Commerce of the People's Republic of China (SAIC) reviews anti-competitive agreements, observes for abuse of dominant position by a company including all actions restricting competition other than price fixing.³⁷

Initially, Antitrust Law does not apply to IP right holders unless they abuse IP rights to exclude or limit competition Article 55.³⁸ The law does not specify what constitutes IPR abuse, not to mention using the FRAND as the mechanism to prevent IPR abuse. In the absence of a clear definition, SSO's SEP license practice therefore never raised antitrust concerns until

34. A ruling related to utility patent dispute by Shanghai Higher Court 上海高院对一起实用新型专利权纠纷作出法定最高金额赔偿判决, <http://www.chinacourt.org/article/detail/2016/04/id/1844897.shtml> access 05/25 2016

35. Article 68 of "the Revised Draft of the Patent Law of the People's Republic of China (Draft for Review)"; 《中华人民共和国专利法修订草案（送审稿）》公开征求意见的通知 <http://www.chinalaw.gov.cn/article/cazjgg/201512/20151200479591.shtml> access 05/25 2016

36. Article 10 of Anti-Monopoly Law: "The agencies undertaking the duties of anti-monopoly law enforcement as appointed by the State Council. . .shall carry out anti-monopoly law enforcement tasks in accordance with the provisions of this Law. "

37. Liu Ning Yuan, Introduction, Liu Ning Yuan, ed., *A study of Chinese Antitrust Law Enforcement from competition law's perspective*, Beijing, 2015, law press China, p.7

38. Article 55 : "With respect to business operators' acts of exercising intellectual property rights according to the provisions of laws and administrative regulations, this Law shall not apply; however, with respect to business operators' acts of abusing intellectual property rights to exclude or limit competition, this Law shall apply."

the *IDC v. Huawei*, and this is the case in which the FRAND is mentioned officially for the first time.

In 2015, China's AML experienced rapid changes in antitrust enforcement and SEP antitrust regulations. In February, the NDRC set a record-high antitrust penalty against Qualcomm's license practice.³⁹ In August, perhaps spiked by the NDRC, the SAIC began to prepare antitrust guidelines and solicited public comments as discussed below. In October, the MOFCOM issued a conditional clearance decision and concluded the FRAND and Disclosure rules as the mechanism to prevent the potential abuse of SEPs after Nokia's US 1 billion dollar acquisition.⁴⁰ On the last day of 2015, the NDRC further published a draft of antitrust guideline to solicit the comments on regulating IPR abuse by antitrust law, and it was expected to be officially submitted to the State Council for approval in the middle of year 2016.⁴¹ Contrary to the MOFCOM, SAIC, or NDRC's previous antitrust enforcement, the guideline does not emphasize the FRAND or Disclosure rules as the mechanism to prevent SEP abuse as will be discussed later.

Due to the rapid change of antitrust enforcement, a more detailed review on the recent enforcement by China's administrative agencies is summarized below:

1. MOFCOM's Antitrust Enforcement on SEP Issues

In 2014, the MOFCOM reviewed Microsoft's acquisition of Nokia Device & Services and issued a clearance with conditions for both parties.⁴² The MOFCOM first identified three relevant markets that may be affected by the merger: the smartphone device market, the operation system for smartphone device, and the patent license market related to the device. The MOFCOM found the market shares for Microsoft OS and

39. The 6 billion RMB sanction on QUALCOMM by NDRC, 国家发展改革委对高通公司垄断行为责令整改并罚款 60 亿元 http://www.sdpc.gov.cn/xwzx/xwfb/201502/t20150210_663822.html access 05/25 2016

40. <http://fdj.mofcom.gov.cn/article/ztxx/201510/20151001139743.shtml> access 05/25 2016

41. *Submitting antitrust guidelines for enforcement related to IP*, Xinhua Net, Jan 4th, 2016 知识产权反垄断指南上半年提交国务院, 新华网, 1月4日, 2016, http://news.xinhuanet.com/legal/2016-01/04/c_128591139.htm access 05/25 2016

42. Announcement No. 24 [2014], the Ministry of Commerce Announcement on Approval of Additional Restrictive Conditions in the Anti-monopoly Review Decision ReMarket Concentration in the Acquisition of the Equipment and Service Business of Nokia Corp. by Microsoft Inc. 商务部公告 2014 年第 24 号 关于附加限制性条件批准微软收购诺基亚设备和服务业务案经营者集中反垄断审查决定的公告 <http://fdj.mofcom.gov.cn/article/ztxx/201404/20140400542415.shtml> access 05/25 2016

Nokia OS were 1.2% and 3.7% respectively in China and 2.42% and 4.85% in the global market. For a reason that competition nature in OS systems substantially depended on the user's evaluation and loyalty to the embedded application but not the OS systems itself, both companies could not refuse to license, raise royalty rates, or block the OS with discriminatory treatment. Therefore, Microsoft and Nokia did not possess dominant position in the OS market.

Microsoft's SEP and non-essential patents related to 802.11 Wi-Fi, H.264 3G/4G/LTE standards for Android smartphone, however, may constitute dominant position in the license market because the patents are necessary constituent for producing Android OS, and 80% of China's smartphones use Android OS. Because 90% of Chinese manufacturers do not have capabilities to bargain and negotiate a cross license with the merged company, and because the SEP license is the major barrier for market entry, the raise of royalty rate by Microsoft may either force manufacturers to close (adversely impacting competitions) or perfuse the additional cost to consumers (harming consumers), and this kind of abuse of SEP rights may harm China's Market.

In addition, the de facto existence of SEP may substantially limit the competition in alternative technology developments. If the SEP holder abuses its rights, such as refusing to license, charging higher royalty rate than the legitimate, or discriminatory license, the competition structure of the market may be twisted. Nokia as the owner of thousands of SEP in the communication device market should not abuse its rights in the SEP licensing market of communication device.

The condition for the clearance therefore required both companies to continue license SEP patents under the FRAND as their commitment to the SSO. Conditions imposed by MOFCOM for Microsoft include: Microsoft shall not resort to injunction when enforcing the SEP rights against Chinese manufacturers, not require grant back clause unless the licensee also possesses SEP, and not assign SEP rights unless the assignee agrees to the FRAND commitments.

Likewise, conditions imposed by MOFCOM for Nokia include: Nokia shall not resort to injunction when enforcing the SEP rights under the FRAND obligation unless the licensee does not accept the FRAND term in good faith. The MOFCOM also described the good faith recognized by Nokia as: the dispute can be resolved by arbitration, and the license is bound by the result to pay royalties under the FRAND term without delay. The FRAND license term should not force licensee to accept other patent license term without FRAND obligations. Nokia shall not assign SEP rights unless the assignee agrees to FRAND commitments.

Nokia provided roughly 9 factors to determine its SEP FRAND rates and agreed no substantial deviation from it.

In October 2015, The MOFCOM further reviewed a US 16.6 billion USD merger proposed by Nokia to Acatel Lucent and issued a clearance with conditions related to the license of wireless communication SEP. In its 7000-word decision, the MOFCOM used a third party's market share report to analyze the competition effect by the concentration.⁴³ In the conditional clearance, the MOFCOM specified that the merger would not substantially limit wireless infrastructure equipment competition because ZTE, Huawei, and Ericsson still actively compete in the 2G, 3G, or 4G equipment market. The MOFCOM, however, was concerned that the merger may limit the SEP licensing market because Nokia would hold 35% of SEP patents in the market after the merger. Therefore, the conditions for the clearance required Nokia to agree on licensing its SEP patents to all licensees under the FRAND term and act as a good faith licensor when negotiating.

It is quite apparent that both decisions by the MOFCOM highly relied on the FRAND obligation to mitigate the SEP right abuse. The MOFCOM did not interfere with the SEP holder's calculation on reasonable rates in both opinions for the moment, but the nine calculation factors provided by NOKIA hinted that the MOFCOM had asked for the calculation base.

2. *The State Administration for Industry and Commerce of the People's Republic of China (SAIC)*

In August 2015, another administrative agency SAIC issued antitrust provisions on prohibiting "the Abuse of Intellectual Property Rights to Preclude or Restrict Competition," and the provisions are expected to protect the rights of IP rights holders while promoting innovation and preserving market competition.⁴⁴ As mentioned, the FRAND obligation and Disclosure rules of patent misuse doctrine is believed to be the means to achieve the goal.

Particularly, the provision⁴⁵ of Article 13 requires that: An operator shall not use the formulation and implementation of the standards . . .to

43. <http://fldj.mofcom.gov.cn/article/ztxx/201510/20151001139743.shtml>, access 05/25 2016

44. Provisions of the State Administrative for Industry and Commerce on prohibiting the Abuse of Intellectual Property Rights to Preclude or Restrict Competition http://www.saic.gov.cn/zwgk/zyfb/zjl/fld/201504/t20150413_155103.html access 05/25 2016

45. English version reference: <http://www.lexology.com/library/detail.aspx?g=25eefb9e-404d-4ac5-b704-4a5672330f95> access 05/25 2016

exclude or restrict competition in exercising intellectual property rights. An operator who is of dominant market position may not . . . implement . . . excluding or restricting competition in the course of formulation and implementation of the standards:

- i. when participating in the formulation of the standards, deliberately not disclosing information on its rights to the standards setting organization, or explicitly waiving its rights, but claiming its patent rights to the implementers of a standard after the standard involves the patent.
- ii. after the patent has become an essential patent of the standards, in violation of the fair, reasonable and non-discriminatory principles, implementing denial of license, conducting tied sale of products, adding other unreasonable trading conditions in the transaction or implementing other acts of excluding or restrict competition.

The provision also prohibits some SSO's patent pooling conducts when SSO's members have a dominant position.⁴⁶ The restrictions are not quite different from conducts prohibited under US law as will be discussed later in this article.

The provisions, however, do not specify what constitutes IP holder's dominant position in the market. If an SSO's SEP holder's dominant position is presumed, as the court did in *IDC v. Huawei*, Article 13 essentially requires all SEP holders to follow the FRAND obligations even if they do not participate in the formation of the standard or not commit to the FRAND. In addition, SSO's members' violation of the FRAND and Disclosure rule may be considered as a behavior that "exclude or restrict competition in exercising intellectual property rights."

On November 25, 2015, the SAIC further publicly welcomed comments on its sixth draft of the "Antitrust Guideline on Intellectual Property Rights Abuses Anti-monopoly and Anti-unfair Competition Enforcement Bureau of State Administration for Industry & Commerce."⁴⁷ This new provision, which was finalized four months after the August provision,

46. See Article 12: The provision prohibits members of SSO's Patent pool member when having a dominant position from: Restricting independent licensing; constraining the members of patent pool or licensees to research and develop and to compete with the parent pool; forcing the licensees to exclusively grant back the improved technologies to the members of patent pool; prohibiting the licensees from challenging patent validity of the pool; treating licensee or the members of patent pool with the same conditions discriminatorily; and exercise other conducts of abusing dominant market position.

47. <http://www.saic.gov.cn/fldyfbzdzjz/gzdt/201601/W020160108580399473419.pdf> access 05/25 2016

clearly instructed that a SEP holder should not be presumed to have a dominant position in the market, and the antitrust determination shall be based upon observing effects on competition.⁴⁸ In this new provision, the FRAND obligation and Disclosure rule are merely a reference for analyzing relevant monopolistic conduct but not a mandatory obligation. In addition, analysis on SEP holder's market position shall be the same as ordinary IP holders and similar general analysis framework shall be applied to determine market dominance under the AML.

Based on a proposed economic calculation as will be discussed later in this article, this new November antitrust guideline reflects a timely revision correcting the potential mistakes in the August provision.

3. *The Development of NDRC's Antitrust Enforcement on SEP Issues*

The NDRC, similar to the MOFCOM and the SAIC, adopted the FRAND initially but it seems to have changed its attitude on incorporating the FRAND doctrine for antitrust review in its most recent guideline. Prior to discussing the guideline drafted by the NDRC in December 2015, this study must introduce the high-profiled 1-billion-penalty USD decision on Qualcomm's abusing SEP license in the wireless telecommunications industry in February 2015.

From NDRC's earlier perspective, what constitutes antitrust violation may be understood by the Qualcomm decision. According to the decision,⁴⁹ the evidence showed Qualcomm possessed a dominant position in the CDMA, WCDMA, and LTE SEP markets. Unlike the market share analysis done by the MOFCOM, no explanation was given as to what evidence constituted the dominant position.

Qualcomm was accused of abusing the dominant position by charging a license fee higher than it should have obtained, of tying unnecessary and expired patents, and of attaching unreasonable condition when selling its chips.

48. *Id.* at article 4 and article 29. "a patent holder should not be directly presumed to have market dominance in the relevant market solely because of owning the SEP. . .the identification of a SEP's market position should be based on. . .on the influence that the SEP's relevant characteristics . . . the competition between different technical standards and the basic status of the technical standards." If the market share is small, the SEP holder does not have market dominance. Otherwise, the following factors should be considered: "the substitutability of the standard and the patented technologies; the evolution and compatibility of the standard and its influence; the possibility and difficulty of switching to other technical standards by implementers of the standard and other relevant factors that should be considered."

49. see footnote 39, *Ibid.*

Regarding the charge of unfairly high royalty rates, the decision was based on Qualcomm's refusal to provide the patent list to its licensee, requiring free grant back, and calculated royalties based on the entire device value instead of the SEP related chipset value.

For the charge of tying unnecessary and expired patents, the licensee was compelled to accept a package of unnecessary license tying with the SEP.

For the charge of attaching unreasonable conditions, the licensee seemed to have been forced to agree on the non-challenge clause.

During the investigation, Qualcomm "voluntarily" changed its business practices during the investigation with following actions: 1) charged royalty rates at 65% of the wholesale net selling price of the device, 2) provided the patent list for potential licensees and the list shall not include expired patents 3) canceled free grant-back clauses, 4) ended a practice of tying unnecessary patents to SEP license, 5) discontinued unreasonable tie-in sales and rescind the non-challenge clause with the Chinese licensee.

Due to the voluntarily change, the NDRC in the decision publicly welcomed Qualcomm's continuing investment in China and promised to support the royalty collection in China with the royalty rates. It appeared that as long as Qualcomm is committed to FRAND practice, the royalty rate could be decided by market and freely negotiated by the licensee and Qualcomm.

It is fair to conclude that the purpose of the NDRC's decision was to maintain the market order, rather than to instruct a particular "FRAND" rate for a SEP's license agreement. The FRAND seemed an implicit obligation for SEP holders. The decision also shed some lights on the NDRC's self-control of its power, allowing the market to decide reasonable rates. Despite the fact that the Qualcomm case demonstrated a huge advancement in the NDRC's antitrust enforcement, it remains a mystery as to how the NDRC determined Qualcomm's dominant position and came up with the 8% of the annual revenue as a reasonable penalty.

4. The Anti-Monopoly Guidelines on Abuse of Intellectual Property Rights (Draft for Comment)

Several months after the Qualcomm decision and several days after the Opinion by the State Council, the NDRC conformed to the State Council's plan, and issued *Anti-Monopoly Guidelines on Abuse of Intellectual Property Rights (Draft for Comment)*.⁵⁰ The guideline is expected to be

50. http://jjs.ndrc.gov.cn/fjgld/201512/t20151231_770233.html? access 05/25 2016

officially submitted to the State Council for approval in the second half of year 2016 and is currently published on NDRC's website for public review.⁵¹

Contrary to the Opinion and the Qualcomm decision, the draft guideline does not include the FRAND or Disclosure rules for SEP's antitrust review. The tentative antitrust guideline (without patent misuse) chooses a different analysis path when regulating SSO's SEP IP right abuse matters. The provision distinguishes the antitrust suspicious contents in IP agreements and the abuse of dominant positions by IP holders in two different categories. The contents relevant to SSO's SEP antitrust enforcement are summarized as below:

i. A review of IP related agreements:

Agencies shall determine if operators are in competitive positions or not.

When an operator is in a competitive position, agencies takes following factors into consideration:

1. R&D joint agreement: whether a restriction affects independent R&D activities beyond the scope of the technology of the joint R&D; whether the joint agreement limits corporations to develop technology with other third parties; whether the joint R&D agreement limits IPR enforcement not relevant to the technology developed by the R&D joint venture.
2. Patent Pool consortium agreement: whether the pool mainly consists of complimentary or substitute patents; whether the consortium allows members to license IP independently; whether it excludes alternative technologies or creates market entry barriers for other competitors; whether members exchange antitrust sensitive information such as price, capacity, market division, or information not necessary to form the consortium; whether the consortium limits members' activities in developing new technologies.
3. Cross license agreement: whether the agreement is exclusive in nature, creates entrance barrier for a third party into relevant markets, or impedes downstream market competition.
4. Standard Formation agreement: whether the formation excludes any specific operators, excludes particular proposals by a specific operator, prohibits the implementation of other

English translation: <http://www.ipkey.org/en/ip-law-document/item/3832-anti-monopoly-guideline-on-intellectual-property-abuse> access 05/25 2016

51. http://jjs.ndrc.gov.cn/fjgld/201512/t20151231_770233.html access 05/25 2016 and http://news.xinhuanet.com/legal/2016-01/04/c_128591139.htm, access 05/25 2016

standards, or causes necessary and reasonable mechanism to restrict IP right enforcement related to the standard.

It appears that the NDRC was concerned about technology competitions affected by R&D JV and the downstream market competition affected by a cross license. When it comes to standard formation and patent pool, the agency focused more on market order and fairness: such as fair opportunities for SSO's members to participate, fairness for IP holders to compete, fairly compete with other standards. . .etc.

When operators are *not* in competitive positions against each other, the agency contemplates if an agreement involves price fixing, exclusive grant back, forcing licensee to agree on no challenge clause or other actions that may raise antitrust concerns.

The new provision also provides a “safe harbor” for antitrust. If the market share of the operators is fewer than 15% or 25% of the operators not in competition, the IP holder agreement is presumed legitimate unless the agreement violates Articles 13 and 14 of the AML.⁵² Comparing the provision with Article 19 of the AML, this new provision allows additional 5% market share concentration for any IP holders and additional 15% if the IP holders are not in a competition position.⁵³

ii. IP holders commit the abuse of dominant positions

The agency concerns different factors when an IP holder commits an abuse of dominant positions via IP rights. Unlike the court's analysis in *IDC v. Huawei*, IP or SEP right holders are not presumed to have market power or dominant position in the market. The agency shall follow the factors and the analysis framework under the AML, but it may further consider additional factors when an IP holder's dominant position is concerned.

1. Dominant position

The factors in determining IP holders' dominant positions include: The alternative cost for switching to other IP rights; the reliance of downstream markets on the products involving the IP at issue; and the counterpart dealer's ability to bargain.

When SEP is a concern, additional factors may be considered: The value of the standard and its application in the market; the existence of alternative standards, industrial reliance on the standard and the switching

52. Noting that the market share safe harbor is 20% for competitor and 30% for non-competitor respectively under the antitrust enforcement provisions issued by SAIC on August 2015.

53. Comparing with article 19, AML: “if a certain business operator therein holds less than ten percent of the market shares, that business operator shall not be deemed to hold a market dominant position.”

cost of alternative standards; the development and compatibility of different generation standards; the possibility of adopting alternative technologies in the standard; and whether the SEP right holder has resorted to injunction as a remedy.

2. The abuse of dominant positions

If an IP or SEP holder is deemed to have a dominant position, the following behaviors may constitute an antitrust violation: demanding unreasonably high royalty rates, refusing to license, tying and attaching unreasonable conditions in deal, and engaging in differential treatments to its licensees. The guideline notes that:

For royalty rates, an IP right holder is entitled to collect royalties as incentives for its invention. The right holder with a dominant position, however, cannot collect the royalty at a rate that may restrict competition or harm consumers.

In regard to right to refuse a license, an IP right holder is free to do so, but the holder with a dominant position may not refuse to license without legitimate reasons.

In the aspect of tying, it may be a pro-competitive behavior because it reduces transactional costs. However, tying may be anti-competitive if it is against the will of a counterparty; against business customs; it disregards relevance between a tied product and the IP related products; the practice is unnecessary for product compatibility, safety, or performance; and it restricts other operators' dealing opportunities.

Regarding the differential treatment, an IP right holder has a right to treat a licensee differently, but a dominant right holder cannot treat a licensee with essentially similar condition differently. Other factors may include: the licensee's condition, a scope of a license, substitute products provided by different licensees, license terms, a nature of business arrangements between a licensor and licensees, and the negative effects on a licensee's participation in a relevant market.

For using injunction as a remedy, the guideline recognizes injunction as a legitimate remedy for SEP right holders, but the injunction order may be used to force a licensee to accept unreasonable royalty rates. The agency may further consider an actual intent of both parties in the license negotiation, including no-injunction commitments of relevant standards, offers during the negotiation, and consumers' interests affected by the injunction.

All the factors in reviewing SEP holders' behaviors for potential anti-competitive practices require the agency to consider a pro-competitive nature of IP right holders. Except for the holders' practices of attaching unreasonable conditions, it appears that the guideline lists potential anti-competitive behaviors by dominant SEP holders without considering their pro-

competitive nature. The following actions by a dominant SEP holders is listed as: requiring the licensee to grant back improvements exclusively, precluding the licensee from challenging IP right validity or filing infringement law suit against the licensor, restricting the licensee from using competitive technology, asserting expired IP rights, or prohibiting the licensee to deal with other third parties. Such actions by the SEP holders with dominant positions, unlike the ordinary IP holders,⁵⁴ may invite antitrust reviews.

Due to lack of consideration on the pro-competitive effect, it appears that the NDRC may incline to review those actions with rigidity while inclining to review other actions under the rule of reason.

5. *The Comments for the Antitrust Guideline from US perspective*

Comparing the Chinese guidelines with the Antitrust guidelines issued by the Federal Trade Commission (FTC) of the United States,⁵⁵ they share a similar standard of review. China's guidelines require an agency to take into account both the pro-competitive and anti-competitive effects in most IPR antitrust analysis. However, unlike the FTC guidelines, it does not address the FRAND and disclosure obligations.⁵⁶

The US-China Business Council (USCBC) agrees with few of the guidelines, such as considering pro-competitive effect when evaluating patent pool consortium agreement. USCBC expressed special concerns on "the clean cut" evaluation of holders' abusing dominant positions under differential treatment provision.⁵⁷ The comment reflects a view of US

54. Noting that the guideline recognize pro-competitive effect of those restrictions by ordinary IP holder as shown in its *Article II(ii)*: 2 False grant-back could decrease the risk of licensor, motivate investment . . . , and promote innovation; 3. . . non-assertion clause could prevent excessive lawsuits and improve transaction efficiency; 4. . . restricting licensee from using competitive technology or dealing with other third party may be commercially reasonable. But when a SEP holder possesses dominant position, no such pro-competitive consideration was given.

55. *Antitrust Guidelines for the Licensing of Intellectual Property*, 1995, 3.4: "The Agencies' general approach in analyzing a licensing restraint under the rule of reason is to inquire whether the restraint is likely to have anticompetitive effects and, if so, whether the restraint is reasonably necessary to achieve pro-competitive benefits that outweigh those anticompetitive effects"

56. *Anti-Monopoly Guidelines on Abuse of Intellectual Property Rights (Draft for Comment)*, [http://jjs.ndrc.gov.cn/fjgld/201512/t20151231_770233.html? access 05/25 2016](http://jjs.ndrc.gov.cn/fjgld/201512/t20151231_770233.html?access=05/25/2016)

57. The comments of USCBC on Anti-Monopoly Guidelines on Abuse of Intellectual Property Rights (Draft for Comment) Jan 20th 2016; 美中贸易全国委员会关于国务院反垄断委员会《关于滥用知识产权的反垄断指南》的建议, 1月20日, 2016;

government's antitrust enforcement agency's view of using a more lenient rule of reason standard (ROR) when reviewing SSO's SEP antitrust issues rather than the per se illegal standard as before.

The AIPLA criticized several changes of China's AML enforcement by the NDRC, reiterating the importance of SEP patent holders' legitimate rights, and suggesting using the FRAND as the mechanism to prevent SEP's abuse of dominant position.⁵⁸ The AIPLA casted a doubt on Article III(II)(5) Discriminative treatment of the guidelines because a mere different rate received by two licensees does not necessarily mean an antitrust violation. In addition, the AIPLA criticized Article III(II)(1) pointing that treating license IPR at unfair high royalty as an antitrust violation would upset innovators' interests. It further suggested a clarification on whether breaching the FRAND obligation or the seeking of an injunction against SEP infringers should on its own constitute an antitrust violation.

It is unclear whether comments made by the USCBC and the AIPLA are biased. For example, the AIPLA suggested, for the fear of affecting IP holders' legitimate rights, "a breach of a FRAND obligation or the mere seeking of an injunction against implementers of an SEP should not on its own constitute an antitrust violation."⁵⁹ The US courts, contrary to the AIPLA's suggestion, sought to limit the monopoly rights of SEP holders. If the patentee commits to FRAND rule under the SSO policy, the patentee of the SSO standard can no longer use injunction to prevent others from implementing the patented technology.⁶⁰ Using the injunction remedy prohibited by law during the course of license negotiation is hardly a legitimate enforcement of SEP holders' rights under US law. The comments contradictory to US law at least demonstrate some of the AIPLA's comments for China's guidelines may be biased.

It is also unclear whether the USCBC's comments on applying ROR review standard or China's draft guidelines, which preserves the clean cut per se evaluation, is more appropriate for antitrust reviews on SEP holders'

<https://www.uschina.org/sites/default/files/USCBC%20Comments%20on%20State%20Council%20Antimonopoly%20Commission%20Draft%20Antimonopoly%20Guidelines%20on%20Abuse%20of%20IPR%20-%20Chinese.pdf> access 05/25 2016

58. Re: AIPLA Comments on State Council Anti-Monopoly Commission's AntiMonopoly Guidelines on Abuse of Intellectual Property Rights (Draft for comment); <http://www.aipla.org/advocacy/intl/Documents/AIPLA%20Comments%20on%20NDRC%20%202%209%2015%20%20FINAL.pdf> access 05/25 2016

59. *Id.*

60. *Apple Inc. v. Motorola, Inc.*, Nos. 12-1548, -1549, (Fed. Cir. Apr. 25, 2014), "A patentee subject to FRAND commitments may have difficulty establishing irreparable harm. On the other hand, an injunction may be justified where an infringer unilaterally refuses a FRAND royalty or unreasonably delays negotiations to the same effect."

conducts. Furthermore, it remains uncertain whether the FRAND obligation as promulgated by the AIPLA, adopted by China's administrative agencies earlier, but implicitly skipped in the recent guideline is an appropriate mechanism for antitrust enforcement.

For better understanding of an appropriate antitrust legal mechanism and to evaluate whether the comments provided by the USCBC and the AIPLA are unbiased, the next section reviews the development of Per Se, ROR, and patent misuse doctrine for regulating SEP's anticompetitive behaviors under the US law.

III. US LEGAL LITERATURE REVIEW

A. Per Se and Rule of Reason Review on Patent Pool

In very early cases before 1912, US courts gave patentees relatively wide latitude to take advantage of business potential from an invention. Collecting royalty by forming a patent pool was one of the options.⁶¹ In this era, patent law often trumped antitrust law.⁶²

The Supreme Court soon changed its attitude after 1912, and condemned patent pooling because it realized that the pool license agreement could serve to fix price in the downstream market and reduce competition.⁶³ With suspicions toward patent pooling, the courts also recognized a pro-competitive effect of patent pool and allowed licensing arrangement of resale price fixing if a patentee vertically imposed a price restriction on its dealer⁶⁴ or when the patents were blockings⁶⁵ each other.

61. *Bement v. Nat'l Harrow Co.*, 186 U.S. 70 (1902) is the first patent pooling cases based on Richard J. Gilbert, *Antitrust for Patent Pools: A Century of Policy Evolution*, STAN. TECH. L. REV. 3, 2004 (2004).

62. *Henry v. A. B. Dick Co.* 224 U.S. 1, 224 U. S. 3 (1912): "The patent statute is one creating and protecting a true monopoly granted to subserve a broad public policy, and it should be construed so as to give effect to a wise and beneficial purpose."

63. *Standard Sanitary Mfg. Co. v. United States*, 226 U.S. 20 (1912) "Before the agreements, the manufacturers of enameled ware were independent and competitive. By the agreements, they were combined, subjected themselves to certain rules and regulations—among others, not to sell their product to the jobbers except at a price fixed not by trade and competitive conditions."

64. *United States v. General Electric Co. et al.*, 272 U.S. 476 (47 S.Ct. 192, 71 L.Ed. 362), (1926). The court upheld a patentee's license to put a restriction upon his licensee "as to the prices at which the latter shall sell articles which he makes and only can make legally under the license."

65. *Standard Oil Company v. United States*, 283 U.S. 163 (1931)

During the 1930s-1950s, suspicions further escalated and antitrust law review standard began to focus on per se rule and market structures.⁶⁶ SSO's patent pooling conduct was not an exception to those per se rules. Various pooling conducts among horizontal competitors such as price restriction,⁶⁷ territorial allocation,⁶⁸ and quantity restriction among horizontal competitors,⁶⁹ as part of a patent licensing agreement, were prohibited. The Court was concerned that the pooling arrangements among horizontal competitors was a sham mechanism to fulfill the licensor's anti-competitive goal thus condemned those anti-competitive conducts as "per se illegal."⁷⁰

The Court's scrutiny toward patent pool during this period was evinced in the *Gypsum* case (1948).⁷¹ There, the Court ruled that even a vertical price restriction imposed by a patentee was illegal, contrary to its ruling 20 years ago which involved similar pooling license conducts.⁷²

From the 1960s to 1980s, the US Supreme Court decisions repeatedly dealt with exclusionary practices and the "capture" of an SSO by a group of competitors.⁷³

In the 1970s and 1980s, a rigid review on horizontal competitors' conduct under per se rule drew very strong criticism from the Chicago School of legal scholars such as Robert Bork and Richard Posner.⁷⁴ The Chicago School scholars proclaimed that the traditional per se illegal conducts, such as vertical restraints, industrial concentration, mergers, and contractual restraints, might still have precompetitive effects.⁷⁵ The tension between per se rule and rule of reason standards exacerbated in the 1970s.⁷⁶ In *United States v. Sealy, Inc.*, the Court held that the vertical

66. *Antitrust Policy: A Century of Economic and Legal Thinking*, William E. Kovacic and Carl Shapiro, Journal of Economic Perspectives, Volume 14, Number 1 Winter 2000, Page 49

67. *United States v. Line Material Co.*, 333 U.S. 287 (1948)

68. *United States v. National Lead Co Et Al.*, 63 F. Supp. 513 (1945)

69. *Hartford-Empire Co. v. United States*, 323 U.S. 386 (1945)

70. *United States v. New Wrinkle, Inc.*, 342 U.S. 371 (1952). "When cross-licensing or pooling arrangements are mechanisms to accomplish naked price fixing or market division, they are subject to challenge under the per se rule."

71. *United States v. U.S. Gypsum Co.*, 333 U.S. 364 (1948)

72. See *Supra. General Electric Co. Et Al.*, 272 U.S. 476, (1926)

73. See FTC 2007 report, Antitrust Enforcement And Intellectual Property Rights: Promoting Innovation and Competition, 2007, P.50, citing *Radiant Burners*, 364 U.S. 656; *Nat'l Soc'y of Prof'l Eng'rs v. United States*, 435 U.S. 679 (1978); *Am. Soc'y of Mech. Eng'rs*, 456 U.S. 556; *Allied Tube*, 486 U.S. 492.

74. William E. Kovacic and Carl Shapiro, *Antitrust Policy: A Century of Economic and Legal Thinking*, Journal of Economic Perspectives, Volume 14, Page 52, Number 1 Winter 2000

75. *Id. at 53.*

76. *Id.*

restrain of retail prices imposed by a licensor with legally obtained trademark monopoly as illegal per se.⁷⁷ Yet a few years later in 1977, the US Supreme Court in *Continental T.V. Inc. v. GTE Sylvania Inc.*, recognized the scholars' opinion, and held that all vertical restrictions, except the very sensitive price restriction, should warrant the rule of reason analysis.⁷⁸

The patent pool cases are no exception to the vigorous debates, but it is clear that there has been a gradual shift towards favoring the rule of reason analysis. In *Manufacturers Aircraft Ass'n* case (1975), the Court was still concerned that a pooling agreement tended to diminish incentive for individual members to compete for innovation. The Court thus dismantled the aircraft patent pool.⁷⁹ Yet in 1977, the Court, relying on the *Continental T.V.* ruling, applied the rule of reason analysis and struck down the traditional ruling that all vertical royalty fixing and tying claims were subject to per se review.⁸⁰ Nevertheless, the Court still condemned horizontal cross license agreement since the purpose of the agreement was to perpetuate the royalty licensing program as the plaintiff asserted.

In 1979, the Court ruled that the blanket license of horizontal copyright pool was not a per se price fixing violation of the Sherman Act but shall be carefully assessed under the rule of reason.⁸¹ In 1980, the Court reemphasized the pro-competitive effect of patent pool in mitigating a "blocking patent" problem, and such legitimate pooling arrangement should not be condemned in the absence of anti-competitive purpose or effect.⁸²

Since the 1980s, the Court in general held a view that joint ventures for patent pools are generally reviewed under the "rule of reason" unless they "amount to complete shams."⁸³ Sharing the view of the Court, the

77. *United States v. Sealy, Inc.*, 388 U.S. 350, (1967).

78. *Continental T.V. Inc. v. GTE Sylvania Inc.*, 433 U.S. 36, p.58, (1977): "Such restrictions, in varying forms, are widely used in our free market economy. As indicated above, there is substantial scholarly and judicial authority supporting their economic utility."

79. *United State v. Manufacturers Aircraft Ass'n*, 1976-1 Trade Cas. (CCH) ¶ 60,810 (S.D.N.Y.1975). Patent pool can reduce innovative incentives in the concentrated industry with high entry barriers.

80. *Duplan Corp. v. Deering Milliken, Inc.*, 444 F. Supp. 648, (D.S.C. 1977),

81. *BROADCAST MUSIC, INC. v. CBS*, 441 U.S. 1, (1979)

82. *CARPET SEAMING TAPE LICENSING v. BEST SEAM INC.*, 616 F.2d 1133, (1980)

83. *Addamax Corp. v. Open Software Found., Inc.*, 152 F.3d 48, 52 & n.5 (1st Cir. 1998); See also, *United States v. Microsoft*, 253 F.3d 34,(D.C. Cir. 2001) rejected to find a package license combining "essential" with "nonessential" as per se violation of tying; also see *U.S. Philips Corp. v. Int'l Trade Comm'n*, 424 F.3d 1179, 1193(Fed. Cir. 2005): "package licensing has the procompetitive effect of reducing the degree of uncertainty associated with investment. . .apply the rule of per se illegality to Philips's package licensing agreements was legally flawed."

U.S. antitrust agencies stated conclusively in *Intellectual Property Antitrust Guidelines* published in 1995 that licensing restraints are evaluated under the rule of reason approach.⁸⁴ In one of its public statements, the agency said, “policy makers should avoid thinking of antitrust as a tool to regulate standard setting efforts, but rather they should analyze standard setting practices for specific competitive harms.”⁸⁵ The Federal Trade Commission (FTC) agency also treated most research joint venture agreements as pro-competitive, and typically analyzed the agreement under the rule of reason.⁸⁶

In 2004, the U.S. Congress enacted the Standards Development Organization Advancement Act of 2004 (SDOAA), which was amended from the National Cooperative Research and Production Act of 1993, to offer additional antitrust protection for SSO's standard development activities. The SDOAA specified that “conduct of research joint ventures is not deemed illegal per se, but is judged on the basis of its reasonableness, taking into account all relevant factors affecting competition.”⁸⁷ Also, Section 211 of the Tunney Act Reform of 2004 requires the courts to consider a competitive impact of a judgment, an impact of entry of such judgment upon competition, and a consideration of the public benefit.⁸⁸

Recently, the rule of reason analysis for SSO's patent pool arrangement is further refined into two categories of analysis. On the one hand, if the SSO's conduct is a “naked restraint” that is so plainly anticompetitive with no pro-competitive justification,⁸⁹ the court may apply the “Quick Look” rule of reason analysis, and evaluate “only a cursory examination to determine the SSO's antitrust liability” when the per se framework is

84. Antitrust Guidelines for the Licensing of Intellectual Property, 1995, 3.4: “The Agencies’ general approach in analyzing a licensing restraint under the rule of reason is to inquire whether the restraint is likely to have anticompetitive effects and, if so, whether the restraint is reasonably necessary to achieve procompetitive benefits that outweigh those anticompetitive effects”

85. EFFICIENCY IN ANALYSIS OF ANTITRUST, STANDARD SETTING, AND INTELLECTUAL PROPERTY, High-Level Workshop on Standardization, IP Licensing, and Antitrust Tilburg Law & Economic Center, Tilburg University Chateau du Lac, Brussels, Belgium, Deputy Assistant Attorney General Antitrust Division U.S. Department of Justice, January 18, 2007. “As a general rule antitrust law should not prohibit practices that make standard setting more efficient, because efficiency is good for consumers.”

86. FTC & Dep’t of Justice, Antitrust Guidelines for Collaborations Among Competitors, § 3.31(a) at p.14 (2000)

87. 15 U.S.C. § 4302

88. See <https://www.congress.gov/bill/108th-congress/house-bill/1086> access 05/25 2016

89. Naked restraint is a restraint with no purpose except stifling of competition. See *BROADCAST MUSIC, INC. v. CBS*, 441 U.S. 1, 3 (1979) citing *White Motor Co. v. United States*, 372 U.S. 253, 372 U.S. 263; also *Cal. Dental Ass’n v. FTC*, 526 U.S. 756, (1999)

inappropriate.⁹⁰ Under such analysis, the economic harm is presumed due to the questionable nature of the conduct, and the burden is shifted to the defendant to show empirical evidence of pro-competitive effects of the joint venture to rebut the presumption.⁹¹ On the other hand, the court is cautious about applying the Quick Look analysis for reviewing SSO conducts because “that presumption of anti-competitiveness shall not be lightly invoked.”⁹²

If the standard setting conduct, which may enhance efficiency or productivity, falls into the “ancillary restraints” category, the Court may apply the rule of reason analysis to determine whether the benefit of the conduct outweighs the anti-competitive effect.⁹³

It is clear that the development of recent cases reflect the authorities’ more lenient attitudes toward patent pooling, although certain per se violations remain prohibited under the US antitrust law. The enactment of the SDOAA and Tunney Act Reform also demonstrate the same trend.

B. Controversial Patent Misuse Standard, FRAND Commitment, and Disclosure Requirement

In recent litigations, the Court recognized the pro-competitive effect of SSO under the rule of reason. However, by using the patent misuse doctrine, it turned to highlight the patent misuse or the possible patent holdup abuse of the standard-patent pool-setting process.⁹⁴

90. See *Princo Corp. v. International Trade Com’n*, 616 F.3d 1318 (Fed. Cir. 2010): “Quick-look analysis applies to “naked restraint[s] on price and output” where a detailed market analysis is unnecessary to conclude that the arrangements in question have anticompetitive effects” ; *AGNEW V. NAT’ L COLLEGIATE ATHLETIC ASS’ N*, 683 F.3d 328 (7th Cir. 2012)

91. “. . .if the joint ventures were a sham, or if the alleged agreement were a naked restraint, i.e., not reasonably necessary to achieve the efficiency-enhancing benefits of the joint venture,” the burden of proof would shift to defendant to show empirical evidence of procompetitive effects of the joint venture . See *Princo Corp. v. International Trade Com’n*, 616 F.3d 1318 (Fed. Cir. 2010) citing *Major League Baseball Props., Inc. v. Salvino, Inc.*, 542 F.3d 290, 338 (2d Cir.2008); and *California Dental Association v. FTC*, 526 U.S. 756, 770 (1999).

92. *Princo Corp.*, 616 F.3d 1318, citing *Broad. Music*, 441 U.S. at 8-9, 99 S.Ct. 1551.

93. “A restraint is ancillary when it may contribute to the success of a cooperative venture that promises greater productivity contribute to the success of restraint is ancillary when it may contribute to the success of a cooperative venture that promises greater productivity and output.” See *Polk Bros., Inc. v. Forest City Enterprises, Inc.*, 776 F.2d 185 (7th Cir. 1985). When the agreement is part of a cooperative venture with prospects for increasing output, it should not be condemned as per se illegal. *Id.* at 190

94. See *Broadcom Corp. v. Qualcomm Inc.*, 501 F.3d 297, (3d Cir. 2007): a patent holder intentionally false promises to license its patent on SDO’s FRAND terms yet breach the promise may constitute actionable anti-competitive conduct. “A standard, by definition, eliminates alternative technologies. . .measures such as fair, reasonable, and non-discriminatory (FRAND) commitments become important safeguards against monopoly power.”

The patent misuse doctrine, which was originated as early as 1917 by a judge, migrated from patent law to antitrust law, and became the review standard on patent pool arrangements in the 1940s and the 1950s.⁹⁵ “The basic rule of patent misuse is that the patentee may exploit his patent but may not use it to acquire a monopoly not embraced in the patent.”⁹⁶

Traditionally, the court would consider the existence of a patent misuse to determine whether a patentee violated antitrust law.⁹⁷ Misuse conducts such as obtaining patent by fraud⁹⁸ or extending a patent monopoly beyond a scope permitted by the Congress⁹⁹ was held illegal per se in the early days.

Similar to the traditional antitrust review, the Court in recent years have favored the rule of reason when applying patent misuse doctrine to evaluate the patent pool arrangement.¹⁰⁰ Despite the relatively lenient antitrust review since the year 2000, a patentee as a member of the SSO may incur additional obligation when exercising its patent monopoly right in the modern era. For example, the Court may scrutinize on a SSO's patent pool arrangement when a patentee breaches a commitment to license on a reasonable and non-discriminatory terms (FRAND), and this commitment is relied on by the SSO in deciding the standard. Violating the FRAND commitment can constitute patent misuse and antitrust violations.¹⁰¹ In

95. Daryl Lim, Patent Misuse and Antitrust: Rebirth or False Dawn?, 20 Mich. Telecomm. & Tech. L. Rev. 299, P.315, (2014). citing *Motion Picture Patents Co. v. Universal Film Mfg. Co.*, 243 U.S. 502, 502 (1917) as the first case articulated patent misuse and *Morton Salt v. G.S. Suppiger Co* 314 U.S. 488 (1942) as the first Supreme Court case to address both Patent Misuse Doctrine and Antitrust competition policy ; See also, *United States v. United States Gypsum Co.*, 333 U.S. 364, 400, 68 S.Ct. 525, 92 L.Ed. 746 (1948), patents “grant no privilege to their owners of organizing the use of those patents to monopolize an industry through price control.”

96. *Princo Corp. v. International Trade Com'n*, 616 F.3d 1318 (Fed. Cir. 2010) citing *Transparent-Wrap Mach. Corp. v. Stokes & Smith Co.*, 329 U.S. 637, 643, 67 S.Ct. 610, 91 L.Ed. 563 (1947).

97. *Cole v. Hughes Tool Company*, 215 F.2d 924 (1954) “ The mere accumulation of patents, no matter how many, is not in and of itself illegal. Of course, there must not be a misuse of the patent monopoly” also, see *Zenith Radio Corp. v. Ha-zeltine Research, Inc.*, 395 U.S. 100, 134-35 (1969)

98. *Walker Process Equipment, Inc. v. Food Machinery & Chemical Corp.*, 86 S.Ct. 347 (1965): inquired whether the enforcement of a patent obtained by fraud may be the basis of an action under § 2 of the Sherman Act. also see *Bendix Corporation v. Balax, INC.*, 471 F.2d 149,159 (1972)

99. *Brulotte v. Thys Co.*,379 U.S. 29 (1964):” royalty agreement that projects beyond the expiration date of the patent is unlawful per se.”; *White Motor Co. v. United States*, 83 S.Ct. 696 (1963):” Where the sale of an unpatented product is tied to a patented article, that is a per se violation since it is a bald effort to enlarge the monopoly of the patent beyond its terms.”

100. *U.S. PHILIPS CORP. v. INTERNATIONAL TRADE COM'N*, 424 F.3d 1179 (2005), A patent pool agreement containing non-essential patents does not constitute patent misuse per se and shall be reviewed under rule of reason.

101. *Broadcom Corp. v. Qualcomm Inc.*, 501 F.3d 297, 314 (3d Cir. 2007)

another case, *In re Rambus (2006)*, the FTC agency applied the “Disclosure rule” to challenge a “patent ambush” behavior, a behavior which a SSO member concealed a relevant patent information during a standard formation yet asserted patent claim against firms employing the standard at a later time.¹⁰²

These modern patent misuse obligations, the FRAND and Disclosure, are not without controversy and in fact have attracted criticism from scholars.¹⁰³ The FRAND requirement has been criticized for offering no workable definition of fair and reasonable licensing terms.¹⁰⁴ As to the Disclosure rule requirement, rulings among authorities are still inconsistent. In the *Rambus* case (2008), the Court ruled that concealing and failing to disclose patent itself did not constitute an antitrust violation.¹⁰⁵ Yet in another case *RIM (2008)*, factually similar to *Rambus*, the Court held a patentee liable for antitrust violations when it obtained monopoly power by misrepresenting to SSOs its intentions to offer FRAND licenses yet failed to comply later.¹⁰⁶

In addition to the controversy in reality, the application of patent misuse doctrine and antitrust violation review may appear to be a dilemma in legal analysis. As mentioned, the Court generally requires evidence for patent misuse conduct, such as violation of the FRAND or Disclosure rule, to prove antitrust violations under the rule of reason. Particularly, the Court has persuasively argued, “It would be absurd to assume that Congress intended to provide that the use of a patent that merited punishment as a felony under the Sherman Act would not constitute ‘misuse’.”¹⁰⁷ The legislature, however, had intended to enact a law that requires finding antitrust violations as a precondition for proving patent misuse.¹⁰⁸ Thanks to

102. *In re Rambus Inc.*, FTC Docket No. 9302, p.118-119, (Aug. 2, 2006), see the conclusion.

103. Robert P. Merges and Jeffery M. Kuhn, Estoppel Doctrine for Patented Standards, An, 97 Cal. L. Rev. 1, p.14 (2009): “District of Columbia Circuit recently reversed the FTC’s ruling that Rambus acted anticompetitively by failing to disclose its patents, bolstering the conclusion that antitrust law is ill-equipped to handle even straightforward disputes involving patents and standards.”

104. Richard J. Gilbert, Deal OR No Deal? Licensing Negotiations By Standard-Setting Organizations, 2011-12-01, note 16, “no SSO, court, or enforcement agency has offered a workable and generally accepted definition of fair and reasonable licensing terms.”

105. *RAMBUS INCORPORATED v. FEDERAL TRADE COMMISSION*, 522 F.3d 456, (2008), p5. The court upheld : “deceit merely enabling a monopolist to charge higher prices than it otherwise could have charged. . . would not in itself constitute monopolization.”

106. *Research in Motion Ltd. v. Motorola, Inc.*, 644 F. Supp. 2d 788,792-97 (N.D. Tex. 2008)

107. *Ill. Tool Works Inc. v. Indep. Ink, Inc.*, 547 U.S. 28, p.5 (2006)

108. Intellectual Property Antitrust Protection Act, S. Res. 1595 100th Cong. §438. “Title II: Patent Misuse Doctrine Reform - Provides that no patent owner shall be denied relief or

the cooperative efforts by judicial and legislative branches, finding patent misuse and finding antitrust violation conduct could have become the chicken or the egg causality dilemma. The good news is that the Intellectual Property Antitrust Protection Act is passed by the Senate only and has not yet become a law. Nevertheless, the applicability of patent misuse doctrine in the antitrust law regime remains controversial.

Some advocated that reconciliation is to treat patent misuse doctrine independent from antitrust inquiries.¹⁰⁹ Another way to reconcile may be referred in the recent case *Princo Corp.* (2010), which required both elements, conducts hurting competition and patent misuse by patentee, for finding antitrust violations when patent pool is involved.¹¹⁰

In sum, the application of patent misuse doctrine to antitrust violations stays vigorously debated and is not yet a settled rule.

C. Brief Conclusion

For over a century, the US antitrust review standard on patent pool arrangement is never a settled law. Even the application of the traditional “per se illegal”¹¹¹ and the “rule of reason”¹¹² standard on SSO’s patent pool arrangement has been going back and forth. It is not until the recent decade the courts have become consistent in recognizing the pro-competitive effect of the SSO’s patent pool, and have firmly applied the rule of

deemed guilty of misuse or illegal extension of the patent right by virtue of his or her licensing practices, actions, or inactions relating to the patent, unless such conduct violates the antitrust laws.”

109. Marshall Leaffer, Patent Misuse And Innovation, 10 J. HIGH TECH. L. 142 (2010) discuss policy concerns in IV. How Misuse Differs from Antitrust and V. Why Patent Misuse Should Not Be Coextensive with Antitrust Law. Also see *C.R. Bard, Inc. v. M3 Sys., Inc.*, 157 F.3d 1340 (Fed. Cir. 1998). “Patent misuse is viewed as a broader wrong than antitrust violation because of the economic power that may be derived from the patentee’s right to exclude. Thus misuse may arise when the conditions of antitrust violation are not met.”

110. *Princo Corp. v. International Trade Com’n*, 616 F.3d 1318 (Fed. Cir. 2010); *Windsurfing Intern. INC. v. AMF, INC*, 782 F.2d 995, 1002, (1986): “factual determination must reveal that the overall effect of the license tends to restrain competition unlawfully in an appropriately defined relevant market.”;

111. “Per se illegal” standard allows a court to condemn certain antitrust conducts without inquiring the harm to competition because the conduct possesses “pernicious effect on competition and lack of any redeeming virtue, are conclusively presumed to be unreasonable, therefore illegal per se.” *Northern Pacific R. Co. v. United States*, 356 U.S. 1, 6 (1958)”; also see *United States v. Socony-Vacuum Oil Co.*, 310 U. S. 150, (1940); Plaintiff just need to prove that the conduct occurred and within the per se category (without showing competitive abuse).

112. “Rule of reason”, on the other hand, requires the court to inquire the reasonableness of restrains and to determine whether the anticompetitive effects of the restrains outweigh its pro-competitive effects. See *Standard Oil Co. of New Jersey v. United States*, 221 U. S. 1; *Chicago Board of Trade v. United States*, 246 U. S.

reason to review SSO's pooling arrangement.¹¹³ However, certain conducts, despite their well-recognized pro-competitive effect, remain prohibited as per se illegal.¹¹⁴ Despite the possible per se rulings, it appears that the Court now tends to follow the ruling that patent law trumps antitrust law, a trend tracing back more than a century ago.¹¹⁵ The trend is to apply the rule of reason standard in determining whether the SSO's patent pool arrangement violates antitrust law as a settled law in the US.¹¹⁶ However, "[t]he truth is that our categories of analysis of anticompetitive effect are less fixed than terms like 'per se,' 'quick look,' and 'Rule of Reason' tend to make them appear."¹¹⁷

Based on the US antitrust enforcements on SSO's SEP holders' conducts, the comment by the USCBC, which promulgated ROR for antitrust reviews, on SEP is not substantially deviated from the current development of US law. China's new antitrust guidelines, which take into account the pro-competitive effects of SEP (similar to ROR) but preserve only a few "clear cut" analyses for antitrust review, are not substantially deviated from the current US law.

AIPLA promulgated the FRAND obligations as the successful mechanism for thousands of SSO. The development of the US law, however, shows that the doctrine remains controversial. In addition, a potential dilemma by using a patent misuse doctrine for antitrust review may exist

113. *Princo Corp. v. International Trade Com'n*, 616 F.3d, 1318 (Fed. Cir. 2010): "it is now well settled that an agreement among joint venturer to pool their research efforts is analyzed under the rule of reason" Also See *U.S. Phillips Corp. v. International Trade Com'n*, 424 F.3d 1179 (2005) citing *Tex. Instruments, Inc. v. Hyundai Elecs.*, 49 F.Supp.2d 893, 901 (E.D.Tex.1999) : "describing how "extremely expensive and time-consuming" it is for parties to license and manage the licensing of technology by using individual patents and how it is preferable to employ a patent portfolio."

114. FTC Report, Antitrust Enforcement And Intellectual Property Rights: Promoting Innovation and Competition, APRIL 2007, "Agencies will still condemn as per se illegal activities designed to reduce or eliminate competition among members of an SSO—such as bid rigging by members who otherwise would compete in licensing technologies for adoption by the SSO or naked price fixing on downstream products by members who otherwise would compete in selling downstream products compliant with the standard."

115. *Townshend v. Rockwell Int'l Corp.*, 55 U.S.P.Q.2d (BNA) 1011, 1018 (N.D. Cal. Mar. 28, 2000): "Given that a patent holder is permitted under the antitrust laws to completely exclude others from practicing his or her technology, the Court finds that 3Com's submission of proposed licensing terms with which it was willing to license does not state a violation of the antitrust laws." Comparing with *Henry v. A. B. Dick Co.* 224 U.S. 1, 224 U. S. 3 (1912): "The patent statute is one creating and protecting a true monopoly granted to subserve a broad public policy, and it should be construed so as to give effect to a wise and beneficial purpose."

116. *Princo Corp. v. International Trade Com'n*, 616 F.3d 1318 (Fed. Cir. 2010): "it is now well settled that an agreement among joint venturers to pool their research efforts is analyzed under the rule of reason."

117. *Cal. Dental Ass'n v. FTC*, 526 U.S. 756, 779, 119 S.Ct. 1604, 143 L.Ed.2d 935 (1999)

between US legislature and US case law. Rather, the Disclosure and FRAND requirement are the two most litigated issues regarding patent misuse claims in SSO's patent pooling arrangement.¹¹⁸ A deeper analysis on the effect of the Disclosure and FRAND requirement may be necessary.

Given the constraint of the rule of reason as a settled law in China and the US, this study intends to review the legitimacy of applying the FRAND and Disclosure rule for antitrust review by evaluating whether the adverse effects of the rules outweigh the benefits under ROR.

IV. ECONOMIC THEORIES RELATED TO SSO'S PATENT POOLING AGREEMENTS AND SEP HOLDERS' RIGHTS

A. Economic Literature Review

As effect comes into the scene of legal disputes, economic theories may be consulted to determine whether antitrust violation exists. It is not a new approach to incorporate economic theories into legal analysis. In the *Microsoft* case, the government used the game theory and accused Microsoft of strategic entry deterrence and maliciously raising the costs of rivals.¹¹⁹ Accordingly, a more careful review for the use of economic theories on patent pool may be useful for resolving controversial legal issues.

As concluded in previous paragraphs, the Court relies on the rule of reason analysis to determine the efficiency of SSO's pooling arrangement, which evaluates whether the benefits of a SSO's restrain outweighs the anticompetitive effects. In order to illustrate the societal benefits of patent pooling, few recent economic papers are examined and summarized.

Shapiro (2001)¹²⁰ proposed that complimentary patent pooling may mitigate "royalty stacking" which is likely to frustrate the emergence of optimal technologies. He explained the concept by using Cournot's model and concluded that "a package license for all N components would lead to higher (combined) profits and lower prices for consumers," and a monopolist has an incentive to coordinate the standard development due to higher profit.

118. FTC Report, Antitrust Enforcement And Intellectual Property Rights: Promoting Innovation and Competition, 2007, p42-53

119. *United States v. Microsoft Corp.*, No. 98-1232, 6 Trade Reg. Rep. (CCH) para. 45,098 (D.D.C. filed May 1998) (Justice Department complaint).

120. Carl Shapiro, *Navigating the Patent Thicket: Cross Licenses, Patent Pools, and Standard Setting, Innovation Policy and the Economy*, Volume 1 Jan 2001.

Gilbert (2004)¹²¹ reviewed a century of antitrust treatment on patent pooling, and concluded that the courts rarely concerned the substitutes or complimentary nature of the pooling. He indicated that joint-defense of weak substitute patents may increase expected royalties but may decrease royalties if the patents are complimentary. In other words, incorporating substitute and weak patents in patent pool may incur additional cost to manufacture thus harmful to society. By giving scores to the court's rulings, Gilbert concluded that the courts paid too much attention to downstream restraints which "does not necessarily imply that a pooling arrangement is anticompetitive." Therefore, he suggested the court should first review the competitive relationships of the patents in the pool then determining the anti- or pro-competitive effect under rule of reasoning.

Daniel Quint (2006) proposed that pools of essential patents are Pareto-improving whenever they occur. Pools of nonessential patents can be welfare-negative, even when the included patents are all complimentary.¹²²

Jeitschkoy and Zhang (2011)¹²³ inspected whether the formation of patent pools is welfare enhancing when patents are complimentary. Contrary to the conventional belief that complimentary patent pooling is welfare enhancing, they found that complimentary patent pools could still be welfare decreasing when the development incentives of the downstream are considered. In addition, consumer surplus may be reduced if the patents are licensed on an up-front fee basis.¹²⁴

Jay Pil Choi and Heiko Gerlach (2013)¹²⁵ added the factor of invalid possibility of weak patents and concluded that patent pools can have the litigation-deterrent chilling effect. The patent pool's patentee with weak patents may charge higher royalties licensing fees than independent patentee, and thus discourage further innovations.

121. Richard J. Gilbert, *Antitrust for Patent Pools: A Century of Policy Evolution*, STAN. TECH. L. REV. 3, ¶84 - ¶87, 2004: "What are the economic consequences of a joint defense agreement? . . . Under these assumptions, cooperation in the defense of weak patents increases expected royalties if the patents are substitutes and decreases expected royalties if the patents are complements."

122. Daniel Quint, *Economics of Patent Pools When Some (but not all) Patents are Essential*, Stanford Institute for Economic Policy Research SIEPR Discussion Paper No. 0628, Stanford University (2006)

123. Thomas D. Jeitschkoy and Nanyun Zhang, *Patent Pools and Product Development: Perfect Complements Revisited*, October 14, 2011

124. Thomas D. Jeitschkoy and Nanyun Zhang, *Adverse Effects of Patent Pooling on Product Development and Commercialization*, EAG 12-5, July 2012

125. Jay Pil Choi and Heiko Gerlach, *Patent Pools, Litigation and Innovation*, October, 2013. In its conclusion remark: "if patents are relatively weak, patent pools can be used as a mechanism to deter litigation that would invalidate the patents in the pool."

The above-mentioned papers brilliantly answer several questions regarding the general social welfare of SSO's patent pooling, but do not answer some controversy from legal practitioner's perspective. Particularly, the economic models do not resolve whether the Court should establish antitrust violation element to prove patent misuse or should establish patent misuse element to prove antitrust violation. These analyses do not focus on evaluating consumers' welfare enhanced by SEP holders' commitment of the FRAND or Disclosure rule which legal practitioners are concerned the most.¹²⁶ This study attempts to make up for the missing part of the literature in the past and proposes an economic model revised from traditional models to analyze and resolve the above legal issue.

B. Model Presented

In general, courts today apply the rule of reason to determine whether the benefit of SEP holders' patent arrangement outweighs the anti-competitive effect as discussed before. This study follows the rule and focuses on analyzing the societal effect, the consumer surplus, and the patent pool arrangement as affected by FRAND and Disclosure requirement in light of the interest of two distinct groups: Product-Centric Developers and Patent-Centric Developer. The competing interest of the two groups in forming one single patent pool is not well discussed but is recognized by one legal scholar Jorge L. Contreras in 2013.¹²⁷

In order to reflect real world practice, the models proposed in the next paragraph further divide Product-Centric Developer into two groups: one is the member of SSO's technical reviewing committee who is usually the initial promoter of a standard, and the other is merely a contributor.¹²⁸ In theory, the initial promoter may or may not have the first move advantage in competition. If the initial promoter does not utilize first move ad-

126. Consumer's welfare is the most important beneficial societal effect under Chinese AML Article 1. Also see ShouWen Zhang, *Economic Law* 2nd edition, p. 241 Beijing: Renmin University Press, 2012; and Russell Pittman, *Consumer Surplus as the Appropriate Standard for Antitrust Enforcement*, EAG Discussion Papers, EAG 07-9, June 2007. Also see Robert H. Lande and Neil W. Averitt, *Consumer Sovereignty: A Unified Theory of Antitrust and Consumer Protection Law* *Antitrust Law Journal*, Vol. 65, p. 713, 1997.

127. Jorge L. Contreras, *Technical Standards and Ex Ante Disclosure: Results and Analysis of An Empirical Study*, 53 *Jurimetrics J.* 163 2013.

128. See Blue-Ray Standard for example, Employees of each Contributor Member formed a Technical Expert Group (TEG) which submits format proposal to Joint Technical Committee for review and confirm. Joint Technical Committee consists of persons from each BOD Member Company, the TEG Chairs, the JTC Chair and JTC Vice Chairs. Available at http://blu-ray-disc.com/Assets/Downloadablefile/BDA_Committee_Rules_v1.7.pdf access 05/25 2016

vantage, the Cournot Competition Model is assumed. If the initial promoter does utilize first move advantage, Stackelberg Competition Model is assumed.

The competition model proposed in this study may not reflect the real world with exact accuracy, but it is hoped to show that violating antitrust patent misuse does not necessarily warrant an antitrust violation under certain negotiation circumstances.

The models proposed:

Assuming two Product-Centric Developers, Firm 1 and Firm 2, compete in the market with price equation as $P=a-q_1-q_2$, with manufacture quantities q_1 and q_2 respectively. Firm 1 is willing to license at royalty R_1 , and Firm 2 is willing to license at royalty R_2 . Another Patent-Centric Developer Firm 3 is willing to license at royalty R_3 . Manufacturing cost is fixed as C . Following the price equation, the consumer surplus is equal to $\frac{1}{2}(q_1+q_2)^2 = \frac{1}{2}Q^2$. The differences of total quantity produced in each proposition will be high lightened for evaluating the consumer surplus because consumer surplus is the legitimate reason to apply antitrust penalty on firms and the major societal benefit that the legal practitioners care.¹²⁹

Proposition 1.1: Assuming Firm 1 and Firm 2 will follow Cournot Competition without corporation, all the patents are complimentary, and Firm 1, 2, 3 are compliant with FRAND and Disclosure rule:

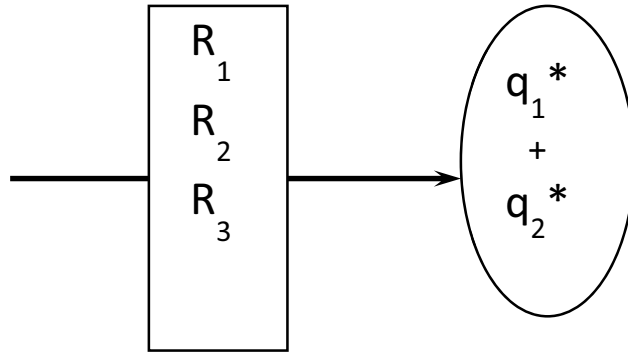
Stage 1, Firm 1, 2, 3 submit royalty rate R_1, R_2, R_3 to SSO's patent pool.

Stage 2, Firm 1 and Firm 2 determined capacity q_1^*, q_2^* respectively based on $R_1+R_2+R_3$.

With the knowledge of royalty rate R_1, R_2, R_3 , Firm 1 will seek to maximize its profit $\pi_1 = q_1(a-q_1-q_2-C) + R_1 q_2 - (R_3+R_2) q_1$

Firm 2 seeks to maximize its profit $\pi_2 = q_2(a-q_1-q_2-C) + R_2 q_1 - (R_3+R_1) q_2$

129. See Supra note 15.



Since Firm 3 disclose royalty rate for Firm 1 and Firm 2 to contemplate product manufacturing, therefore maximized $\pi_1 \pi_2$ under Cournot Competition model will give us q_1^* and q_2^* respectively as below:

$$\begin{aligned} \Rightarrow \frac{\partial \pi_1}{\partial q_1} = 0 ; \frac{\partial \pi_2}{\partial q_2} = 0 \\ \Rightarrow q_1^* = \frac{1}{3} (a-c) - \frac{1}{3} (2R_2 - R_1 + R_3); q_2^* = \frac{1}{3} (a-c) - \frac{1}{3} (2R_1 - R_2 + R_3). \end{aligned}$$

Societal total capacity $Q^* = q_1^* + q_2^* = \frac{2}{3} (a-c) - \frac{1}{3} (R_1 + R_2 + 2R_3)$;

Firm 3 collects royalty $\pi_3 = R_3 \times [\frac{2}{3} (a-c) - \frac{1}{3} (R_1 + R_2 + 2R_3)]$

Maximizing $\pi_3 \Rightarrow d\pi_3/dR_3 = 0, \Rightarrow R_3^* = \frac{1}{2} (a-c) - \frac{1}{4} (R_1 + R_2)$

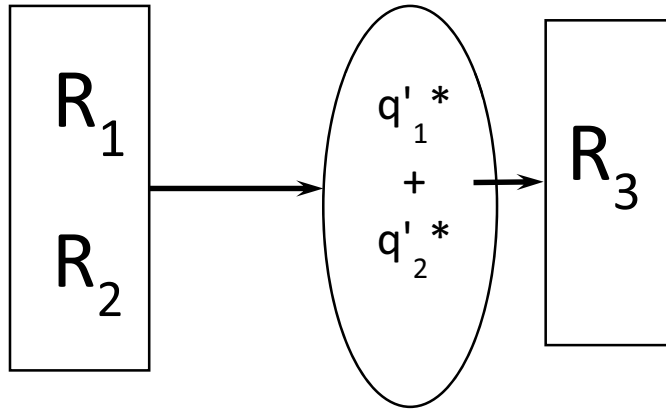
$$\begin{aligned} \pi_3^* &= [\frac{1}{2} (a-c) - \frac{1}{4} (R_1 + R_2)] \times [\frac{2}{3} (a-c) - \frac{1}{3} (R_1 + R_2 + 2(\frac{1}{2} (a-c) - \frac{1}{4} (R_1 + R_2)))] \\ &= [\frac{1}{2} (a-c) - \frac{1}{4} (R_1 + R_2)] * [\frac{1}{3} (a-c) - \frac{1}{6} (R_1 + R_2)] \\ &= \frac{1}{6} (a-c)^2 - \frac{1}{6} (R_1 + R_2) (a-c) + \frac{1}{24} (R_1 + R_2)^2; \text{ Total } Q^* = \frac{1}{3} (a-c) - \frac{1}{6} (R_1 + R_2) \end{aligned}$$

Proposition 1.2: Assuming Firm 1 and Firm 2 will follow Cournot Competition and Nash equilibrium without corporation, all the patents are complimentary, and Firm 3 is compliant with FRAND but **NOT** the Disclosure rule:

Therefore, in Stage 1: Firm 1, 2 submit royalty rate R_1 and R_2 to SSO's patent pool.

In Stage 2: Firm 1, 2 determine capacity q_1^* and q_2^* respectively based on $R_1 + R_2$ without the knowledge of R_3 .

In Stage 3: Firm 3 "hijack" or collect royalty after Firm 1 and Firm 2 manufacture at the quantity level of $Q' = q_1^* + q_2^*$



$$\begin{aligned} \Rightarrow \frac{\partial \pi_1}{\partial q_1} &= 0; \frac{\partial \pi_2}{\partial q_2} = 0 \\ \Rightarrow q'_{1*} &= \frac{1}{3}(a-c) - \frac{1}{3}(2R_2 - R_1); \\ q'_{2*} &= \frac{1}{3}(a-c) - \frac{1}{3}(2R_1 - R_2); \\ Q' &= q'_{1*} + q'_{2*} = \frac{2}{3}(a-c) - \frac{1}{3}(R_1 + R_2) \end{aligned}$$

Profit of Firm 3:

$\pi'_3 = R_3 \times \left[\frac{2}{3}(a-c) - \frac{1}{3}(R_1 + R_2) \right]$ which is $\frac{2}{3}(R_3)^2$ greater than Firm 3's profit in Proposition 1.1 where $\pi_3 = R_3 \times \left[\frac{2}{3}(a-c) - \frac{1}{3}(R_1 + R_2 + 2R_3) \right]$.

Despite the non-disclosure, Firm 3 does not need to give Firm 1 and Firm 2 an official infringement notice to collect royalties. Rather, Firm 3 may take advantage of the constructive marking statute to collect patent damages up to 6 years.¹³⁰ If Firm 3 chooses not to disclose, the additional $\frac{2}{3}(R_3)^2$ royalties is still collectable, and Firm 1 and Firm 2 will not adjust its capacity until receiving actual notices.

Moreover, since consumer surplus is proportional to the total quantity Q , it can be higher if Firm 3 does not disclose its patent within the 6 years limitation.

130. See *American Medical Systems Inc. v. Medical Engineering Corp.*, 28 USPQ2d 1321 (Fed. Cir. 1993), for method or process claim, a patentee does not have to mark or provide actual notice to infringer because there is nothing to mark. Also 35 U.S.C. Sec. 287(a). also 35 U.S. Code § 286 gives patentee 6 years to bring law suit.

Increasing the number of Product-Centric firms in the patent pool will not change the result where consumer is better off if one of the firms in the patent pool conceals its patent. Assuming we have n firms, and Firm 1, 2, 3. . . to Firm n-1 is Product-centric and the final Firm n is Patent Centric Firm , all the patents are complimentary, and total quantity = $Q=q_1+q_2+\dots+q_{n-1}$, and total royalty $R_s=R_1+R_2+\dots+R_{n-1}$

$$\Rightarrow \text{the total quantity produced will be } Q_n = \frac{n-1}{n} (a-c) - \frac{n-2}{n} R_s - (n-1)R_n^{131} \text{ (The total quantity produced without "concealing")}$$

If the final firm "conceals" its patent, Firms are not aware of the royalty R_n . The total quantity produced will be:

$$\Rightarrow Q_n' = \frac{n-1}{n} (a-c) - \frac{n-2}{n} R_s.$$

$$\Rightarrow Q_n' > Q_n$$

Therefore, consumers are better off if Firm n conceal its patent when patent pool is formed because Consumer Surplus is higher ($\frac{1}{2}Q_n'^2 > \frac{1}{2}Q_n^2$). For the ease of illustration, only the three Firms scenarios are used, discussed, and compared hereafter.

Proposition 2.1: Assuming firm 1 and firm 2 follows Stackelberg Competition Model without corporation, Firm 1 is the founding member thus enjoys the first move advantage when it receives royalty rates from Firm 2 and Firm 3; Firm 2 and Firm 3 are contributors. All the patents are complimentary, and Firm 1, 2, 3 follow FRAND and Disclosure rule.

Stage 1: Firm 1, 2, 3 submit royalty rate R_1, R_2, R_3 to SSO's patent pool, and

Firm 1, with the first move advantage, seeks to maximize its profit with the knowledge of Firm 2's best response function at royalty rate R_1, R_2, R_3 .

$$\pi_1 = q_1(a - q_1 - q_2 - C) + R_1 q_2 - (R_3 + R_2) q_1$$

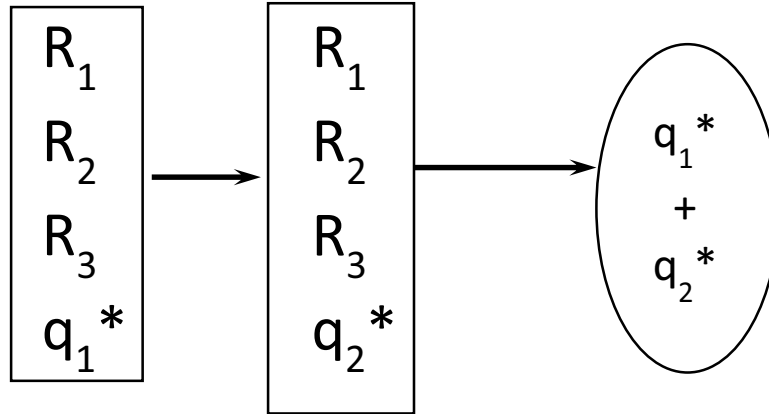
Stage 2: Firm 2 seeks to maximize its profit under the condition of Firm 1's capacity q_1^* and the knowledge of royalty rate R_1, R_2, R_3 .

$$\pi_2 = q_2(a - q_1 - q_2 - C) + R_2 q_1 - (R_3 + R_1) q_2; \text{ Total Quantity } Q = q_1^* + q_2^*$$

131. Profit equation for firm 1 to firm n as below:

$\pi_1 = q_1(a - Q - C - \sum_{i=2}^n R_i) + R_1 \sum_{i=2}^{n-1} q_i$; $\pi_2 = q_2(a - Q - C - \sum_{i \neq 2}^n R_i) + R_1 \sum_{i \neq 2}^{n-1} q_i \dots \pi_{n-1}$; But $\pi_n = Q * R_n$;
 $\frac{\partial \pi_1}{\partial q_1} = 0, \frac{\partial \pi_2}{\partial q_2} = 0, \dots$ to $\frac{\partial \pi_{n-1}}{\partial q_{n-1}} = 0$ give us
 $q_1 = a - c - Q - \sum_{i \neq 1}^n R_i = a - c - Q - R_s + R_1 - R_n$; $q_2 = a - c - Q - R_s + R_2 - R_n; \dots q_{n-1} = a - c - Q - R_s + R_{n-1} - R_n$;
 $i = 1, 2, 3, \dots n$

add all equation, $q_1, q_2, \dots, q_{n-1} \Rightarrow q_1 + q_2 + \dots + q_{n-1} = Q = (n-1)(a - c - Q) - (n-1)R_s + R_s - (n-1)R_n$
 Therefore, if n firm in a patent pool, the total quantity produced will be $Q_n = \frac{n-1}{n} (a - c) - \frac{n-2}{n} R_s - (n-1)R_n$



Following Stackelberg Competition Model, Firm 1 and Firm 2 are aware of R_3 when maximizing their profit π_1 and π_2 . Therefore:

\Rightarrow Solve Stackelberg Competition problem¹³²,

$$\Rightarrow q_1^* = \frac{1}{2} (a-c) - \frac{1}{2} (2R_2 + R_3);$$

$$q_2^* = \frac{1}{4} (a-c) - \frac{1}{4} (2R_1 - 2R_2 + R_3);$$

$$\text{Total } Q = \frac{3}{4} (a-c) - \frac{1}{4} (2R_1 + 2R_2 + 3R_3)$$

$$\pi_3 = R_3 \times Q = R_3 \times \left[\frac{3}{4} (a-c) - \frac{1}{4} (2R_1 + 2R_2 + 3R_3) \right]$$

$$\text{if } d\pi_3/dR_3 = 0 \Rightarrow R_3^* = \frac{1}{2} (a-c) - \frac{1}{3} (R_1 + R_2);$$

$$\pi_3^* = \left[\frac{1}{2} (a-c) - \frac{1}{3} (R_1 + R_2) \right] \times \left[\frac{3}{4} (a-c) - \frac{1}{4} (2R_1 + 2R_2 + 3 \left(\frac{1}{2} (a-c) - \frac{1}{3} (R_1 + R_2) \right)) \right]$$

$$= \left[\frac{1}{2} (a-c) - \frac{1}{3} (R_1 + R_2) \right] \times \left[\frac{3}{8} (a-c) - \frac{1}{4} (R_1 + R_2) \right]$$

$$= \frac{3}{16} (a-c)^2 - \frac{1}{4} (R_1 + R_2) (a-c) + \frac{1}{12} (R_1 + R_2)^2$$

$$R_3^* = \text{Min} \left| \frac{1}{2} (a-c) - \frac{1}{3} (R_1 + R_2) \right|$$

$$\text{Total } Q^* = \frac{3}{8} (a-c) - \frac{1}{4} (R_1 + R_2)$$

Proposition 2.2: Assume Firm 1 and Firm 2 will follow Stackelberg Competition without corporation; Firm 1 is the founding member thus enjoying the first move advantage; Firm 2 and Firm 3 are contributors. All the patents are complimentary, and Firm 3 follows FRAND but **NOT** the

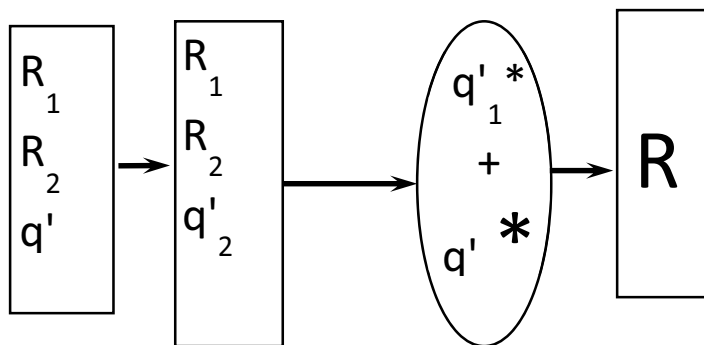
132. Given q_1 and $\frac{\partial \pi_2}{\partial q_2} = 0$, the best reaction function S_2 for Firm 2, the value of q_2 maximizing π_2 is derived. Firm 1 therefore may maximize its profit by finding best quantity q_1^* under the condition of knowing the reaction function S_2 of Firm 2. $\Rightarrow \pi_1 = q_1(a - q_1 - S_2 - C) + R_1 S_2 - (R_3 + R_2) q_1$. q_1^* can be derived by maximizing π_1 , $\frac{\partial \pi_1}{\partial q_1} = 0$.

Disclosure rule. Therefore, Firm 1 and Firm 2 are **NOT** aware of R_3 when maximizing their profit π_1 and π_2 .

Stage 1: Firm 1 seeks to maximize its profit $\pi_1 = q_1(a - q_1 - q_2 - C) + R_1 q_2 - R_2 q_1$ with the knowledge of Firm 2's best response function and royalty rate R_1 and R_2 .

Stage 2: Firm 2 seeks to maximize its profit $\pi_2 = q_2(a - q_1 - q_2 - C) + R_2 q_1 - R_1 q_2$ under the condition of Firm 1's capacity q_1^* and the knowledge of royalty rate R_1 and R_2 .

Stage 3: After Firm 1 and Firm 2 produce capacity q'_1 and q'_2 , Firm 3 "hijack" the standard within 6 year limitation to collect patent damages.



Solve Stackelberg Competition problem as proposition 2.1:

$$\Rightarrow q'_1 = \frac{1}{2}(a - c) - R_2;$$

$$q'_2 = \frac{1}{4}(a - c) - \frac{1}{2}(R_1 - R_2);$$

Total $Q' = q'_1 + q'_2 = \frac{3}{4}(a - c) - \frac{1}{2}(R_1 + R_2)$; The total quantity produced Q' under proposition 2.2 is higher than the total quantity produced Q in Proposition 2.1.

$$\text{i.e. } Q' = \frac{3}{4}(a - c) - \frac{1}{2}(R_1 + R_2) > Q = \frac{3}{4}(a - c) - \frac{1}{4}(2R_1 + 2R_2 + 3R_3).$$

$$\Rightarrow \text{Consumer surplus: } \frac{1}{2}Q'^2 > \frac{1}{2}Q^2$$

$$\pi'_3 = R_3 * \frac{1}{2} Q' = R_3 * \left[\frac{3}{4}(a - c) - \frac{1}{2}(R_1 + R_2) \right] > \pi_3 = R_3 \times \left[\frac{3}{4}(a - c) - \frac{1}{4}(2R_1 + 2R_2 + 3R_3) \right]$$

Again, similar to Cournot Competition, consumer is better off if Firm 3 does not disclose its patent initially. Firm 3 shall have incentive to do so because $\pi'_3 > \pi_3$.

Proposition 3.1: Assume Firm 1 and Firm 2 will coordinate to create a monopoly patent pool and divide the capacity. All the patents are complimentary, and Firm 3 is compliant with FRAND and Disclosure rule:

Noting that the maximum profit of the monopoly company is $\text{Max } \pi = Q^*(a-Q-c) = \frac{1}{4}(a-c)^2$ with capacity at $\frac{1}{2}(a-c)$. In the absence of Firm 3, Firm 1 and Firm 2 may share the capacity and profit equally. However, if the 3rd firm's patent interest is concerned:

$$\pi_1 = q_1^*(a - q_1 - q_2 - c - R_3 - R_2) + R_1 q_2$$

$$\pi_2 = q_2^*(a - q_1 - q_2 - c - R_3 - R_1) + R_2 q_1$$

Given the divided capacity $q_1 = q_2$, the best strategy for the two collusive firms (Firm 1 and Firm 2) is to maximize $\pi_1 + \pi_2$, given $q_1 = q_2$.

=>

$$\pi = \pi_1 + \pi_2 = q_1(2a - 4q_1 - 2c - 2R_3) \quad d\pi/dq_1 = 0 \Rightarrow q_1^* = \frac{1}{4}(a - c - R_3)$$

$$q_2^* = \frac{1}{4}(a - c - R_3); \quad Q = \frac{1}{2}(a - c - R_3);$$

$$\pi_3 = R_3 \times \frac{1}{2}(a - c - R_3);$$

Maximizing π_3 , $d\pi_3/dR_3 = 0$

The Firm 3 will charge royalty at $R_3^* = \frac{1}{2}(a - c)$, $\pi_3^* = \frac{1}{4}(a - c)^2 \Rightarrow$ Total $Q = \frac{1}{4}(a - c)$;

Proposition 3.2: Assume Firm 1 and Firm 2 will coordinate a monopoly pool to divide market; all the patents are complimentary; and Firm 3 is compliant with FRAND but **NOT** the Disclosure rule:

$$q_1^* = \frac{1}{4}(a - c) = q_2^*$$

$$Q^* = \frac{1}{2}(a - c)$$

$$\pi_3^* = R_3^* \times \frac{1}{2}(a - c) > \pi_3 = R_3 \times \frac{1}{2}(a - c - R_3)$$

$$\text{Consumer surplus } \frac{1}{2}Q'^2 > \frac{1}{2}Q^2$$

In each scenario from proposition 1 to proposition 3, Firm 3 has the incentive to conceal or "hijack" because its profit can be higher $\pi_3^* > \pi_3$. In each scenario, consumers are better off if Firm 3 does not follow the Disclosure rule. Accordingly, the pro-competitive effect of non-disclosure by firm 3 outweighs its anti-competitive effect at least from consumers' point of view. This result thus calls for a doubt on the applicability patent misuse doctrine as a part of the antitrust punishment on Firm 3's non-disclosure action.

V. ANALYSIS AND MATHEMATICAL CONCLUSION

A. Disclosure Rule May Not Enhance Consumer Surplus Under Rule of Reason

Under the current patent law, royalties generally accrue from the date actual notice is given except that the patentee asserts only process or method claims.¹³³ If so, Firm 3 may thus avoid the notice requirement and collect royalties from Firm 1 and Firm 2 prior to actual disclosure if its claim involves method claim only. Accordingly, Firm 1 and Firm 2 may have manufactured at a capacity without contemplating Firm 3's patent if Firm 3 chose not to follow the Disclosure rule as in Proposition 1.2, 2.2, 3.2. The total quantities produced in different situations are shown below:

Table 1

	Total Q (q ₁ +q ₂) (Firm 3 disclose)	Total Q (q ₁ +q ₂) (Firm 3 conceal)
Firm 1 and Firm 2 in Cournot Competition	$\frac{2}{3}(a-c) - \frac{1}{3}(R_1+R_2+2R_3)/$ or $\frac{1}{3}(a-c) - \frac{1}{6}(R_1+R_2)$	$\frac{2}{3}(a-c) - \frac{1}{3}(R_1+R_2)$
Firm 1 and Firm 2 in Stackelberg Competition	$\frac{3}{4}(a-c) - \frac{1}{4}(2R_1+2R_2+3R_3)/$ or $\frac{3}{8}(a-c) - \frac{1}{4}(R_1+R_2)$	$\frac{3}{4}(a-c) - \frac{1}{2}(R_1+R_2)$
Firm 1 and Firm 2 coordinate duopoly	$\frac{1}{2}(a-c-R_3);$ or $\frac{1}{4}(a-c)$	$\frac{1}{2}(a-c)$

As Table 1 indicates, total quantity Q produced is greater if Firm 3 does not disclose its patent to SSO in every scenario. Firm 3's non-disclosure action brings more products available and promoting competition in the market. Recall Consumer surplus is $\frac{1}{2}Q^2$, and this means consumers are thus better off if Firm 3 conceals its patent from SSO members.

Under the rule of reason, if pro-competitive effect outweighs anti-competitive effect, no antitrust violations shall be found. It is well known that Firm 3's non-disclosure action may constitute patent misuse as FTC asserted.¹³⁴ The concealing action, however, does not always constitute antitrust violations under rule of reason at least from consumers' point of

133. *Crown Packaging Technology, Inc. v. Reexam Beverage Can Co.*, 559 F.3d 1308, (2009)

134. *In re Rambus Inc.*, FTC Docket No. 9302, p.118-119, (Aug. 2, 2006)

view. Accordingly, patent misuse conduct alone does not guarantee an antitrust violation.

Assuming Firm 3's non-disclosure action constitutes patent misuse, the model then points out that the bill, Intellectual Property Antitrust Protection Act 1989,¹³⁵ is not logically sound.

This study does not aim to demonstrate the model accurately simulating patent negotiation. It is intended to prove that under certain conditions patent misuse Disclosure rule alone is ill-suited in proving antitrust violation. Moreover, it does not aim to prove Firm 3's conduct is legitimate either. Rather, if Firm 1 and Firm 2 are harmed by Firm 3's concealing behavior, the injured parties may resort to contract law remedy, fraud, or any other allowable remedies except the remedy under antitrust law.

B. The Recent Development of Economic Theories Re-Confirms the Appropriate Application of Rule of Reason Standard As Suggested

The economic papers mentioned above, such as Shapiro (2001), supported existence of pro-competitive nature of patent pooling arrangement in SSO, although other papers, such as Jay Pil Choi and Heiko Gerlach (2013), indicated the anti-competitive nature of certain patent pooling arrangements.

In this study, the concealing action of its patent by Firm 3, although disputable induces more quantities produced and consumer may benefit from it. Although the antitrust review standard has "swung back and forth" between the traditional "per se illegal" and the "rule of reason" as mentioned, this study and the recent economic theories have helped to reconfirm that traditional "per se illegal" standard 'may be inappropriate in reviewing SSO's patent pool action, except in rare conditions. Viewing from consumer surplus, applying the "rule of reason" standard to determine the SSO's patent pool arrangement for different business scenarios is appropriate under SDOAA and as the *Princo* court ruled.¹³⁶

Accordingly, ROR suggestion by USCBC is supported by both current US antitrust law and economic theories.

135. A bill prohibits the patentee being deemed guilty of misuse by virtue of his or her licensing practices unless such conduct violates the antitrust laws.

136. *Princo Corp. v. International Trade Com'n*, 616 F.3d 1318 (Fed. Cir. 2010): "it is now well settled that an agreement among joint venturers to pool their research efforts is analyzed under the rule of reason."

C. The FRAND Assessment Remains a Non-Workable Definition Due to the Possible Wide Range of Royalty Based on Different Lawful Competition Practice

Several commentators have criticized the difficulty of evaluating the reasonableness of the royalty rate. In order to evaluate the problem, the proposed model is used to calculate the reasonableness of Firm 3's royalty rate. It is assumed that Firm 3 discloses the rate R^*_3 when forming the patent pool and the royalty rate R^*_3 , otherwise firm 1 and firm 2 will turn to adopt alternative technology.

The royalty rate is based on the profit maximizing assumption of Firm 3 and may be in fact lower due to the existence of alternative knowledge. The rate in different scenarios is illustrated below:

Table 2

	Firm 3 follows FRAND and Disclosure rule	R^*_3 (rate after profit maximization)	Total Q
Scenario I	Firm 1 and Firm 2 in Cournot Competition	$\frac{1}{2}(a-c) - \frac{1}{4}(R_1 + R_2)$	$\frac{2}{3}(a-c) - \frac{1}{3}(R_1 + R_2 + 2R_3)$ or $\frac{1}{3}(a-c) - \frac{1}{6}(R_1 + R_2)$
Scenario II	Firm 1 and Firm 2 in Stackelberg Competition	$\frac{1}{2}(a-c) - \frac{1}{3}(R_1 + R_2)$	$\frac{3}{4}(a-c) - \frac{1}{4}(2R_1 + 2R_2 + 3R_3)$ or $\frac{3}{8}(a-c) - \frac{1}{4}(R_1 + R_2)$
Scenario III	Firm 1 and Firm 2 coordinate duopoly	$\frac{1}{2}(a-c)$	$\frac{1}{4}(a-c)$

Although each parties essentially following the same basic profit model that $\pi_i = q_i(a - q_i - q_j - C) + R_i q_j - (R_3 + R_j) q_i$, a wide range of the royalty rate differences for Firm 3 is found if it follows Disclosure rule by using different legitimate competition methods.¹³⁷

137. Noting that Cournot and Stackelberg competition are the kind of permitted competition actions under the antitrust law, but the coordinated duopoly is not. Comparing Scenario I and

In Scenario III, despite Firm 1 and Firm 2 coordinate the duopoly patent pool prohibited under the antitrust law, Firm 3 does not take a part in the collusion. The antitrust law does not prohibit a patentee to charge as the royalty rate as high as possible on monopolists or other SSO members.¹³⁸ In the absence of other antitrust violation, the highest royalty rate Firm 3 may charge is $\frac{1}{2}(a-c)$ under scenario III, or $\frac{1}{3}(R_1 + R_2)$ higher than scenario II. Therefore, the legitimate royalty rate difference if comparing with all Scenarios could go as high as 4 times in difference, i.e., $\frac{1}{12}(R_1 + R_2) \sim \frac{1}{3}(R_1 + R_2)$.

Since the wide range of R3 royalties under each scenario is legitimate, the court would face a challenging task of defining the term “reasonable” under FRAND obligation. Although the FRAND obligation is highly recommended by AIPLA, it does not guarantee a workable mechanism for antitrust enforcement.

Although AIPLA’s comment on FRAND is questionable, not all of the comments are questionable. AIPLA’s suggestion that a mere different rate received by two licensees does not necessarily mean an antitrust violation may be correct. Table 2 demonstrates that a difference in royalty rate may exist based on different competition assumption. The law does not prohibit Cournot or Stackelberg competition; accordingly it shall not prohibit a licensor to initially collect royalty rate based on a reasonable prediction of Cournot competition by others but at the end collect royalty rate based on the actual Stackelberg competition by others. Accordingly, AIPLA’s suggestion in this aspect is supported by this study.

D. SEP Holder’s Exercise of its “Legitimate” Rights to Charge Excessive High Royalty Rates Can Be More Harmful Than the Coordinated Monopoly Prohibited by Traditional Per Se Illegal

Referring to Table 2, total quantities produced in Scenario I is $\frac{1}{3}(a-c) - \frac{1}{6}(R_1 + R_2)$ after Firm 3 choose a maximized royalty rates under

II, the royalty rate difference between Cournot and Stackelberg is $\frac{1}{12}(R_1 + R_2)$. Comparing Scenario I and III, the royalty rate difference between Cournot and Firm 3’ legitimate royalty coordinated mo

138. In *Brulotte v. Thys Co.*, 379 U.S. 29, 85 S.Ct. 176, 13 L.Ed.2d 99 (1964), the Court explained that a patent “empowers the owner to exact royalties as high as he can negotiate with the leverage of that monopoly.” *Rambus v. FTC*, 522 F.3d 456, (DC Cir. 2008) “deceit merely enabling a monopolist to charge higher prices than it otherwise could have charged—would not in itself constitute monopolization.”

Cournot competition. The result means: if Firm 1 and Firm 2 “legitimately” choose to charge the total royalty rate, $(R_1 + R_2) > \frac{1}{2}(a-c)$, then the total quantities produced will be fewer than coordinated monopoly by Firm 1 and Firm 2 under Scenario III. The same situation if Firm 1 and Firm 2 “legitimately” choose to charge the rate higher than $\frac{1}{2}(a-c)$.

The presented models, however, do suggest that the attempt to lower royalty rates would generally induce the more production even facing a wide range of the reasonable royalty rates involving SSO's patent pools.¹³⁹

Although AIPLA criticized that treating License IPR at unfair high royalty as antitrust violation would upset the interests of innovators, consumers may be benefit from Chinese government's effort to reduce royalty rates. The result shows that AIPLA's comment may be questionable and the Chinese government effort in this aspect is legitimate and consistent with the goal of Chinese AML, although the efforts might have other strategic concerns.

E. The Result Points Out the Intellectual Property Antitrust Protection Act 1989 is Not Logically Sound.

As mentioned before, Intellectual Property Antitrust Protection Act 1989 is a bill prohibits the patentee being deemed guilty of misuse by virtue of his or her licensing practices unless such conduct violates the antitrust laws.¹⁴⁰ The results of the presented model, contrary to Intellectual Property Antitrust Protection Act 1989, show that patent misuse (violating Disclosure rule) does not necessary guarantee an antitrust violation under rule of reason because consumers are better off. Accordingly, the 1989 Act is not logically sound if reviewed by the well recognized rule of reason standard and the models presented.¹⁴¹

In addition, the result also demonstrates the use of patent misuse doctrine for antitrust enforcement remains controversial, and incorporating

139. Referring to table 1 and table 2 total quantities Q calculations, lowering royalty rates may induce more quantity produced.

140. i.e., if a patent misuse is found, there must be an antitrust violation.

141. This logic game is quite straight forward:

Logic Game 1: if the act is correct: if a patent misuse => antitrust violation.

Logic Game 2: under Rule of Reason and the calculation of this study:

if non-disclosure (the existence of a patent misuse) => Consumer is better off => no antitrust violation.

Assuming rule of reason standard and the model calculation is correct, Logic Game 1 must not be correct, therefore the Act is not right.

the FRAND obligation in the recent antitrust guidelines, as highly recommended by the AIPLA, does not necessarily beneficial to consumers.

VI. CONCLUSION

USCBC's suggestion on applying ROR for China's antitrust enforcement is generally right. The development of US law, recent economic theories, and the calculation result in this study re-confirm the application of ROR standard in determining whether the SSO's patent pool arrangement is appropriate. On the other hand, the AIPLA's suggestion to incorporate patent misuse doctrine, the FRAND and Disclosure rule as the major factor for antitrust review on SEP holders' conduct may not be appropriate.

The Non-Disclosure of a SSO's member against patent misuse doctrine may in theory enhance consumer surplus and pro-competitive under current legal mechanism. Accordingly, the models proposed in this study points out at least one inappropriate application of patent misuse doctrines for antitrust review on patent pooling under the ROR standard.

The FRAND obligation, as highly recommended by the AIPLA, is neither fully supported by the current US law nor does it guarantee a workable mechanism for antitrust enforcement under economic theories.¹⁴²

The AIPLA's suggestion that a mere different rate received by two licensees does not necessarily mean an antitrust violation is correct. Accordingly, the suggestions made by the AIPLA, however, are partially correct in this study.

The analysis based on the economic models also indicates that the Intellectual Property Antitrust Protection Act 1989 is not logically sound under ROR.

The wide range of the reasonable royalty rates under the FRAND obligation assessment would further strengthen the view that "no workable definition of fair and reasonable licensing terms can be offered."¹⁴³ The models, however, also show that lowering royalty rates would induce the

142. In addition to the economic calculations, The FTC report, Supra footnote 7 at p.192 also states that: "However, there is much debate over whether such RAND or FRAND commitments can effectively prevent patent owners from imposing excessive royalty obligations on licensees." Panelists complained that the terms RAND and FRAND are vague and ill-defined

143. Richard J. Gilbert, Deal OR No Deal? Licensing Negotiations By Standard-Setting Organizations, 2011-12-01, P. 859 note 16

more production thus benefits consumers. Accordingly the Chinese government's efforts to lower excessive high royalty rates charged by the SEP holders may be correct under this study.

In sum, the models echo the D.C. Circuit Court's ruling that the breach of the Disclosure and FRAND commitment under *Rambus* does not necessarily present harm to competition.¹⁴⁴ These calculations of consumer surplus help to confirm that certain patent misuse elements alone are ill-suited for proving antitrust violations. Perhaps, patent misuse doctrine should be treated as a "broader wrong than antitrust violation"¹⁴⁵ and distinct from courts' antitrust review.

The calculation result shows that China's new antitrust guidelines appropriately adopted the same review standard in accordance with the basic analysis framework of AML when facing SEP issues. ROR prone reviewing standard by contemplating pro-competitive features of IPRs is also supported by both the US legal wisdom and economic theories. It is fair to conclude that the revision of the Chinese antitrust guideline is toward a positive direction for consumers.

Finale – China's Fast Advancement and Taiwan's Efforts in Antitrust Regulations

1. Selective Prosecution Against Foreign Companies by Chinese Government

The power of China's administrative agencies is quite limited when facing Chinese government-owned companies, although their power is tremendous against foreign companies. Antitrust investigations against PretroChina, China Telcom, the railroad transportation industry, and the banks were conducted but no concrete evidence was found. The reason is that the "administrative ranking" of those state-owned entities is higher than the antitrust enforcement agency and the "atmosphere" of those entities may be too enormous in China.¹⁴⁶ Perhaps it is the lack of investigations against the state-owned companies thus giving the impression that China's administrative agencies "selectively prosecute against foreign

144. *Rambus Inc. v. FTC*, 522 F.3d 456, 466 (D.C. Cir. 2008).

145. *Monsanto Co. v. Scruggs*, 459 F.3d 1328, 1339 (Fed. Cir. 2006) (quoting C.R. Bard, Inc. v. M3 Sys., Inc., 157 F.3d 1340, 1372 (Fed. Cir. 1998)).

146. Ning Yuan Liu, ed., *A study of Chinese Antitrust Law Enforcement from competition law's perspective*, Beijing, 2015, law press China. P. 27: The term atmosphere is a courteous way to express certain influences by state owned companies.

companies.” However, the Chinese government’s official record indicated otherwise.¹⁴⁷

Reviewing the case QUALCOMM and IDC, the decisions against foreign SEP holders are not without merit, although Chinese companies, mostly licensees of SEP, also benefit from it. China’s administrative agencies did not specify a reasonable royalty under the FRAND in Nokia, Microsoft, or Qualcomm decisions and the market order seemed to be a major concern.

Considering Huawei invested 9.2 billion in R&D in 2015 and began to collect patent royalties from Apple,¹⁴⁸ it is unlikely that the only purpose of the antitrust guideline draft is to limit SEP holders’ right. Perhaps, the purpose of the recent AML movements related to SEP is just to prepare for the coming era of Chinese companies’ competition in SEP and profiting from it after hundred billion dollars have been invested in R&D.

2. *China’s Fast Advancement of the AML in SEP Antitrust Regulations and Taiwan’s Ineffective Efforts*

The US law currently requires both anticompetitive and patent misuse by patentees to find SEP antitrust violations.¹⁴⁹ It is a holding favoring patentees, while China’s new antitrust policy uses ordinary AML analysis framework for SEP review favoring consumers. Although the FRAND obligation on SEP holders is well recognized in the rest of the world and is adopted by Chinese courts and administrative agencies, the omission of the FRAND obligation in the draft hints Chinese government’s intent to develop its own SEP regulation policy.

Taiwan, an island that produces high-tech products, is supposed to eagerly participate in SEP legal regulation event. Contrarily, no specific law is enacted except Article 45 of the *Fair Trade Act* 2015. Article 45 provides almost a free pass with very limited restriction on SEP holders’ IP right enforcement.¹⁵⁰ Another relevant provision for reviewing license agreements is only an internal principle of the administrative agency, not

147. http://www.saic.gov.cn/gslid/llyj/xxb/201410/t20141015_149027.html access 05/25 2016 the official record shows only 10% of NDRC and 5% of SAIC cases involving foreign companies

148. <http://www.globaltimes.cn/content/982367.shtml> access 05/25 2016

149. *Princo Corp. v. International Trade Com’n*, 616 F.3d 1318 (Fed. Cir. 2010)

150. Article 45: No provision of this Act shall apply to any “proper” conduct in connection with the exercise of rights pursuant to the provisions of the Copyright Act, Trademark Act, Patent Act or other Intellectual property laws. The definition of “proper” is highly uncertain.

a law.¹⁵¹ Under the principle, any IP holders' market power is not presumed. When IP is involved, technology markets and innovation markets can each constitute independent markets for antitrust review in addition to goods markets. A typical example is the complimentary SEP pool formed by Philips, Sony, Taiyo Yuden, is determined to have the monopoly power over the CD-R market. The concerted action of three companies to abuse the power violates unfair trade law by jointly determining the royalty price, restricting independent license, and charging unreasonably high royalty rates.

The royalty rate is fixed at 10 JPY per disc and making licensees to lose money when manufacturing. The refusal to renegotiate a reasonable price in responding to market changes may constitute a violation of Article 14 of the Unfair Trade Act, because the refusal may restrict business activities and result in an impact on the market function with respect to production. Similar to China's new antitrust guidelines, Taiwan's government also refuses to grant SEP holders the right to charge unreasonably high royalty rates. Despite the sanction for each company is just NTD 8 million (~USD 266,000), NTD 4 million, and NTD 2 million respectively, Sony and Taiyo Yuden reduce the royalty rates substantially afterwards. Philips refused to join the "concerted action" of lowering price and became the independent licensor to charge high royalty rate without carrying the obligation vested upon SSO's SEP holders.

The efforts Taiwanese government made to suppress CD-R royalty rate were futile. Comparing with the multinational companies' response, for example, Qualcomm, when facing Chinese government, received a record high penalty of USD 1 billion but chose to cooperate with Chinese government. In contrast, the penalty Taiwanese government imposed on Philips is just NTD 4 million (~USD 135,000) and Philips chose not to cooperate with Taiwanese government. Perhaps, competition law is nothing but a tool to rebalance the interests among different interested parties, but the precondition for a successful enforcement relies on the economic or political power behinds the law. Taiwan's limited market is a disadvantage for local competition law to grow, while the much larger fast growing market in China provides the opportunity for its government to develop its own SEP regulation.

In the absence of substantial and strong economic power, the best strategy for Taiwan is not to enact a local competition law to protect or enhance local companies' competitiveness. Instead, Taiwan should face

151. *The principles for reviewing IP agreements by Fair Trade Commission*, 公平交易委員會對於技術授權協議案件之處理原則, <http://www.ftc.gov.tw/internet/main/doc/docDetail.aspx?uid=163&docid=227> access 05/25 2016

the competitions around the world and adjust itself to comport its legal system with the world's major economies, so Taiwanese companies can pull themselves away from disadvantaged positions in the aspect of legal enforcement. In recent years, there has been a loud voice in Taiwan treating China and its market as an evil. It is not wise for the sentiment to grow or spread, for it blocks people from seeing the reality that China is now one of the fastest growing major markets players in the world. Reviewing its recent change on SEP antitrust regulations, the legal development is consistent with the goal of consumer protection under AML, is supported by economic theories, and is strategically for the protection of its industries. It is wise, and it is not evil.

GLOSSARY OF SELECTED ABBREVIATED TERMS

AIPLA	American Intellectual Property Law Association
AML	China's Anti-Monopoly Law
DOJ	US Department of Justice
ETSI	European Telecommunications Standards Institute
FRAND	Fair, Reasonable And Non-Discriminatory
FTC	US Federal Trade Commission
ITC	US International Trade Commission
IDC court	Shenzhen Intermediate People's Court
IDC	InterDigital Technology Corporation
IPR	Intellectual Property Right
MOFCOM	The Ministry of Commerce of People's Republic of China
NDRC	National Development and Reform Commission of the People's Republic of China
the Opinion	Opinion on Accelerating the Building of IP power under New Conditions
ROR	Rule of Reason Standard
SAIC	State Administration for Industry and Commerce of the People's Republic of China
SDOAA	Standards Development Organization Advancement Act of 2004
SEP	Standard Essential Patent
SSO	Standard Setting Organization
USCBC	US-China Business Council

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