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REASONABLE ROYALTIES AND THE CALCULATION OF PATENT DAMAGES:

Reflections and Recommendations for a Fair and Adequate Calculating Basis of Reasonable Royalties in Terms of Harmonization of China-Taiwan Regional Patent Laws

Chung-Lun Shen*

Introduction

Recently, Taiwan has been working with China toward the harmonization of intellectual property laws in the Cross-Straits Region. This collaboration may be considered a significant part of Asian regional integration on intellectual property policies and will play an active role in the development of a post-TRIPS era in the future.¹ In 2010, “the Cross-Straits Intellectual Property Rights Protection Agreement” was concluded and came into effect.² The Cross-Straits-Agreement represents a great step for Taiwan and China toward mutual cooperation on the aspects of acquisition, maintenance, and enforcement of intellectual property rights. Its provisions address, for example, mutual recognition of priority of earlier-filed applications for patents, trademarks, and plant varieties³; mutual cooperation in the prosecution of patent and plant variety rights⁴; the certification of copyrighted works⁵; the establishment of a coordinated mechanism for the resolution of specific issues over on-line piracy; and, the protection of famous marks and geographic indicators⁶. The Cross-Straits Agreement should lead to the harmonization of substantive issues under intellectual property laws in the future.

Among the substantive issues of patent law, patent enforcement has received increasing focus in the global community.⁷ Owing to the intangibility of patents, and in view of the symmetry of exclusive rights with damages, courts and juries have difficulty calculating appropriate damages for patent infringement.⁸ Compared with the traditional calculation of patent damages, which rests upon the patentee’s losses or infringer’s profits, the basis of reasonable royalties provides a flexible concept for accommodating damages when the patentee cannot adequately prove damages, especially, when the patented or

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¹ Agreement on Trade-Related Aspects of Intellectual Property Rights, Apr. 15, 1994, Marrakesh Agreement Establishing the World Trade Organization, Annex 1C, Legal Instruments—Results of the Uruguay Round vol. 31, 33 I.L.M. 81 (1994) [hereinafter *the TRIPS Agreement*].

² See the Cross-Straits Intellectual Property Protection Agreement (the original text in Chinese), June 29, 2010 available at http://www.tipo.gov.tw/ch/News_NewsContent.aspx?NewsID=4578 (last updated July 1, 2010) [hereinafter *Cross-Straits Agreement*].

³ See *id.* art. I.

⁴ See *id.* arts. III-IV.

⁵ See *id.* art. VI.

⁶ See *id.* art. VII.

⁷ See Peter K. Yu, *Six Secret (and Now Open) Fears of ACTA*, 64 SMU L. REV. 975, 977-79 (2011) (notwithstanding a limited meaning toward patent law, the Anti-Counterfeiting Trade Agreement (ACTA) is accounting for the international focus upon strengthening the enforcement of intellectual property rights.)

⁸ See *infra* notes 12-30 and accompanying text.

infringing products were not available in the market at the time of infringement.⁹ Until the amendment of Taiwan's Patent Act in 2011, the authority of reasonable royalties as patent damages was not officially codified.¹⁰ China's Patent Act had recognized the remedy of patent infringement subject to reasonable royalties since 2000.¹¹ In light of the development of comparative patent laws and original jurisprudence guiding patent law, the provisions of Taiwan's Patent Act and China's Patent Act concerning reasonable royalties as patent damages still have room for refinement. Consequently, this article attempts to establish an optimal model for applying related provisions in future judicial practice. The proposed model could contribute a common guideline for the determination of reasonable royalties to the regional harmonization of patent laws in Taiwan and China.

I. The Legal Structure of Patent Damages under Taiwanese and Chinese Patent Laws

A. Calculation of Patent Damages under Taiwan's Patent Act

1. The Position of Patent Damages under Traditional Damages Law

Patent damages have been among the most controversial issues of patent law in the global community. Although Paragraph 1 of Article 85 under the current Taiwanese Patent Act addresses patent damages exclusively, this section will review and clarify this provision, in view of academic arguments and practical development.

a. Subparagraph 1, Paragraph 1 of Article 85 of the Current Taiwanese Patent Act

First, Paragraph 1 of Article 216 of the Taiwanese Civil Code limits damages for injury to property to the harm suffered by the property and the loss of economic interests enjoyed by the owners.¹² Instead of a legal model in which civil law parallels commercial law, the Taiwanese legal system adopted the concept of "convergence". This concept considers civil law a series of fundamental stipulations and allows commercial law its own series of special stipulations, provided that no similar or overlapping provisions exist under civil and commercial laws.¹³ The traditional interpretation of the civil legal system recognizes that Paragraph 1 of Article 216 of the Taiwanese Civil Code established the scope of damages as a fundamental stipulation. When Paragraph 1 of Article 85 of the current Taiwanese Patent Act was enacted, the civil law and patent law damages provisions collided and fractured the traditional interpretation. One interpretation adhered to the traditional argument, positioning the provision of patent law as a damage calculation subject to the scope of damages under civil law.¹⁴ Another interpretation prioritized patent law over civil law, recognizing a special scope of damages because patents are different from traditional tangible properties.¹⁵

⁹ See *infra* Part II-4.

¹⁰ See *infra* notes 34-37 and accompanying text.

¹¹ See *infra* notes 38-43 and accompanying text.

¹² Paragraph 1, Taiwan Civil Code art. 216 (2002) ("Except as otherwise stipulated in this or other Acts, or contracts, the damages ought to be limited to the compensation to any damage or loss borne by the obligee") (translated by this author).

¹³ See TEZ-CHIEN WANG (王澤鑑), *THE GENERAL PRINCIPLE OF CIVIL CODE (民法總則)* 18-19, (2d ed. 2008).

¹⁴ See Chung-Lun Shen (沈宗倫), *Adequate Interpretation and Reconstruction of Causation of Patent Damage*, 8, no.1 *TECH. L. REV (科技法學評論)* 12-13 (June 2011) (hereinafter *Causation of Patent Damage*).

¹⁵ See Chung-Hsin Hsu (許忠信), *Examining the Compensation Liability for Patent Infringement in Taiwan from the Perspective of German Law*, 61 *TAIPEI U. L. REV* 13 (臺北大學法學論叢) (March 2007).

Second, even though the damage calculation provision of Taiwan's Patent Act is subject to the damage scope of Taiwan's Civil Code, there are four approaches the patentee could choose from to calculate damages when patent infringement occurs. The first approach is used to measure patent damages, provided that the patentee can prove damages from infringement and loss of economic interests derived from the patent. This approach may be considered a confirmation of Paragraph 1, Article 216 of Taiwan's Civil Code, but is rarely applied in Taiwanese judicial cases due to the difficulty in proving patent damages or losses, which are distinguishable from traditional tangible properties.¹⁶ The second approach, similar to the first, is based on the depreciation of patent value, which functions as the calculation of patent damages. That is the well-known "lost profits" measurement. The legislation intends to allow the patentee to seek patent damages, as long as the difference between the expected profits from using the patent without infringement and the real profits made after infringement could be proven.¹⁷ Certainly, this approach should be applied cautiously. To ignore the appropriate causation of substitution effects on infringing products in the market would overcompensate the patentee and devastate the interest balance under patent law.¹⁸ As a matter of fact, this approach seems to be stretched from the first interpretation because the difference of the lost profits mentioned above is accounted for among the various forms of damages or losses that the first approach covers. But, according to the common interpretation, the second approach runs independently from the first one in patent damage calculation.¹⁹

b. Subparagraph 2, Paragraph 1 of Article 85 of Current Taiwanese Patent Act

Contrary to the approaches above, which are based upon the positive economic value of a patent, the other two approaches calculate patent damages by measuring the profits made by the infringer when the patent infringement occurs in the market. The nature of infringing profits is originally thought of as unjust enrichment from patent infringement. Unlike the first two approaches, the third and fourth approaches recognize that the sales of infringing products are open to the public in the markets. This recognition provides the patentee with other options for overcoming the possible predicament of proving patent damages required by the first two approaches. In doing so, however, approaches three and four create a risk of

¹⁶ To claim damages in accordance with the preceding Article, any of the following options may be adopted for calculating of the amount of damages: To claim in accordance with Article 216 of the Civil Code. A patentee may, however, take the balance derived by subtracting the profit earned through the practice of his/her patent after the existence of infringement from the profit normally expected through the practice of the same patent as the amount of the damages, provided that no proving method can be presented to justify the damages; To claim based on the profit earned by the infringer as a result of his/her infringement act. The entire income derived from the sale of the infringing articles shall be deemed the infringer's profit, provided that the infringer is unable to produce proof to justify his/her costs or necessary expenses.

Taiwan Patent Act art. 85, ¶1 (2011) (the official edition of translation, promulgated by Intellectual Property Office, Ministry of Economic Affairs, available at http://www.tipo.gov.tw/en/AllInOne_Show.aspx?guid=173f4350-93d4-43c9-a475-042ce0f3ac8c&lang=en-us&path=1448) (last updated July 2, 2012)(The authority of the first approach is the first sentence of Subparagraph 1, Paragraph 1, Article 85 of Taiwan Patent Act ("To claim in accordance with Article 216 of the Civil Code."))

¹⁷ *Id.* subdiv. 1 Paragraph 1, Paragraph 1 ("A patentee may, however, take the balance derived by subtracting the profit earned through the practice of his/her patent after the existence of infringement from the profit normally expected through the practice of the same patent as the amount of the damages, provided that no proving method can be presented to justify the damages.")

¹⁸ See MING-YAN SHIEH(謝銘洋), INTELLECTUAL PROPERTY LAW(智慧財產權法) 357-58 (2nd ed., Angle Publishing 2011); Shen, *supra* note 14, at 14-17.

¹⁹ See MING-CHENG TSAI(蔡明誠), STUDIES ON INVENTION PATENT LAW(發明專利法研究) 234-35 (3d.ed., National Taiwan University College of Law, Taipei 2000).

confusing patent damages with the remedy for unjust enrichment. The application of the third approach may be analogous to the disgorging of infringing profits to the patentee, and may allow the patentee to take infringing profits made by the infringer into the damages scope.²⁰ Certainly, the causation between infringing profits and patent infringement should be emphasized to avoid the distortion of damages.²¹

The fourth approach considers the sale revenue of infringing products as patent damages, provided that the infringer could not prove relevant costs together with the manufacture and marketing of infringing products.²² The text of Subparagraph 2, Paragraph 1 of Article 85 suggests that the fourth approach is designed to supplement the application of the third as a special provision on the burden of proof.²³ In other words, in order to ensure the patentee's adequate remedy and to resolve the difficulty in proving aforesaid costs, all that a patentee should do is to show the court the sale revenue of infringing products, after which the patent damages are presumed. At the same time, the burden of proof for deducting relevant costs from revenue is already shifted to the infringer. If the infringer fails to prove relevant costs, courts use the sale revenue of infringing products to calculate patent damages. According to Taiwanese academic and practical interpretations, the third and fourth approaches are applied independently of the other.²⁴ However, it seems reasonable to consider the two approaches as being under the same provision. Under the concept of calculating patent damages from the infringer's profits, the third and fourth approaches are substantially positioned as dividing the burden of proof. The former is applied to ascertain the patentee's burden in the sale revenue of infringing products, and the fourth focuses on the proof of relevant costs to the sale revenue and is borne by the infringer.²⁵ The two approaches should have functioned jointly, rather than separately, in calculating patent damages.

2. Correlation between Paragraphs 1 and 2 of Article 85

It is worth noting that under the Taiwanese legal system of patent damages, two significant structural aspects frequently lead to the development of judicial cases and practical settlement over the issue of patent damages. One aspect concerns the correlation among the four approaches for patent damages under Paragraph 1 of Article 85 of Taiwan's Patent Act. The other aspect is reflected in the legal loopholes of remedies according to the interpretation of this Article.

²⁰ *Supra* note 16, subdiv. 2 Paragraph 1 ("To claim based on the profit earned by the infringer as a result of his/her infringement act.")

²¹ See GaoDeng FaYuan TaiZhonng FenYuan 93 ZhiShangGeng 1-1 MinShi PanJue (Taizhong Admin. High Ct.1993)(臺灣高等法院臺中分院 93 年度智上更(一)字第 1 號民事判決); also see Shen, *supra* note 14, at 39-43 (In respect of academic discussions about this issue). At least one judicial decision in Taiwan recognized that the profits made by the infringer should be limited to be caused by the uses of the patent. However, how to set up a rule of causation for the calculation of patent damage under the third approach has not been instructed in judicial practices. In particular, the infringers used the patent to manufacture the products, which were distinguished from the patented products in the market.

²² *Supra* note 16, subdiv. 2 Paragraph 1 ("The entire income derived from the sale of the infringing articles shall be deemed the infringer's profit, provided that the infringer is unable to produce proof to justify his/her costs or necessary expenses.")

²³ See *supra* note 16, ¶1.

²⁴ See TSAI, *supra* note 19, at 234-35.

²⁵ See Shen, *supra* note 14, at 10-12 (Although the calculation of patent damages is kept from the basis of the infringer's profit under current U.S. patent law, the models adopted under U.S. trademark and copyright laws strongly suggests such division about proof burden in the infringer's profits); see also 15 U.S.C. § 1117(a) (2008); 17 U.S.C. § 504(b) (2010).

The most critical issue about the aforesaid correlation in Taiwan is whether the patentee could select more than one approach to fit infringing situations for the damage calculation under each single act of patent infringement, provided that no double remedies exist. For example, under a single act of patent infringement, the infringer manufactured and sold the patented products without the authorization of the patentee. On the condition that at least some infringing products resulted in substitution effects in the market while the rest did not, was the patentee entitled to select the second approach mentioned above to cover the lost profits caused by the former infringing products, and the third or fourth approach to cover the infringer's profits made through the sale of the latter infringing products? A more persuasive interpretation of the problem above in Taiwan is to read the literal text of Paragraph 1 of Article 85 of the Taiwanese Patent Act. The beginning of the Article 85 text clearly states that the patentee can select any approach to calculate patent damages. As a consequence, it seems unlikely for the patentee to select more than one approach for the calculation of patent damages, even when a multi-calculation will secure adequate compensation for patent infringement. To avoid the risk of under-compensation, the accepted consensus in judicial practice suggests that the patentee may select more than one approach for patent damages in the judicial proceedings, but the court will make a final ruling and select the most appropriate approach applied in calculating patent damages for the patentee.²⁶ But this idea did not fundamentally change the legal model for Paragraph 1 of Article 85, which merely allows one approach for the calculation of patent damages.

3. The Gaps for Remedies under Patent Law

a. Patented Products not Available at the Time of Infringement

As mentioned above, the authority of the second approach is the proviso of Subparagraph 1, Paragraph 1 of Article 85. The text of this provision states that the patentee may calculate damages as the difference between the profits earned from a patent after infringement and the anticipated profits made without infringement, provided the patentee cannot sufficiently prove damages under the rest of Subparagraph 1, Paragraph 1 of Article 85. Basically, the interpretation of "the profits made through the practice of a patent" is literally restricted by the precondition that the patentee has been selling the patented products in the market.²⁷ As a consequence, a gap for remedies opens if the patentee has no plan to sell patented products in the market at that time when the patent infringement is conducted. In such a circumstance, it seems that no substitution effects in the market would impact patented products. The patentee is in no position to assert the proviso of Subparagraph 1, Paragraph 1 of Article 85 to calculate patent damages, even though the infringer truly practices the patent of the infringing products without authorization.

b. Infringing Products not Available at the Time of Infringement

Regardless of the third or fourth approach noted above, and similar to calculating patent damages under the second approach, a patentee may still encounter a remedies gap. According to the interpretation of Subparagraph 2, Paragraph 1 of Article 85, the calculation of patent damages relies upon the infringer's profits made through the practice of a patent.

²⁶ See the 2009 symposium of intellectual property law, issue No.8 of the civil procedure division, (Sifayuan, June 22, 2009) (民國 98 年 6 月 22 日司法院 98 年度智慧財產法律座談會提案及研討結果，民事訴訟類第 8 號).

²⁷ See JUNG-REN JENG(鄭中人), THE ANNOTATED TAIWAN PATENT ACT(專利法規釋義), Ch. 2, 170-77 (Kao-Una Publishing, Taipei, 2009).

Those profits are usually recognized as ones resulting from the sale of infringing products in the market.²⁸ Therefore, the infringer deprives the patentee of calculated damages by withholding infringing products from the market. One possible way to fill the remedies gap is to broaden the literal indication of the infringer's profits earned through the practice of a patent to cover the occasions under which the infringer did not sell the infringing products in the market. In this way, concern about the infringer's profits shifts from the sale of the infringing products to the benefit of the internal value of a patent. Under this concept, the royalties avoided by the patent infringer through infringement seem to be within the infringer's profits. However, such interpretation substantially risks blurring the boundaries between damages and the remedy of unjust enrichment under Taiwanese law.

c. Method Patents with a Remote Product

Traditionally, patent law recognizes article patents and method patents as the two primary patent types. It is worth clarifying that the practice of method patents does not always lead directly to patented products, which are evaluated meaningfully under patent law. The exclusive rights under method patents are merely applied against the infringing products directly manufactured by the practice of patents.²⁹ Any indirect or remotely infringing products resulting from the patent's practice are not within the exclusive rights of the patentee. Based upon this inference, if the infringer manufactured and sold such indirect or remotely infringing products to make profits, Subparagraph 2, Paragraph 1, Article 85 cannot be viewed as an appropriate authority to calculate patent damages by considering the aforesaid profits. The only feasible way to calculate patent damages is to resort to the manufacture of infringing products. Under method patents, the manufacture of infringing products may be considered the use of patents, which involves the consumption of internal values of patents. However, through the overview of traditional Taiwanese patent law system, especially Paragraph 1 of Article 85, it is difficult to find an authority to calculate damages just by the evaluation of patent values, other than the sale of patented or infringing products. Certainly, due to the jurisprudence of the exclusive rights under method patents, the patentee also faces a predicament in the calculation of damages. The sale of patented products made indirectly or remotely from the practice of a patent will weaken the justification to seek the proviso of Subparagraphs 1 and 2, Paragraph 1 of Article 85 as an authority to calculate damage by considering the substitution effects in the market or the profits enjoyed by the infringer.

d. Specific Exclusive Rights without Performance in the Market

Among the patentee's exclusive rights, using the example of article patents, it seems that the only rights involved in substantive market effects are the rights to exclude others from selling or importing patented products. Even though the patentee already has a marketing plan for the patented products, infringement occurs only when the patented products are made and ready to sell. In this situation, owing to no instant substitution effects in the market, it is difficult for the patentee to calculate patent damages through the proviso of Subparagraph 1, Paragraph 1 of Article 85. Similarly, the patentee may not apply Subparagraph 2, Paragraph 1 of Article 85 to take infringer's profits as damages when third

²⁸ *Id.* at 172.

²⁹ *Supra* note 1, art. 29 (“A patent shall confer on its owner the following exclusive rights: (b) where the subject matter of a patent is a process, to prevent third parties not having the owner's consent from the act of using the process, and from the acts of: using, offering for sale, selling, or importing for these purposes at least **the product obtained directly by that process.**”) (emphasis added)

parties have not sold or imported products that infringe the patent. This is the remedies gap in view of the violation of exclusive rights.

4. Resolution for Remedy Gaps through Reasonable Royalties

a. First Stage: Judicial Cases' Approach

As a matter of fact, Taiwanese judicial practices have recognized that remedies gaps would not only contradict the goals of patent protection and industrial development, but also fail to comply with the gist of patent law. Despite inadequate authority, courts interpreted Paragraph 1 of Article 85 in practice to establish the concept of “royalties lost” or “reasonable royalties” to fill the aforesaid gaps reflected in the calculation of patent damages. First, one court held that “royalties lost” or “reasonable royalties” is within the scope of damages under Paragraph 1 of Article 216 of the Taiwanese Civil Code. As a consequence, when the defendant violated the plaintiff’s exclusive right to “offer to sell” by uploading the catalogs on a website as advertisements, the plaintiff was entitled to “royalties lost” or “reasonable royalties” as patent damages, which would have been negotiated and agreed between the plaintiff and the defendant had the patent infringement not occurred.³⁰ Second, in order to strengthen the justification for the position of the courts on “royalties lost” or “reasonable royalties” as patent damages, Paragraph 2 of Article 222 of the Taiwanese Civil Procedure Act and Paragraph 2 of Article 87 of the Executive Notices of Civil Procedure were applied as supplemental authority.³¹ The former emphasizes that the court can consider all circumstances to rule for patent damages, provided that the plaintiff suffered from damages that cannot or are difficult to be proven. The latter, which is subordinate to the former under the legal system, further provides the court with a guideline for taking “royalties lost” or “reasonable royalties” as the calculation of patent damages.³² Moreover, at least one court recognized comparative laws from foreign jurisdictions concerning “reasonable royalties” and other equivalent concepts. These approaches, analogous royalties developed in German judicial practice, reasonable royalties stipulated under Article 284 of the U.S. Patent Act, and licensing revenues authorized by Paragraph 3, Article 102 of the Japanese Patent Act, all support the idea of “royalties lost” or “reasonable royalties” for the calculation of patent damages.³³ Finally, not only did Taiwanese courts recognize the necessity of “royalties lost” or “reasonable royalties” to resolve present hardship for patent damages in some occasions, they also contributed opinions about the measurement of

³⁰ See, e.g., Zhi Hui Cai Chan Fa Yuan 99 Nian Du Min Zhuan Shang Geng 1Zi Di 10 Hao Pan Jue (智慧財產法院 99 年度民專上更(一)字第 10 號判決)(focusing on reasonable royalties); Zhi Hui Cai Chan Fa Yuan 99 Nian Du Min Zhuan Swu Zi Di 66 Hao Pan Jue (智慧財產法院 99 年度民專訴字第 66 號判決) (focusing on reasonable royalties); Zhi Hui Cai Chan Fa Yuan 97 Nian Du Min Zhuan Swu Zi Di 66 Hao Pan Jue (智慧財產法院 97 年度民專訴字第 66 號判決) (focusing on reasonable royalties); Zhi Hui Cai Chan Fa Yuan 98 Nian Du Min Zhuan Shang Yi Geng 1Zi Di 25 Hao Pan Jue (智慧財產法院 98 年度民專上易字第 25 號判決)(focusing on royalties lost); Zhi Hui Cai Chan Fa Yuan 99 Nian Du Min Zhuan Swu Zi Di 156 Hao Pan Jue (智慧財產法院 99 年度民專訴字第 156 號判決) (focusing on royalties lost).

³¹ See, e.g., Zhi Hui Cai Chan Fa Yuan 97 Nian Du Min Zhuan Swu Zi Di 66 Hao Pan Jue (智慧財產法院 97 年度民專訴字第 66 號判決); Zhi Hui Cai Chan Fa Yuan 98 Nian Du Min Zhuan Shang Yi Geng 1Zi Di 25 Hao Pan Jue (智慧財產法院 98 年度民專上易字第 25 號判決); Zhi Hui Cai Chan Fa Yuan 99 Nian Du Min Zhuan Swu Zi Di 156 Hao Pan Jue (智慧財產法院 99 年度民專訴字第 156 號判決).

³² See Executive Notices of Civil Procedure under Taiwan Civil Procedure Code (辦理民事訴訟事件應行注意事項) art. 87, ¶2 (Dec. 12, 2009), available at <http://db.lawbank.com.tw/FLAW/FLAWDOC01.aspx?lsid=FL001384&lno=87> (accessed May 6, 2012).

³³ See Zhi Hui Cai Chan Fa Yuan 97 Nian Du Min Zhuan Swu Zi Di 66 Hao Pan Jue (智慧財產法院 97 年度民專訴字第 66 號判決).

“royalties lost” or “reasonable royalties.” Those ideas might result from the influence of comparative laws, and should be given some due review. This article will discuss this issue later when attempting to establish a harmonized model for the measurement of “royalties lost” or “reasonable royalties” as patent damages between Taiwan and China.

b. Second Stage: Codification of Authority of Reasonable Royalties

It should be recognized that the momentum from the strong desire for sufficient remedies was persistent and eventually manifested itself in the amendment of the Taiwanese Patent Act in 2011. This bill was passed on November 29, 2011. Although the amended Taiwanese Patent Act will not come into effect until the end of 2012,³⁴ the patent damages amendment establishes a milestone, under which the approach of “reasonable royalties” is added to the Taiwanese patent remedy system as an authority for the calculation of patent damages. Located in Subparagraph 3 of Article 97, the new provision stipulates that the equivalent of royalties in consideration of the practice of a licensed patent may be used in the calculation of patent damages.³⁵ Legislators actually conceived of this “equivalent of royalties” as “reasonable royalties.”³⁶ The main function of the reasonable royalties approach is to help patentees evaluate patent damages, especially, when they bear a prohibitive burden of proof for damages that fell into the remedies gap.³⁷ In view of a systematic analysis, the approach of reasonable royalties parallels with other approaches as an independent calculation of damages. Later, this article will give a further examination regarding special properties about the approach of reasonable royalties.

B. Calculating Patent damages under the Chinese Patent Act

Compared with Taiwanese patent law, Chinese patent law seems flexible for patentees to calculate damages for remedies. In response to a deficiency over the calculation of patent damages, the Chinese Patent Act was amended to add Article 60 to authorize the calculation of patent damages in 2000.³⁸ Under Article 60 of the 2000 Chinese Patent Act, there are three options for patentees calculating patent damages. The first sentence states that patent damages may be calculated according to either patentee losses caused by the patent infringement or infringer profits earned by infringing a patent. The patentee seems free to select either approach for calculating damages without any explanation. However, when the patentee runs into difficulty to prove the losses or infringer’s profits, patent damages may be calculated in accordance with appropriate multiples of licensing royalties.

³⁴ See Intellectual Property Office, *Update on Copyright Law and Patent Law* (商標法及專利法新制即將上路), available at http://www.tipo.gov.tw/ch/News_NewsContent.aspx?NewsID=5698 (last updated Feb. 4, 2012). It is noted for the readers’ reference that Taiwanese amended Patent Act comes into effects on January 1, 2013.

³⁵ As a matter of fact, except for adding a new authority for the reasonable royalties, the amended Taiwanese Patent Act did not revise the original provision for patent damages to any significant extent. Subparagraph 1, Paragraph 1 of Article 85 of the current Patent Act is reorganized as Subparagraph 1, Paragraph 1 of Article 9 of the, amended Patent Act. Subparagraph 2, by the same logic, is replaced by Subparagraph 2 of Paragraph 1 of Article 97 of the amended Patent Act, but the original second sentence was deleted due to consideration of overcompensation. The calculation of patent damages through reasonable royalties is authorized under Subparagraph 3, Paragraph 1 of Article 97 of the amended Patent Act.

³⁶ See the Legislative Statement 2(3) of Article 97 of amended Taiwan Patent Act, under the general statement and synopsis between current and amended Taiwan Patent Act (專利法修正總說明及條文對照表), available at http://www.tipo.gov.tw/ch/AllInOne_Show.aspx?path=2769&guid=45f2e9ed-6a50-488e-8514-47a78e3cc320&lang=zh-tw (last updated Nov. 12, 2012).

³⁷ *Id.*

³⁸ See YIN XIN TIAN(尹新天), *INTRODUCTION TO THE PATENT LAW OF CHINA* (中国专利法详解) 729 (Zhi Shi Chan Quan Publishing, Peking, 2011).

In 2008, aside from reorganizing Article 61 into Article 65, Article 65 of the Chinese Patent Act was substantively amended to respond to the ongoing situation of Chinese patent litigation in pursuit of sufficient compensation for patent infringement.³⁹ This provision set up the priority of available options for the calculation of patent damages. The first priority is to base patent damages on the patentee's losses caused by the patent infringement.⁴⁰ Simply when the losses are hard to determine, the patentee may shift to measuring the profits of the infringer taking advantage of a patent as patent damages.⁴¹ If losses and profits fail as proof of patent damages, then the patentee will use the third priority, which calculates damages as appropriate multiples of licensing royalties.⁴² If the three options noted above all suffer from insufficient determination, the Chinese People's Court will award patent damages above 10,000 Yuan, but not in excess of 1,000,000 Yuan, according to its discretion over the factors, the subject matter of the patent, and the characteristics and extent of infringement.⁴³

In view of the context of Article 65 of the Chinese Patent Act, it seems that there are no remedies gaps, unlike the Taiwanese Patent Act, even when the patented or infringing products are not available in the market. The third and fourth options (reasonable royalties and statutory damages) seem more malleable to deal with those occasions where the patentee's losses or infringer's profits cannot be used as the calculation of patent damages.

II. Functioning for Sufficient Patent Damages: Reasonable Royalties Work with Other Alternatives

A. Bafflement from Assertion of a Single Patent Infringement

In terms of the development of judicial practice and the patent law amendment, Taiwan permits the calculation of reasonable royalties as patent damages. Retroactive to 2000 or earlier, Chinese patent law also recognized the concept of reasonable royalties for patent damages, even though the text of the Chinese Patent Act did not feature of the term "reasonable royalty" at that time. Under the same concept shared by Taiwanese and Chinese patent laws, it is worth noting that there are different legal models for assessing reasonable royalties as damages in the two jurisdictions.

Taiwanese patent law positions the option of calculating patent damages with reference to reasonable royalties as an independent provision, as mentioned above. Occasionally, the patent infringement possibly involved damages that could be measured by patentee's losses, infringer's profits, or otherwise. If the patentee eventually selects reasonable royalties to calculate patent damages, a patentee might not be able to seek other approaches to help determine the overall damages. Unless the patentee could transcribe the original calculating basis for the former damages to the reasonable royalty basis, it obviously contradicts either the legislative structure or literal interpretation of Article 97 of the Amended Taiwanese Patent Act if the patentee uses Paragraphs 1 and 2 to calculate the

³⁹ *Id.*; Xiao Qing Feng, *The Interaction between Enhancing the Capacity for Independent Innovation and Patent Protection: A Perspective on the Third Amendment to the Patent Law of the P. R. China*, 9 PITT. J. TECH. L. & POL'Y 1, 112-15 (2009); Po-Ching Lee (李柏靜), *Damages Calculation in China Patent Law and Practice--Perspective of Third Amendment to Patent Law*, 7 NCCU INTELL. PROP. REV., (政大智慧財產評論) no.2, 62-65 (Oct. 2009).

⁴⁰ See China Patent Act ¶1, sentence 1 (unofficial ed. 2008); see also Feng, *supra* note 39, at 118.

⁴¹ See China Patent Act ¶1, sentence 2.

⁴² See *id.* sentence 3.

⁴³ See *id.* ¶2.

former damages, and simultaneously refers to Paragraph 3 for the latter ones. In a similar interference, as long as the patentee calculates former patent damages based on the patentee's losses or infringer's profits, it is commensurate to coerce the patentee to abandon the remedies for the latter damages that otherwise could be calculated through the approach of reasonable royalties. Injustice against the remedies to patent infringement may emerge from a stark interpretation of Article 97 of the Amended Taiwanese Patent Act.

Contrary to Article 97 of the Amended Taiwanese Patent Act, Article 65 of the Chinese Patent Act prioritizes options for the calculation of patent damages. This model, however, does not guarantee that the patentee could calculate damages based on the patentee's losses or infringer's profits and simultaneously on reasonable royalties or statutory damages, assuming the infringement satisfied both approaches. No strong evidence available proves the opposite, though. Injustice in remedies also possibly happens under Chinese patent law.

B. Two Possible Interpretations for Sufficient Patent Damages

1. Calculation of Damages in Accordance with Each Exclusive Right

In order to resolve the injustice in calculating sufficient patent damages, two guidelines for interpreting both Article 97 of the Amended Taiwanese Patent Act and Article 65 of the Chinese Patent Act are useful. One guideline is to loosen the application of the two provisions and focus on the basis of the violation of exclusive rights under the same patent infringement, as opposed to under a single patent infringement.⁴⁴ The interpretation affords advantages by accommodating different occurrences of patent damages resulting from various violations of exclusive rights. For example, a single patent infringement may involve the infringer's use of a patent, as well as the offer or sale of infringing products. When the infringer violates the patentee's exclusive right to sell, the patentee may calculate damages through "lost profits" based on the sale of infringing products that produced the substitution effect in the market, according to the proviso of Subparagraph 1 of Article 97 in Taiwan or the first sentence of Paragraph 1, Article 65 in China. In that case, a court might interpret the sale of infringing products without substitution effects as the violation of the exclusive use right. Alternatively, if an infringer violates the exclusive sale right, a court may calculate patent damages based on the infringer's profits from the infringing products without determining substitution effects or not. This alternative is in accordance with Subparagraph 2 of Article 97 or the second sentence of Paragraph 1 of Article 65.

If an infringer violates the exclusive right to make, offer to sell and use, a court or patentee may calculate patent damages based on reasonable royalties under Subparagraph 3 of Article 97 or the third sentence in Paragraph 1 of Article 65.

2. Extending the Basis of Reasonable Royalties

⁴⁴ See 35 U.S.C. § 284(1) (2011) ("Upon finding for the claimant the court shall award the claimant damages adequate to compensate for the infringement but in no event less than a reasonable royalty for the use made of the invention by the infringer, together with interest and costs as fixed by the court.") (Under the comparative aspect, U.S. patent law seems to allow the patentee to have the reasonable royalties as the minimum patent damage, and it is legal for the patentee to assert other damages that are beyond the reasonable royalties according to a single patent infringement, on the condition that there is no double compensation for damages); see, e.g., *State Indus., Inc. v. Mor-Flo Indus., Inc.*, 883 F.2d 1573, 1577-81 (Fed. Cir. 1989) (It seems U.S. patent law will not run into the predicament of insufficient compensation that Taiwanese or Chinese patent law is currently faced with.)

The second guideline works to broaden the scope of the provision governing the calculation of patent damages through the approach of reasonable royalties. In other words, reasonable royalties would apply to not only patent damages beyond the patentee's losses or infringer's profits, but also to the damages that originally should have been calculated in accordance with the patentee's losses or infringer's profits.⁴⁵ This interpretation keeps the function of the original provision intact, and corresponds appropriately to the text or wording of each provision. Under Article 97 of the Amended Taiwanese Patent Act, the patentee is entitled to any of the legal approaches for the calculation of patent damages. Even when the patentee chooses to calculate damages through reasonable royalties, a patentee may still incorporate into the scope of reasonable royalties some damages that would otherwise be calculated based on the patentee's losses or infringer's profits. This interpretation has two benefits. First it ensures that the goal of sufficient compensation can be fulfilled through reasonable royalties. Second, it ensures the patentee does not abandon the damages remedies under Subparagraphs 1 and 2 of Article 97 of the Amended Taiwanese Patent Act when a patentee selects reasonable royalties to calculate damages. This interpretation's independence from other approaches under Article 97 of the Amended Taiwanese Patent Act strongly justifies a broad interpretation when applying Subparagraph 3 to grant sufficient remedies against infringement. The same interference, from personal observation, will likely create the benefits of sufficient remedies through calculation of reasonable royalties under Article 65 of the Chinese Patent Act.

However, calculating patent damages on the basis of the violation of exclusive rights, discussed *supra*, also runs the risk of double compensation. Looking at the example of article patents, a single patent infringement usually goes through a series of procedures, including the manufacture, storage, and marketing, as well as the sale of infringing products. Obviously, the aforesaid infringement involves the violation of at least three exclusive rights. The manufacture of infringing products without authorization violates the exclusive right to make the patented article. The storage and marketing possibly violate the exclusive right to "offer to sell." The sale of infringing products undoubtedly violates of the exclusive sale right. If the exclusive right type does not limit patent damage calculation, the patentee may seek reasonable royalties for an infringer's violation of the rights to make or offer to sell, and still be entitled to damages based on the patentee's losses or infringer's profits in light of the same infringing products.⁴⁶ In order to function well, to protect against the predicament of insufficient remedies, and to avoid double compensation, it seems a precondition that a patentee is merely entitled to having patent damages according to the same infringing products by selecting one stage under a single patent infringement. But under the same stage, if the exclusive sale right is not completely violated, non-violated infringing products may result in the calculation of patent damages as reasonable royalties. In some cases, although the infringing products are made and advertised without authorization, only some are sold in the market, while others are still in storage. Alternatively, even if infringing products have entered the market, only a portion of them causes substitution effects, while another portion

⁴⁵ Cf. Mark A. Lemley, *Distinguishing Lost Profits from Reasonable Royalties*, 51 WM & MARY L. REV. 655, 673 (2009) ("With manufacturing patent owners and those that have granted exclusive licenses to manufacturing firms more clearly protected under the lost profits prong, the reasonable royalty measure of damages can return to its original role-as a means of ensuring that patentee aren't denied fair compensation for the value they could have demanded in a fair market for a non-exclusive license to their patents.") (note 81 omitted)

⁴⁶ For example, it would be double compensation if the patentee first sought reasonable royalties because the infringer offered to sell an estimated number of infringing products, and then again counted the lost profits on the same infringing products in the market. In this author's view, the calculation of reasonable royalties based on the violation of the exclusive right of offering to sell is a bit speculative and it seems easy to involve double compensation when the lost profit is also used later.

does not. In this situation, without fear of double compensation, the patentee could, first, calculate patent damages from sold infringing products or products leading to the substitution effects based on the patentee's losses or infringer's profits, and, second, take reasonable royalties to measure the damages from unsold infringing products in storage or products that did not cause substitution effects.

Certainly, it is also difficult to broaden the scope of reasonable royalties to cover other damages that could otherwise be calculated according to patentee losses or infringer profits. This difficulty is reflected in the issue of how to appropriately transcribe the basis of the aforesaid damages to reasonable royalties. Further, a derivative issue is whether the factors and causations considered in the original basis would be considered in the calculation of reasonable royalties.

In this author's opinion, the two issues proposed above will not contradict each other. When they work together, it is helpful to seek remedies to cover patent damages.

III. Determination of Reasonable Royalties for Patent Damages

A. The Property of Reasonable Royalties

Prior to discussing how to assess appropriately reasonable royalties as patent damages, it is necessary to clarify the characteristics of such royalties under Taiwanese and Chinese patent law. Compared with the royalties in patent licensing, which are consideration for granting patent rights, reasonable royalties are fixed as a patent damages remedy.⁴⁷ While the former royalties are usually concluded as a price for waiving patent infringement claims through real negotiations about patent licensing according to the determined scope of patent practices,⁴⁸ the latter compensate patent damages based on hypothetical negotiations in terms of the development of patent infringement.⁴⁹ Another difference is that reasonable royalties may be observed at the time of patent infringement to contain what had already been agreed as a price for granting patent rights had infringement not occurred.⁵⁰ However, subjecting a reasonable royalty to the price of patent rights practice under a hypothetical agreement does not finalize it. The uncertain development of the patent infringement always brings about unpredictable damages. It is difficult to find a hypothetical license that completely fits the real situation of the patent infringement.⁵¹

Additionally, multiple harms arise when the patent infringement occurs. Besides the patentee suffering the depreciation of internal patent valuation, the original patent management is harmed and can further weaken the patentee's competitive market advantage, thereby curbing the improvement plan or accumulated innovations. If we also count both the costs of overcoming uncertainties in calculating reasonable royalties (as compared to licensing costs from real negotiations) and the interests that the patentee probably lost in the time gap between the real and hypothetical negotiations, the licensing royalties may well be substantially different from the reasonable ones.⁵²

⁴⁷ See 7-20 DONALD S. CHISUM, CHISUM ON PATENTS § 20.3[3] (LexisNexis 2009).

⁴⁸ See BRAIN G. BRUNSVOLD & DENNIS P. O'REILLEY, DRAFTING PATENT LICENSE AGREEMENTS 5 (5th ed. 2004).

⁴⁹ See CHISUM, *supra* note 47, § 20.3[3][a].

⁵⁰ See RICHARD B. TROXEL & WILLIAM O KERR, ASSETS AND FINANCES: CALCULATING INTELLECTUAL PROPERTY DAMAGES §§ 5:11-:12 (2010).

⁵¹ *Id.* § 5.14.

⁵² See ROBERT L. HARMON, PATENTS AND THE FEDERAL CIRCUIT 1014-17 (9th ed. 2009).

As a consequence, it is rational to infer that licensing royalties as *ex ante* are not always equal to reasonable royalties as *ex post*, even subject to the patent infringement that may be the converse of the symmetrical patent practice. The reasonable royalties usually go beyond the licensing royalties.⁵³ The opposite argument will induce the infringer to rely upon the speculative chance of escaping the remedy of reasonable royalties, rather than negotiate licensing royalties.⁵⁴ The inference that reasonable royalties as damages are possibly more than *ex ante* licensing royalties can present significant meaning under Taiwanese and Chinese patent laws. As proposed earlier, this author thought that the interpretations of Subparagraph 3, Article 97 of the Amended Taiwanese Patent Act and Sentence 3, Paragraph 1, Article 65 under the Chinese Patent Act, should follow the way on which the damages that are otherwise measured according to patentee's losses or infringer's profits can be transcribed to the basis of reasonable royalties for the remedy under a single patent infringement. When the transcribed damages are counted within the scope of reasonable royalties, the royalty considers the development of the patent infringement and does not serve merely as fixing the price against the granting of patent rights.

B. Establishment of the Preliminary Rate for Reasonable Royalties

Neither the Taiwanese Patent Act nor the Chinese Patent Act indicate how the reasonable royalties should be measured or what factors and causations are necessary to enable reasonable royalties to function appropriately as patent damages.

As noted above, the reasonable royalties for calculation, which are different from licensing royalties arrived at through real negotiation, are built on a hypothetical basis. This basis is subject to the validity of the patent and the existence of infringement, which leads to the assumption of the patentee and infringer's intents in establishing a hypothetical price for damages. The first step in pursuit of such calculation is to determine a preliminary rate of reasonable royalties, assuming we have not yet added other factors into consideration of reasonable royalties. The parallel recognition of both the hypothetical conditions of a licensing agreement and the real development of patent infringement should be conducted in a due comparative basis. In other words, a preliminary rate of reasonable royalties is justified according to the concept of symmetry, under which the real patent infringement development could be transferred into a price corresponding to the governance of one or more specific licensing agreements. Theoretically, the established royalty rate is more efficient than the hypothetically negotiated one at measuring the reasonable royalties as patent damages.⁵⁵ Certainly, in most cases, it is not easy to find an established royalty rate for calculating damages to precisely cover the real outcome of infringement in one's own or competitors' current licensing agreements. Owing to unpredictability of real infringement development, which is often beyond the pricing of ordinary patent licensing agreements over negotiated uses of a patent, a hypothetical royalty rate is expected to cover real infringement development. Generally speaking, the structure of a patent licensing agreement may be composed of the following sections: the granting license; royalty calculation and reporting; representations and warranties; transferability of rights and obligations; term and termination; dispute settlement mechanism, including the issues of applicable law; jurisdiction; and arbitration.⁵⁶ It is an onerous task to reflect real infringement in a hypothetical licensing

⁵³ *Id.*; TROXEL & O KERR, *supra* note 50, at § 5:09.

⁵⁴ Daralyn J. Durie & Mark A. Lemley, *A Structured Approach to Calculating Reasonable Royalties*, 14 LEWIS & CLARK L. REV. 627, 642 (2010); YIN, *supra* note 38, at 736.

⁵⁵ See CHISUM, *supra* note 47, § 20.3[2].

⁵⁶ See, e.g., *Rambus's Sample DRAM and Controller's Licensing Agreements*, available at

agreement to produce a balanced consideration. Among the stipulations of a patent licensing agreement, even a hypothetical one, the clauses of the granting license, royalty calculation, and the term of agreement are susceptible to real infringement development. As patent validity and infringement are assumed to measure the reasonable royalties as patent damages, the clauses addressing representations and warranties and the transferability of rights and obligations fade in the hypothetical negotiations for royalties. The infringer is the only party liable for patent damages, so no issues of transferability of rights and obligations should concern the determination of reasonable royalties.⁵⁷ In addition, reasonable royalties have nothing to do with the representations and warranties, since past, current, and future events related to a patent do not influence the status of patent infringement.⁵⁸ As to the dispute settlement clause, it focuses on the interpretation of the patent licensing agreement based on the parties' mutual interest in ensuring that they comply with the agreement to a rational extent in the real world, rather than the exclusive purpose of resolving patent infringement.⁵⁹ This clause seems to play no significant role in the determination of reasonable royalties as patent damages.

The clause actually granting license usually stipulates to the determination of the scope of the patent as licensing subject matter, and to the limitation of patent practices, including which patented products may be made, and which exclusive patent rights are waivable.⁶⁰ In view of measuring reasonable royalties as patent damages, it is necessary to connect license granting in the hypothetical negotiations with real patent infringement to seek an adequate patent licensing agreement under which the royalty rate may be considered or adjusted as a preliminary one. Patent infringement occurred when the infringer violated at least one kind of exclusive right under patent law. The kind of exclusive right violated and the extent of the violation should correspond to the clauses granting license under the hypothetical agreement. Any current patent agreement that does not grant the exclusive rights that the patent infringement violated cannot justifiably serve as a basis for the preliminary royalty rate in calculating reasonable royalties as patent damages.⁶¹ A patent, although intangible, is legal property, and the practice of a patent is inexhaustible and non-rivalrous.⁶²

In a similar inference, a single infringement never prohibits other infringements, even over the same subject matter. In other words, the vulnerability of a patent to infringements always exists, and does not stop after a single infringement. As a consequence, it seems that a non-exclusive licensing agreement is better than an exclusive one to determine the preliminary royalty rate for patent damages.⁶³ The calculation of licensing royalties under a hypothetical basis is also relevant to patent infringement. Selecting a lump sum basis for the calculation of licensing royalties usually emphasizes the overall prize of practicing the patent during the specific term. Such a model of calculation works simply and efficiently, but a

<http://www.rambus.com/us/about/licensing/index.html> (last visit May 1, 2012).

⁵⁷ See BRUNSVOLD & O'REILLY, *supra* note 48, at 151-52 (on the purpose of the clauses for transferability of rights and obligations under a patent licensing agreement).

⁵⁸ See *id.*, at 173-74 (on the purpose of the clauses for representations and warranties under a patent licensing agreement).

⁵⁹ See *id.*, at 194-95, 199-200 (on the purpose of the clauses for choice of law and arbitration under a patent licensing agreement).

⁶⁰ See ERIC BENSON, 1-2 PATENT LICENSING TRANSACTION § 2.01[1] (LexisNexis 2010).

⁶¹ Cf. Thomas F. Cotter, *Four Principles for Calculating Reasonable Royalties in Patent Infringement Litigation*, 27 SANTA CLARA COMPUTER & HIGH TECH. L.J. 725, 746-48 (2011).

⁶² See F. SCOTT KIEFF ET AL., PRINCIPLES OF PATENT LAW-CASES AND MATERIALS 50-51 (5th ed. 2011); JANICE M. MUELLER, PATENT LAW 61-62 (3d. ed. 2009).

⁶³ Cf. Cotter, *supra* note 61, at 746-48.

lump sum basis does not reflect the real situation where the patent was used. For example, it fails to answer what types of patent rights were practiced and to what extent the patent was reduced to patented products. In order to refine the reasonable royalties so that they correspond to the development of patent infringement, a running basis seems more advantageous than a lump sum.⁶⁴

C. Patent Value and Reasonable Royalties

Next, we distinguish different patent practices prior to infringement to properly incorporate factors for measuring reasonable royalties as patent damages. As mentioned above, in order to propose sufficient remedies for patent damages, under both the Taiwanese and Chinese patent acts, the patentee should have a chance to transcribe patent damages into the basis for reasonable royalties, which are otherwise calculated subject to patentee's losses or infringer's profits. Faced with necessary and distinguished evaluation and analysis, this article separates the occasions where seeking patent damages is merely subject to reasonable royalties, from ones where patent damages may originally be calculated through other approaches to measure reasonable royalties.

1. Causation of Patented Technologies

First, we concentrate upon the former patent damages as the subject matter. It should be emphasized that the patent value is never exactly recognized just through the granting of patent as an absolute and static property. In contrast, the patent value is dynamic, and it is changeable under patent law. Real patent value must still be determined according to how the patentee makes best efforts to practice the patent, even though the patent value is bound by its claims.⁶⁵ The more the patentee is dedicated to practicing a patent, the more the patent can be evaluated under patent law.⁶⁶ Just like two sides of a coin, the evaluation of a patent may be expected to fix the scope of patent damages when the patent infringement was conducted. This jurisprudence may be rationalized by the undergirding principle of patent law, utilitarianism, which originated in U.S. patent law, and has influenced the development of Taiwanese and Chinese patent laws. Under utilitarianism, the ultimate goal of patent law is not so much to benefit a specific inventor, as much as to promote substantial development of industries.⁶⁷

The legislative goal of utilitarianism might be achieved through a presumed social contract between the inventor and the government on behalf of the public.⁶⁸ While the government establishes patent law to endow exclusive rights to secure the incentives for patentees to continue future innovation, the patentee has the obligation to contribute useful and high-quality inventions to the public.⁶⁹ This contribution of such inventions is not

⁶⁴ *Id.*

⁶⁵ Cf. Roger D. Blair & Thomas F. Cotter, *Rethinking Patent Damage*, 10 TEX. INTELL. PROP. L.J. 1, 74-84 (2001) (detailed analysis about "idle patents" under this article).

⁶⁶ *Contra.* John M. Golden, *Principles for Patent Remedies*, 88 TEX. L. REV. 505, 555-61(2010) ("The antidiscrimination principle for patent remedies cautions against embracing approaches to remedies that explicitly or otherwise directly favor certain categories of business models, where 'business model' is understood to encompass essentially any mode, whether commercially motivated or not, of organizing persons, material, or behavior to develop, promote, or exploit an invention or innovation.") (note 280 omitted).

⁶⁷ See KIEFF ET AL., *supra* note 62, at 50-51; JANICE M. MUELLER, PATENT LAW 31-33 (3d. ed. 2009).31-33 (3d. ed. 2009); see also JENG, *supra* note 27, Ch. 1, at 6; YIN, *supra* note 38, at 10-14; *supra* note 41, art. 1.

⁶⁸ See Shubha Ghosh, *Patents and the Regulatory State: Rethinking the Patent Bargain Metaphor after Eldred*, 19 BERKELEY TECH. L.J. 1315, 1316-17 (2004).

⁶⁹ This obligation is reflected in the requirements of patent eligibility and patentability, including, for example,

expected merely to permit the public to enjoy fruitful results of the inventions; rather, it also leads to further improvements or accumulated innovations of original inventions in the future. The latter purpose complies deeply with the most significant meaning of utilitarianism. It is undeniable that patent applications are presumed to reduce inventions to practice. However, the presumption of reducing invention into practice does not guarantee that the patentee will diligently practice the patent or authorize others to practice it after the patent is granted. In order to ensure that the patentee's acts after the patent was granted would not deviate from the jurisprudence of utilitarianism, the patent value should be proven through the status of patent practices. Under the same inference, the scope of patent damages also refers to the real practice of a patent.

Consequently, when we determine reasonable royalties where patent damages are incalculable through other approaches, the reasonable royalty rate should be appropriately adjusted from the aforesaid preliminary rate by comparing the technological advances covered by the patent to the status of current, similar technologies in the market to ensure the patent's real contribution.⁷⁰ Moreover, the real competition of technologies in the market also secures the contribution of a patent. This speaks to the issue of causation. To seek the substitution effects secondary to patented technologies is to recognize if the substitution effects would happen in the market. The stronger the substitution effects presented in the market are, the less room there is for the evaluation of patent contribution. As soon as the substitution effects are fully recognized, patent damages calculated through reasonable royalties would be limited, at most, to the price of the aforesaid best alternative to the patent.⁷¹

Finally, in rare occasions where the patentee neither practices the patent, nor has any intention to accept others' offers for licensing, the value of the patent would not be definitely proven, owing to the lack of any contribution made by the patentee to the public. If patent infringement occurs under such circumstances, any remedies through reasonable royalties seem to contradict the utilitarianism principle of patent law, which is concerned with the practice of a patent.⁷²

2. Causation of Patented Products

Under the amended Taiwanese Patent Act and current Chinese Patent Act, the patentee may choose to transcribe patent damages calculated by other approaches into reasonable royalties to avoid the risk of insufficient remedies resulting from the selection of approaches for calculating damages. The approaches, regardless of the basis of the patentee's losses or infringer's profits, are scrutinized by the causation of patent damages. The causation on calculating damages through the determination of the patentee's losses is usually reflected in a concept that concerns the lost profits of patented products on the ground due to infringing products that were put in the market. The causation for this remedy for patent damages looks to the difference between the originally estimated profits of patented products prior to patent infringement, and the actual profits after such infringement occurred. The jurisprudence of

the subject matter of patent, novelty, non-obviousness, utility and enablement.

⁷⁰ See LEMLEY, *supra* note 54, at 637-38; Cotter, *supra* note 61, at 742-44.

⁷¹ See LEMLEY, *supra* note 54, at 639; Cotter, *supra* note 61, at 743-44; cf. Christopher B Seaman, *Reconsidering the Georgia-Pacific Standard for Reasonable Royalty Patent Damages*, 2010 B.Y.U.L. REV. 1161, 1711-15 (2010).

⁷² In terms of a social contract under patent law, after the patent was granted, if the patentee failed to practice the patent for the benefits of the public, the jurisprudence of estoppel seems to be able to justify the position of the deprived damages.

this kind of calculation for patent damages concentrates upon a reasonable connection between expected and real profits of patented products. As a matter of fact, effects resulting from the substitution of infringing products for patented products determine the causation. Generally speaking, the court would determine the causation by considering the interchangeability of infringing products over patented products in terms of customer demands, other legal alternatives to patented products, and the manufacturing capacity of the patentee for increased patented products, but-for infringement.⁷³ The causation existing in the calculation of patent damages in light of lost profits should not be ignored, even when the patentee selected reasonable royalties to calculate patent damages that had been determined by lost profits.⁷⁴ Otherwise, an unbridled recognition of infringing products would distort the calculation of patent damages, and provide the patentee with opportunities to escape from the lost profits causation limitation when it was transcribed into the reasonable royalty.

D. The Entire Market Value Rule and Reasonable Royalties

As highly diversified professions have continued to develop technologies, any single invention is possibly a technological improvement or innovation. It is no surprise that even an end product or an industrial process often attracts the contribution of more than one single invention or patent. This fact of manufacturing incidentally brought a controversial issue into the field of patent law. Particularly, this issue is connected with patent damages, which involves delicate interest consideration under patent law. When patent infringement was not the infringer's only purpose in manufacturing the product, it means that the infringing products were merely elements or components of an end product that the infringer planned to make. In this circumstance, if the patent infringement is undisputed, it is worth further investigating what the patentee should rely on to seek patent damages: the value of the patent that contributed to the end product or the value of the end product? This controversy is also present under Taiwanese and Chinese patent laws.⁷⁵ It is possible to consider just the value of the patent that contributed to the end product. The advantage of this approach is to make sure that the patentee would not be overcompensated by extending the exclusive right beyond the limitation of claims without any scrutiny of patentability.⁷⁶ The disadvantage emerges as to how the court should separate the patent value from the end product by distinguishing the patent's contribution from that of other technologies used in the manufacture of the same product.⁷⁷ Additionally, another concern addresses determining the patent value for damages

⁷³ See Chung-Lun Shen, THE REASONABLE CAUSATION OF LOST PROFITS UNDER THE PROVISIO OF SUBPARAGRAPH 1 PF ARTICLE 85(1) OF TAIWAN PATENT ACT-COMMENTS ON THE DECISION OF THE TAICHUNG BRANCH OF TAIWAN HIGH COURT: 94-ZHI SHANG GENG 1 ZI-NO.1, Court Case Times (月旦裁判時報), no.3, at 88-94, June 2010; Panduit Corp. v. Stahlin Bros. Fiber Works, Inc., 575 F.2d 1152, 1156 (6th Cir. 1978).

⁷⁴ See Zhi Hui Cai Chan Fa Yuan 98 Nian Du Min Zhuan Shang Yi Zi Di 25 Hao Pan Jue (智慧財產法院 98 年度民專上易字第 25 號判決); Zhi Hui Cai Chan Fa Yuan 99 Nian Du Min Zhuan Swu Zi Di 156 Hao Pan Jue (智慧財產法院 99 年度民專訴字第 156 號判決).

⁷⁵ On Taiwan, see Zui Gao Fa Yuan 97 Nian Du Tai Shang Zi Di 965 Hao Min Shi Pan Jue (最高法院 97 年度台上字第 865 號民事判決); Zui Gao Fa Yuan 96 Nian Du Tai Shang Zi Di 1134 Hao Min Shi Pan Jue; Taiwan Gao Deng Fa Yuan 94 Nian Du Zhi Shang Zi Di 51 Hao Min Shi Pan Jue (臺灣高等法院 94 年度智上字第 51 號民事判決); Zhi Hui Cai Chan Fa Yuan 99 Nian Du Min Zhuan Swu Zi Di 156 Hao Pan Jue (智慧財產法院 99 年度民專訴字第 156 號判決). On China, see YIN, *supra* note 38, at 739-740.

⁷⁶ See Brian J. Love, *Patentee Overcompensation and the Entire Market Value Rule*, 60 STAN. L. REV. 263, 289-93 (2007); Amy L. Landers, *Let the Game Begin: Incentives to Innovation in the New Economy of Intellectual Property Law*, 46 SANTA CLARA L. REV. 307, 354-62 (2006); Blair & Cotter, *supra* note 65, at 85-89; see also Peter E. Strand, *Back to Bedrock: Constitutional Underpinnings Set "New" Standards for Patent Infringement Causation*, 8 B.U. J. SCI. & TECH. L. 375, 450 (2002).

⁷⁷ See Elizabeth M. Bailey et al., *Making Sense of "Apportionment" in Patent Damages*, 12 COLUM. SCI. & TECH. L. REV. 255, 269-71 (2011).

and whether the patent value dominates the whole end product. If it does, it seems reasonable for the patentee to seek the remedy of patent damages against the overall price of the end product according to the jurisprudence we discussed earlier, which emphasizes measuring the scope of patent damages by the contribution of a patent made by the patentee.

It is also possible to base damages upon the price of the end product. However, rather than measuring damages by adopting the value of the patent that contributed to the end product, patent law questions this approach. While its advantage focuses upon recognizing the possibility of domination of patent contribution, its disadvantage leads to patent damages that overcompensate the patentee.

In terms of comparative law, according to the development of U.S. patent law, the court has in rare occasions allowed the patentee to assess the price of the end product as a basis of patent damages, even where the patented product merely contributed to the end product as an element or component. This concept is admitted as the entire market value rule. There are four possible tests for the entire market value rule. The first rests upon the dependence of the end product on the patented component. When dependence could be proven in light of marketing, the price of the end product may serve as the basis of patent damages.⁷⁸ U.S. case law also recognizes the unity of function between the patented product and the end product. The unity of function entitles the patentee to patent damages by referring to the price of the end product.⁷⁹ The court found it proper to measure patent damages from the point of foreseeability and to consider if the price of the end product would serve as the basis of a remedy.⁸⁰ Currently, the theory of customer demand works as mainstream to apply the entire market value rule under U.S. case law.⁸¹ As long as customer demand in the market could be tied with the patented product that attributed to the core value of the end product, patent damages may be calculated according to the price of the end product.⁸²

Although the legal model of U.S. patent law is not always applicable to Taiwanese or Chinese patent law, the jurisprudence behind the entire market value rule is not without merits. This rule resorts to the evaluation of a patent to guide the scope of patent damages, to the extent that damages are not inappropriately beyond the limitation of claims. The rule of entire market value, in this author's opinion, is applicable under Taiwanese or Chinese patent law, especially under Subparagraph 3, Article 97 of the Taiwanese Patent Act, and Sentence 3, Paragraph 1, Article 65 of the Chinese Patent Act, both of which authorize the calculation of patent damages through reasonable royalties.⁸³ Nevertheless, applying this rule substantively and undoubtedly extends the scope of exclusive rights to outside the claims. Not only does such extension expose the public to the risk of overcompensating the patentee, it also weakens the function of public notice of claims. Perhaps, the concept of patent

⁷⁸ See, e.g., *Leesona Corp. v. United States*, 599 F.2d 958 (Ct. Cl. 1979).

⁷⁹ See, e.g., *Paper Converting Machine. Co. v. Magna-Graphics Corp.*, 745 F.2d 11 (Fed. Cir. 1984); *Rite-Hite Corp. v. Kelley Co.*, 56 F.3d 1538 (Fed. Cir. 1995); *IP Innovation L.L.C. v. Red Hat, Inc.*, 705 F. Supp. 2d 687 (E.D. Tex. 2010).

⁸⁰ See, e.g., *King Instrument Corp. v. Perego*, 65 F.3d 941 (Fed. Cir. 1995); *Micro Chem., Inc. v. Lextron, Inc.*, 318 F.3d 1119 (Fed. Cir. 2003).

⁸¹ See, e.g., *Fonar Corp. v. Gen. Elec. Co.*, 107 F.3d 1543 (Fed. Cir. 1997) ; *Lucent Techs, Inc. v. Gateway*, 580 F.3d 1301 (Fed. Cir. 2009); *Cornell Univ. v. Hewlett-Packard Co.*, 609 F. Supp.2d 279 (N.D.N.Y. 2009); *Uniloc USA, Inc. v. Microsoft Corp.*, 2011 U.S. App. LEXIS 11 (Fed. Cir. Jan. 4, 2011).

⁸² *Lucent Techs.*, 580 F.3d at 1337-38.

⁸³ Taiwanese intellectual property court seems to be influenced by the jurisprudence of "customer demand" in the application of the entire market value rule. See *Zhi Hui Cai Chan Fa Yuan 100 Nian Du Min Zhuan Shang Zi Di 47 Hao Pan Jue* (智慧財產法院 100 年度民專上字第 47 號判決).

evaluation justifies the application of such a rule under patent law, but never cures the defects resulting from overcompensation and weak public notice. As a consequence, the rule should function as an exception to calculating patent damages. In other words, the patentee is merely entitled to calculate patent damages by reasonable royalties based upon the patented product, rather than the end product, unless the patentee could satisfy the proof of the entire market value rule.

After reviewing the aforesaid four tests under U.S. patent case law to ensure the application of the entire market value rule, none of the available tests sufficiently justifies this rule in terms of patent evaluation. In order to strengthen the justification of this rule, the jurisprudence under the doctrine of equivalents might be applied from the determination of patent infringement to the calculation of patent damages.⁸⁴ Officially, the doctrine of equivalents would be applied *mutatis mutandis* to determine if the entire market value rule should be applied in calculating patent damages.

This test may be established through a hypothetical scenario. Suppose that the end product (hereafter “the hypothetical patented product”) is protected under a patent (hereinafter “the hypothetical patent”), and the original patented product serves merely as an element or component of the hypothetical patented product. Suppose also that someone, without any authorization, manufactured the hypothetical infringing product. In such a situation, the doctrine of equivalents can determine whether making the original patented product infringed the hypothetical patent. If the answer were affirmative, then the original patented product would constitute the core value of the hypothetical patent, and other parts of the hypothetical patented product merely contribute limited and ordinary value to the patent. By recognizing the substantial role of the original patented product over the evaluation of the hypothetical patent, it is reasonable to infer that, in patent damages, the entire market value rule seems to work reasonably. Extending the scope of exclusive rights to include the patented elements not within the core value of the patent never runs the risk of overcompensating the patentee. The result of this test entitles the patentee to apply the entire market value rule to rest upon the end product for patent damages. In this situation, if the infringer, without authorization, made the infringing product, and used it as a component in the end-infringing product, then a reasonable royalty could be calculated as patent damages

⁸⁴ The doctrine of equivalents was originally created for the sake of fairness to prevent the infringer from the liability for patent infringement by amending insubstantial part of claims. Given this doctrine functions beyond patent claims serving as an indication of public notice, U.S. patent law set up the tests for availability of the doctrine of equivalents, function-way-result test and insubstantiality test, to secure the amended part was not within the core of patent. This author thinks that the evaluation method from the aforesaid two tests might provide an instruction toward the resolution of disputed patent damages under the entire market value rule. Regarding the doctrine of equivalents under U.S. patent law, see *Graver Tank v. Linde Air Prods. Co.*, 339 U.S. 605, 608 (1950); *Warner-Jenkison Co. v. Hilton Davis Chem. Co.*, 520 U.S. 17, 36, 39-40 (1997); Martin J. Adelman & Gary L. Francione, *The Doctrine of Equivalents in Patent Law: Questions that Pennwalt Did Not Answer*, 137 U. PA. L. REV. 673, 679-683 (1989); Michael J. Meurer & Graig Allen Nard, *The Doctrine of Equivalents: Invention, Refinement and Patent Claim Scope: A New Perspective on the Doctrine of Equivalents*, 93 GEO. L.J. 1947, 1960-67 (2005). Regarding the doctrine of equivalents under Taiwanese patent law, see *Zui Gao Fa Yuan 101 Nian Du Tai Shang Zi Di 230 Hao Min Shi Pan Jue* (最高法院 101 年度台上字第 230 號民事判決); *Zui Gao Fa Yuan 101 Nian Du Tai Shang Zi Di 231 Hao Min Shi Pan Jue* (最高法院 101 年度台上字第 231 號民事判決); *Zui Gao Fa Yuan 101 Nian Du Tai Shang Zi Di 38 Hao Min Shi Pan Jue* (最高法院 101 年度台上字第 18 號民事判決); Chung-Lun Shen, *Retrospection, Inspection and Prospection of Doctrine of Equivalents-Where Taiwan Patent Law will be going?*, 20 SOOCHOW L. REV., (東吳法律學報) no.2, 173-222 (Oct. 2008) (Taiwanese citation).

according to the end-infringing product, rather than the infringing product serving as a part of the former.

If the opposite situation occurred, the original patented product would be evaluated outside of the core value of the hypothetical patent. In this situation, even though someone infringed the patent by incorporating the infringing product into the end-infringing product as an element or component, the patentee must merely follow the manufacture of patented products to calculate reasonable damages through reasonable royalties. Otherwise, the reasonable royalties under the end-infringing products lead substantially to the inappropriate extension of exclusive rights over the limitation of patent claims. In practice, the patented product functions as a part of the end product and does not necessarily have an independent and distinctive price in the market. When the entire market value rule is inapplicable, it is the court's duty to determine the contribution of the patented product to the end product for having an adequate apportionment from the reasonable royalties that are calculated according to the price of the end-infringing product.

Conclusion

As the codification of calculation of patent damages by reasonable royalties continues, the disputes around the authority and properties of reasonable royalties have gradually faded away. In place of disputes, questions of how to apply reasonable royalties provisions to patent damages are emerging as a significant issue under Taiwanese and Chinese patent laws.

First, in terms of the legal structure of patent law governing patent damages, the provision for reasonable royalties under Taiwanese patent law functions independently of other calculation approaches, whereas Chinese patent law sets the third priority of remedies for reasonable royalties as damages. In other words, the Taiwanese patentee, in his own interest judgment, may select reasonable royalties as the calculation of patent damages without regard for alternatives, but the Chinese patentee must present the hardship of damages calculation through other approaches prior to selecting the basis of reasonable royalties. Despite the difference in the legal structures between Taiwanese and Chinese patent law, it is common for the two systems to regard reasonable royalties as a breakthrough to resolve the difficulties in proving damages, especially when the patented or infringing products did not appear in the market at that time of infringement. However, it is ambiguous whether the patentee could select more than one damages approach in a single instance of patent infringement, such as using reasonable royalties to deal with damages not in accordance with the patentee's losses or the infringer's profits, and then use other approaches to measure the damages that can be calculated from the patented or infringing products in the market. In order to secure sufficient remedies for patent damages, this article proposed that two possible interpretations of Subparagraph 3, Article 97 of the amended Taiwanese Patent Act and Sentence 3, Paragraph 1 of Article 65 of the Chinese Patent Act should be followed to increase the adaptation for various infringement results. The violation of any exclusive right works as an independent ground to trigger the selection of approaches for calculating patent damages. Under a single patent infringement, the patentee may select more than one approach to calculate patent damages based on the violation of various exclusive rights. Moreover, when the patentee selects reasonable royalties to calculate patent damages, it may transcribe into those royalties the damages that had otherwise been calculated through other approaches.

Second, a reasonable royalty is not always equal to a license negotiated absent infringement. In trying to reflect the real infringement development and avoid the infringer's goal of sidestepping liability through unnoticed infringement instead of negotiating a license prior to infringement, the royalty may even possibly go beyond what is "reasonable," provided that the real development of infringement is considered. The wording of Sentence 3, Paragraph 1 of Article 65 of the Chinese Patent Act suggests this observation. The wording authorizes courts to apply appropriate multiples of licensing royalties as patent damages. However, Taiwanese precedent tends to limit reasonable royalties so that such royalties are not greater than the real profits the infringer enjoyed through the practice of the patent. The conclusion obviously seems to inadequately distinguish the reasonable royalties from the negotiated licensing ones, and is worth further consideration.

Moreover, this article emphasized that the hypothetical preliminary rate of royalties ought to be established subject to the symmetry between the conditions of similar licensing agreements governing the price for uses of technologies and the real situation of patent infringement. In this aspect, Taiwanese precedent has followed this way of assessing the rate of reasonable royalties, but seems to focus more upon seeking similar licensing agreements than fitting the real situation of patent infringement into consideration. The problem ought to be fixed by closer observation and analysis of patent infringement. Under the Chinese Patent Act, including the provision that authorizes the court to take multiples of licensing royalties as patent damages, its real meaning is not so much to grant a mandatory calculation for patent damages, as to grant courts the discretion to set up the preliminary rate of reasonable royalties and refine the rate according to the real development of patent infringement. "Multiples of licensing royalties," in fact, is the affirmation of the legislators to consider the real situation of infringement in assessing the rate of reasonable royalties.

Further, the core of this article proposed that the optimal level at which the preliminary rate of reasonable royalties is refined is subject to the contribution of the patent in terms of either the marketing of patented products or the technological evaluation. There are three conclusions about this concept. The first is that the comparison between the patented technologies and other alternatives is to secure the substitution effects function as a significant causation to determine the adequate scope of reasonable royalties. The second is that when the basis of reasonable royalties is used to cover patent damages otherwise calculated by other alternatives, the original causation in the market ought to still be considered in the measure of reasonable royalties. The final conclusion is that patent damages calculated by reasonable royalties ought to be strictly ascertained, provided that the patentee intentionally keeps the public from accessing the patented technologies by licensing, and did not practice the patent to benefit the public. Rarely, according to this author's observation, did Taiwanese and Chinese courts have a straightforward discussion over the interrelation between the contribution of the patent and the scope of damages. In order to calculate adequate patent damages, it is unavoidable to make patent damages rely upon patent evaluation. This conclusion meets with the essence of patent law, which secures accumulated innovation in the continuing technological development.

Finally, this article discussed that the jurisprudence of the entire market value rule created by U.S. patent case law shows the merit of shedding light on the feasibility of this rule in determining reasonable royalties. Based on the position that this rule is subject to the patentee's burden of proof, this article proposed a test that seeks and transfers the jurisprudence of the doctrine of equivalents for the sake of ensuring if this rule would function or not, rather than the importation of traditional tests.