

1. CURRENT LEGAL REGIME OF EMPLOYEE INVENTION PATENTS IN CHINA

Zhongfa Ma*

ABSTRACT

The legal regime governing employee invention patents plays a very important role in transforming China into an innovation-oriented country. China has already established such a regime but it suffers from a number of deficiencies. The provisions for claiming ownership of employee invention patents are rigid, which means that in most cases, ownership is attributed to employers. The provisions for rewarding employee inventors are difficult to enforce because of their vagueness and subjective nature. This difficulty is aggravated by the weak position of the employee inventor in negotiations with their employers. The provisions on dispute resolution are unsatisfactory, forcing parties to rely on traditional means of litigating before judicial authorities. All of the above can adversely affect innovation and commercialization of employee inventions. Learning from the experience of Germany and France, this article makes the case that the legal regime in China needs to be improved in the following manner: (1) Adopting more flexible provisions on the ascription of ownership of employee invention patents; (2) implementing definite measures for the distribution of rewards to employee inventors; and (3) finally, establishing a more comprehensive mechanism to settle disputes regarding employee invention patents.

Keywords: *employee invention, employee invention patent, ownership, rewards and remuneration, dispute settlement, innovation*

1. INTRODUCTION

China is actively promoting the construction of an innovation-oriented economy by creating an environment which facilitates progress in Research and Development (R & D). The government boosts mass entrepreneurship and innovation, which it regards as the new engine fuelling China's economic growth. In China, the largest investment in R&D is made by the state along with privately owned enterprises and provincial governments.¹ These resources are distributed to universities and R&D institutes in numerous ways. The vast majority of inventions are made by employees of institutions, both public and private. According to the statistics on the distribution of employee inventions *vis a vis* non-employee inventions released by the State Intellectual Property Office of China (SIPO), about 80% of patent applications or 90% of grants fall

under employee inventions (see the following timetable).² But many employee inventions for which patents have been granted are not commercialized. The primary reasons for this are low quality patents, inappropriate methods of commercializing patents, absence of incentive mechanisms for patentees and inventors to promote commercialization, and poor awareness among inventors about the need to promote the transfer of technology.³ All these deficiencies are closely related to the legal regime on employee invention patents. In light of the above, exploring avenues to improve the legal regime is of critical importance.

*Ma Zhongfa, Professor of Law School, Fudan University, Shanghai, China.

¹ See Zhang Yi, *New Breakthroughs in R & D Investment in China*, Guangming Daily: November 12, 2016.

² Sometimes, it is also called service invention or Employment Invention-creation (See The Patent Law of People's Republic of China in English version from the website of WIPO, at http://www.wipo.int/wipolex/en/text.jsp?file_id=178664, accessed 15 October 2016).

³ See Gu Xiaohua, "The Status quo, Problems and Countermeasures of Commercializing the Scientific and Technological Achievements"(2016) 4, *Straits Science* ; Jiang Xinghua, Xie Huijia, "Research on the Problems and Countermeasures of Scientific and Technological Achievements Transformation based on the perspective of policy analysis" (2016) 2, *Science and Technology Management Research*; etc.

Proportion of Employee inventions out of Total Applications/Grants/ for Patents from Home and Abroad in China⁴

Year	Before 2011		2012	2013	2014	2015	2016.1-8	Home	Abroad
Applications of employee inventions ⁵ :%	Home	53.8	67.6	69.6	80.9	80.2	79.5	About 80 since 2014	About 97-98
	Abroad	96.4	97.2	97.3	97.9	97.9	97.9		
	Total	\	\	\	83.2	82.3	81.4		
Applications of non-employee inventions:%	Home	46.2	32.4	30.4	19.8	19.8	20.5	About 20 since 2014	About 2-3
	Abroad	3.6	2.8	2.7	2.1	2.1	2.1		
	Total	\	\	\	18.8	17.7	18.6		
Grants of employee inventions:%	Home	53.7	68.7	71.0	89.9	90.7	91.2	About 90 since 2014	About 97-98
	Abroad	96.6	97.5	97.3	98.2	98.4	98.4		
	Total	\	\	\	92.4	92.7	93.0		
Grants of non-employee inventions:%	Home	46.3	31.3	29	10.1	9.3	8.8	About 10 since 2014	About 2-3
	Abroad	3.4	2.5	2.7	1.8	1.6	1.6		
	Total	\	\	\	7.6	7.3	7.0		

⁴ The data are cited from the official website of SIPO which demonstrates that SI occupies the major part of the total invention patents. See The Patent Work and the Comprehensive Management Monthly Statistics Bulletins from January 2012 to July 2016 of the State Intellectual Property Office, at <http://www.sipo.gov.cn/tjxx/tjyb/>; accessed 16 October 2016.

⁵ The specific data of domestic applications and grants of patents in 2014, 2015 and from Jan. to July, 2017 in China are shown as the following: in 2014, there are 648,023 out of 810,135 applications for employee invention patents, and 146,172 out of 162,680 grants of employee invention patents ; in 2015, 776,117 out of 968,251 applications for employee invention patents, and 238,818 out of 263,436 grants; from Jan. to July,2016, 482,290 out of 602171 applications, and 194,836 out of 213,595 grants. See The Patent Work and the Comprehensive Management Monthly Statistics Bulletins from January 2012 to July 2016 of the State Intellectual Property Office, at <http://www.sipo.gov.cn/tjxx/tjyb/>; accessed 16 October 2016.

The Patent Law of China (the Patent Law, 2008) defines a patent as an invention created or accomplished in the execution of employment tasks or primarily by using the employer's resources in the form of materials or technology. [Sic]⁶ However, there are heated arguments on the following key issues: (1) who has the right to file patent applications for employee inventions and who should own them: inventors or employers? (2) how to ensure inventors receive reasonable rewards from assigning or licensing their patents as well as the contributions they have made to such patents? (3) How to settle disputes arising from employee inventions? For a number of reasons, which this paper goes on to discuss, the existing regime does not provide satisfactory answers to these questions. They need to be solved gradually to ensure the improvement of patent and other related laws in China.

2. THE CURRENT LEGAL REGIME ON EMPLOYEE INVENTION PATENTS IN CHINA

China has already developed a fundamental framework of employee invention patents, based on the following laws and executive regulations. On the legislative front, there are at least four laws adopted by the National People's Congress concerning employee inventions, these are the Patent law, the Contract Law (1999), the Law on Promoting the Transformation of Scientific and Technological Achievements (the Law on PTSTA, 2015) and the Law on Progress of Science and Technology (2007). These make up the basic legal framework for employee invention patents. On the subordinate legislation front, the following regulations (including the draft regulations) merit mention: the Implementing Regulations of the Patent Law (the Regulations, 2010), and the Draft Regulations on Employee inventions (Draft Regulations, 2015) which are currently under discussion. On the judicial front, there is the Guidance on Hearing Rewards or Remuneration Disputes over Employee inventions Made by Employee-Inventors or Designers (2013, the Shanghai High People's Court). This paper will not discuss this Guidance framework as it is only a guideline for judicial cases in Shanghai.

A. PROVISIONS IN RELATED LAWS

(i) GENERAL PROVISIONS UNDER THE PATENT LAW AND THE CONTRACT LAW

The Patent Law sets out the general position with respect to the ownership of patent rights and remuneration of employee inventors in the PRC.⁷ It stipulates that for an employee invention, the employer has the right to apply for a patent and after such an application is granted, the employer shall be the patentee; and for an employee invention accomplished by using the material and technical

conditions of an employer, deference is given to any contract between the employer and employee determining the ownership of the right to apply for the patent or the ownership of the patent right.⁸ So it is obvious that for determining the ownership of an employee invention patent, the duty standard is the primary principle (the patent of an invention completed on duty shall be owned by the employer as per the law, whether there is a contract to that end or not)⁹ while the resources standard is an auxiliary principle (for patenting an invention created by using the employer's resources; here the contractual agreement is given priority; if there is no agreement, the employers will gain the application rights or patent rights). It is clear that this provision gives employers more opportunities to gain ownership of employee invention patents, which may deter inventors from taking the initiative to innovate and commercialize their inventions. In addition, it must be kept in mind however, that in most occasions, the employers have more bargaining power than employees.

The law also provides that a company that obtains a patent over an employee invention must, upon exploitation of the patent, pay the inventor a reasonable reward taking into account the extent to which the patent is being exploited and the income earned from such exploitation.¹⁰ This is the fundamental provision on reward or remuneration for inventors who contribute to the patents. The difficulty however is in its implementation. To begin with, defining the word 'reasonable' is a big issue for both companies and inventors. In fact, most disputes or controversies have arisen out of this very question.¹¹

In the Contract Law, there is a provision that indirectly has a bearing on employee inventions, which is entitled "Employee-developed Technology". Employee-developed technology is technology developed in the course of completing a task assigned by a legal person or an

⁸ Clause 6.3 of the Patent Law (2008).

⁹ There was one case occurring in Shanghai in which the employee (Mr. Qian) concluded an agreement with the company which said the patent of a specific product of hydraulic grab, trackless equipment and others would be jointly owned by Mr. Qian and the company. In June 2011, Mr. Qian applied for a patent based on the contractual products for himself, and later the company sued him to the court. The first-instance court made a judgment against Mr. Qian and the appeal court confirmed the judgment, and the reasons for the judgment was that the patent of employee invention under such a situation should not be decided by agreement according to Article 6 of the Patent Law. See Ling Zongliang, On Patent Right Ascription of Invention Accomplished in Execution of the Company's Task, *People's Court Daily*, (7) January 9th, 2014.

¹⁰ Article 16 of the Patent Law (2008).

¹¹ Tao, Xinliang, Agreement on the Nature of Employment Invention and the Related Remuneration and Reward, (2016) *Intellectual Property Journal*.

⁶ Article 6 of Patent Law of the People's Republic of China (2008)

⁷ There is no change of these articles in the 3rd revision and in the 4th revision draft, and they have not been discussed in the Draft Regulation yet.

organization of any other nature, or developed by primarily utilizing the material and technical resources thereof. The substantive provision of this law relating to employee inventions is as follows: where the right to use and the right to transfer employee-developed technology belongs to a legal person or an organization of any other nature, the legal person or organization may enter into a technology contract with other parties in respect of such employee-developed technology. The legal person or organization shall reward or remunerate the individual(s) who developed the technology with a percentage of the benefits that accrue from the use and transfer of the employee-developed technology.¹² This provision implies that the ownership of an employee invention is not always given to the employers, but the law does not address how this ownership is to be determined. On the question of remuneration, the phrase "a percentage of the benefits" is very vague and needs to be clarified in the contract between the inventor and the employer.

(ii) GENERAL PROVISIONS UNDER THE LAW ON PROGRESS OF SCIENCE AND TECHNOLOGY AND THE LAW ON PTSTA

The Law on Progress of Science and Technology clearly defines how the ownership of patents that are financially supported by the government should be determined and the applicability of the principle of distribution of benefits. It provides that the right to patent an invention arising from projects aided by the government or scientific and technological plans shall be granted to the authorized undertakers of such projects except where national security and vital public interests are involved.¹³ Further, if they fail to exercise their rights within the reasonable time limit prescribed, the State may acquire it without paying any compensation, or may permit another person to do so with or without compensation. The benefits arising from the exercise of the IP rights shall be distributed among the project undertakers in accordance with the provisions of relevant laws and administrative regulations; and where the law does not stipulate the manner of distribution, the benefits shall be distributed as agreed upon.¹⁴ Some scholars call this provision "the Bayh-Dole Rule of China".¹⁵

In the entire legislative framework for employee inventions, the PTSTA has the most detailed provisions, eight in number, namely articles 16 to 20 and articles 43 to 45. However, we will only analyze four of them.¹⁶ It provides that for employee scientific and technological achievements (ESTAs) obtained in state-maintained R&D institutions and universities, the accomplishees may, without changing the ownership of ESTAs, commercialize ESTAs according to agreements reached with their employers and enjoy the rights and interests arising therefrom. If the employer commercializes ESTAs, the accomplishees of ESTAs or persons in charge of the research projects shall neither obstruct the commercialization of ESTAs nor infringe upon the lawful rights and interests of their employers.¹⁷ In the course of promoting ESTA commercialization, the state-maintained R&D institutions and universities shall also establish systems for professional title appraisal, post management, examination and evaluation rules compatible with the characteristics of the ESTA commercialization as well as improve the income distribution incentive and restraint mechanism.¹⁸ These provisions describe the general content of ESTAs and means for their exploitation and distribution. The next article provides a more detailed method for distribution of the benefits from ESTAs. After ESTAs are commercialized the entities shall grant rewards and remunerations to people who have made significant contributions to the completion and commercialization of ESTAs; and they may specify general provisions or reach an agreement with scientific and technical personnel on the method, amount and time period for paying remuneration.¹⁹ If the entities have not implemented such provisions or the parties have not reached agreement on the method and amount of such rewards, they shall do so according to the following criteria: (1) Where an ESTA is assigned or licensed, not less than 50% of the net income from such an assignment or license shall be withdrawn. (2) Where an ESTA is used as a trade-in in investment, not less than 50% of shares or capital contributions formed from such ESTA shall be withdrawn. (3) Where an ESTA is implemented independently or in cooperation with others, not less than 5% of business profits from such implementation shall be withdrawn consecutively for three

¹² Article 326 of the Contract Law (1999).

¹³ In this situation, even if the intellectual property rights are granted to project undertakers according to the law, they may be exercised by the State without compensation, or the State may permit another person to do it with or without compensation.

¹⁴ Article 20 of the Law on Progress of Science and Technology (2007).

¹⁵ The Bayh-Dole rule means that private sectors, universities, research and development (R&D) institutes, or other legal entities have capacities to enjoy or own the patent rights of the government funded research results which may create a powerful driving force for the commercialization of scientific research achievements. See He Lianhong, Chen Jiecan, "The Failure of the Bayh Dole act of China version' and the Solutions of

Commercializing University intellectual property rights" (2013) 3 Intellectual Property 84-88.

¹⁶ Four articles are Article 19, 20, 44 and 45, and the reason for discussing them is that they are the most important articles concerning employment invention patent which have aroused bitter debates.

¹⁷ Article 19 of the Law on Promoting the Transformation of Scientific and Technological Achievements (2015).

¹⁸ Article 20 of the Law on Promoting the Transformation of Scientific and Technological Achievements (2015).

¹⁹ Article 44 of the Law on Promoting the Transformation of Scientific and Technological Achievements (2015).

to five years after the commercialization.²⁰ We can conclude that for reward and remuneration, first the related parties may reach an agreement on the distribution and method for calculating distributions, and when they fail to do so, the statutory standards shall apply.

B. STIPULATIONS IN RELATED REGULATIONS

(i) PROVISIONS UNDER THE IMPLEMENTING REGULATIONS OF THE PATENT LAW²¹

The Regulations further stipulate that "Employee invention made by a person in execution of the tasks of the employer to which he belongs (including a temporary one)" and "material resources of the entity" described in the Patent Law. The former means that any invention made: (1) in the course of performing his own duty; (2) in execution of any task, other than his own duty, which was delivered to him by the entity to which he belongs; (3) within one year from his resignation, retirement or change of work, provided that the invention relates to his own duty or to the other task distributed to him by the entity to which he previously belonged. The latter shall include the entity's money, equipment, spare parts, raw materials, or technical data which are not to be disclosed to the public.²² From these provisions, we may conclude that the term 'employee invention' will be applied in a broader sense under the Regulations than in the Patent Law. This will negatively impact the commercialization of these patents. The commercialization of a patented technology largely depends on the inventor's involvement; without the inventor's active participation in the commercialization (usually caused by the fact that the inventor does not own the patent and there is no reasonable incentive mechanism for him to participate in its commercialization), the process may not be successful.²³

The Regulation provides that the employer may either enter into an agreement with its employees on rewards and remuneration for employee inventions or set them out in its internal policies and procedures in accordance with the law.²⁴ In the absence of a contract or company policy on the subject, the following rewards shall be paid to employees: a reward of no less than RMB 3,000 or 1,000 for the issuance of an invention patent or for a utility model or design patent within three months from the date

on which a patent is granted.²⁵ If the patent is implemented or licensed within the terms of the patent without any agreement between the employer and employee, a "reasonable remuneration" upon exploitation of an employee's invention patent amounting to no less than 2% of the operating profits generated from implementation of an invention patent or 0.2% of the operating profits generated from implementation of a utility model or design patent, or 10% of the royalty generated from the patent licensing.²⁶ Some employers have viewed the above default arrangement as somewhat impracticable, particularly the provision for "reasonable remuneration" because it is difficult for the inventor to obtain information about the "profits" made by the employer. Furthermore, without distinguishing between patents in different fields, this provision is too rigid and difficult to enforce. Even if it is enforced, it may give rise to unfair results and inventors in some fields will adopt a negative attitude to patent exploitation.

(ii) DRAFT REGULATIONS ON EMPLOYMENT INVENTIONS (April, 2015)

The Draft Regulations, currently under discussion, contain 7 chapters with 44 articles. The Draft Regulations have tried to solve the specific issues within the current legal framework on employee inventions. In the Draft Regulations, the principle of balancing the rights and interests of employers and inventors is reaffirmed. It also seeks to encourage employee inventions and promote their patenting.²⁷ The provisions on ownership of patent rights are similar to those in the Patent Law.²⁸ However, it has provided a new framework for employee inventions, which would control reporting of inventions and applications for patenting them. This framework is inspired by the provisions in the German Patent Law.²⁹ The content of the institution may be summarized as follows: Inventors shall report their inventions to their employers after they finish the invention, and within 2 months, the latter will determine whether the invention is an employee invention or not. If so, the employer will decide whether or not to apply for a patent.³⁰ Furthermore, it provides that the method for determining the quantum reward or remuneration for inventors may be regulated by the

²⁰ Article 45 of the Law on Promoting the Transformation of Scientific and Technological Achievements (2015).

²¹ Other Regulations have similar provisions to those of the Patent Law, for instance, the Regulation on Protection of New Varieties of Plants (2013) has similar provision (see Article 7) to Article 6 of the Patent Law and it will not be discussed in this paper.

²² Article 12 of the Implementing Regulations of the Patent Law (2010)

²³ He Min, The new humanism concept and the perfection of patent system of service invention, (2012) 9 Law Science: 65-74.

²⁴ Article 76 of the Implementing Regulations of the Patent Law (2010).

²⁵ Article 77 of the Implementing Regulations of the Patent Law (2010).

²⁶ Article 78 of the Implementing Regulations of the Patent Law (2010).

²⁷ See Chapter 1 of Draft Regulations on Employment Inventions (2015).

²⁸ See Chapter 2 of Draft Regulations on Employment Inventions (2015).

²⁹ See The Legislative Affairs Office of the State Council, The Statement on Draft Regulations on Employment Inventions (2015).

³⁰ See Chapter 3 of Draft Regulations on Employment Inventions (2015).

employer's internal rules or by an agreement between the employer and the employee.³¹ If there are no rules or agreements, the statutory provisions on remuneration shall apply.³² The last two things which should be studied in the Draft Regulations are the functions of the executive bodies in tasks such as supervision and inspection as well as dispute settlement between the employers and the employees. These include negotiation, conciliation by the executive, litigation and arbitration.³³

In determining the ownership of employee invention patents, the Draft Regulations still focus on the principle of granting priority to the employer. This has caused bitter arguments amongst academics, where some scholars defend the principle³⁴ while others object to it, believing that ownership should be held by the inventor.³⁵ This is possibly one of the reasons why the State Council has not yet adopted them. As for reward and remuneration, the principle of "internal rules or contractual agreement being primary while statutory provisions being auxiliary" will be observed.

3. THE DEFECTS AND PROBLEMS OF THE CURRENT LEGAL REGIME

A. THE PROVISIONS IN DIFFERENT LAWS CONCERNING EMPLOYEE INVENTION DO NOT COORDINATE WITH EACH OTHER

To a certain extent, the present legal regime on employee inventions is confusing.³⁶ The provisions on the ownership of employee invention patents are not unified in the current framework, and they are dispersed between the Patent Law, the Contract Law, the Law on PTSTA, the Law on Progress of Science and Technology, the Regulation on Protection of New Varieties of Plants and other laws and regulations. There are conflicting provisions in the different laws and regulations, which may cause problems in applying the provisions. For example, the provisions in the Contract law and the Patent law are inconsistent. The Patent law provides that generally, the right of patent application and ownership of the patent concerning employee invention shall be with the employer;³⁷ whereas

in the Contract law³⁸, ownership may belong to either the inventor or the employer, and not necessarily by the employer. In such a situation, the ownership of an employee invention patent will be flexible and may be much fairer than the provision in the Patent Law.

The fact that the provision in the Patent law attributes ownership of an employee invention patent on most occasions to the employer reflects that the legislature has oversimplified the complex situation of employee invention³⁹ which could possibly be influenced by the model of a planned economy. The reasons for an employee invention patent being owned by the employer are not rational.⁴⁰ According to the Patent Law, the invention accomplished by the inventor on the basis of performing his or her tasks assigned by the employer will be attributed to the employer; or without an agreement, the invention completed by the inventor by mainly using the material and technical resources of the employer shall also be owned the employer. We know that only natural persons can complete an invention, and that the employers on most occasions exist in the form of organizations which may provide R & D facilities and organize the creation process. Principally, the person who creates property shall possess the ownership of that property. The law should not necessarily or rigidly provide that the ownership is possessed by the employer, but should provide that the ownership may be flexible, that is, it generally belongs to inventors or may be decided by the contract reached by the inventors and employers according to the autonomous will of both parties. If ownership belongs to the inventors, the employers may have the right to apply and get patents with the inventors' agreement or get a license from the inventor. This may enhance the inventors' position and allow them to play an active role in promoting patent commercialization and licensing, which will be helpful in addressing the significantly low rate of patent commercialization in China.⁴¹ If ownership belongs to the employer, we should have specific measures to reward or remunerate the inventors, which may also encourage them to support the commercialization of patents. The conflict between provisions in different laws has jeopardized the effectiveness of the more reasonable provisions and held up the enforcement thereof.

Furthermore, it is difficult to determine, whether in practice, an invention is "merely verified or tested with the employer's material and technical conditions upon

³¹ These internal rules or agreements can be recorded or deposited by executive organs at different levels. See Chapter 7 of Draft Regulations on Employment Inventions (2015).

³² See Chapter 4 of Draft Regulations on Employment Inventions (2015).

³³ See Chapter 6 of Draft Regulations on Employment Inventions (2015).

³⁴ See Ma Biyu, Study on the Reform of Right Ascription Rules of Employee invention —Comment on the Relevant Content of Employee invention Bill (2015)9 *Academic Exploration* 38-44.

³⁵ He Min, Justice on the Property Right Ascription of Employee invention (2007) 5 *Chinese Journal of Law* 75-89.

³⁶ Gu Yubo, Problems and Perfection of the Legal System on Employee invention in China (2016) 4 *Intellectual Property* 78-82.

³⁷ See the related analysis in Part 2.

³⁸ Article 326 of the Contract Law (1999)

³⁹ See Zhang Zongren: Study on the right Ascription and reward of the Employee invention (2014)10 *Intellectual Property* 72-77.

⁴⁰ Shen Juan: Certain Thoughts on the problems of the Employee invention (2011) 2 *Contemporary Economics* 138-139.

⁴¹ See Jia Liwei, The Proportion of Applications Is Unbalanced and the Commercialization Rate Is Low, and the Quality of the Patents from R&D Needs to be Improved, *China Industrial Economy News*, April 14th, 2017.

completion of the invention",⁴² and to what extent the inventor has utilized the company's material and technical conditions as well as when an invention is completed. However, considering the significant work experience that the employee-inventor has already gained from the company which constitutes the base for him or her conceiving an invention, if he or she is also allowed to use the company's assets to verify the invention then it would be unfair to the company if the invention was characterized as a non-employee invention. In such situations, the invention can be categorized as an employee invention, but the ascription of ownership should be flexible.

B. DIFFICULTY IN IMPLEMENTING THE PROVISIONS ON REWARD AND REMUNERATION FOR INVENTORS

As for rewards and remuneration, the current provisions are too vague and simplistic, making them difficult to implement. There is only a single way to obtain rewards and terminology such as "profit" and "reasonable" are arduous to define. For some complicated cases, such as "joint patents", "cross license" or assignment without payment, there are no applicable provisions. The rigidly specific provisions on rewards or remuneration for the inventors, for example, those in the Implementation Regulations of the Patent Law and in the PSTA law are not be operable or reasonable.⁴³ Inventors and experts have claimed that although the existing laws have attributed the ownership of the employee inventions to the employer and have given the employee-inventor the right of authorship and rewards, there is still an absence of procedural regulations for the exercise of employee-inventor's rights.⁴⁴

The employee is always in a vulnerable position in the negotiation of rewards. Employee-inventors hope to fully exercise their rights through new legislation that is binding on the employer-company, so that, they may get the reward stipulated by the relevant statute, especially when they feel they are in an unequal position with the employer. However, it is difficult for different types of enterprises in different industries to adopt and apply similar provisions concerning the rewards for employee inventions as provided in the related laws and regulations.

If the employee-inventors do not obtain the original ownership of patents and have to accept rewards passively, which rewards may not match or reflect their

contributions to the patent, this may dampen their enthusiasm to create and utilize IP tools.⁴⁵ In practice, the leaders of some entities actually do not pay much attention to inventor remuneration.⁴⁶ We neither have effective measures to enforce the provisions concerning employee inventions nor the dispute settlement mechanism to solve issues of reward and remuneration. The management systems for employee inventions in many enterprises, universities, R&D institutes and other entities fail to meet the demands of the employee inventor.

C. INEFFECTIVE DISPUTE SETTLEMENT MECHANISM FOR THE ISSUE OF REWARDS AND REMUNERATION

There have been very few cases concerning disputes on rewards and remuneration of employee inventors before the judiciary in China because there are no specific dispute settlement provisions on the issue. Effective and systematic dispute settlement mechanisms have not been established. Furthermore the data relating to these disputes is very limited. As at 30 October 2016, 52 judgments⁴⁷ out of 64,730 ones (concerning IP issues)⁴⁸ have been decided by the courts in Mainland China. Even fewer cases have been resolved by way of conciliation or mediation.⁴⁹ The reasons for this phenomenon are as follows: (1) The inventors do not have knowledge of the provisions on rewards and remuneration for employee inventors, or even if they do, they are afraid of adverse impacts it can cause to the relationship between themselves and their employers, should they litigate the issue. As a result, most of the cases come to the courts after the inventors have resigned or quit from their positions. (2) The existing legal provisions are ambiguous and generic and there is no effective method of evaluating patented technology. Normally, the inventors can only put forward a general figure when claiming remuneration as there is no criteria or basis for arriving at specific figures. In addition, employers' business data is seldom transparent

⁴² See Fu Jianqing, Li Yihong: The Deficiency and Improvement of the Patent Law in China(2016) 5 Intellectual Property 50-55.

⁴³ Liu Xiangmei, Liu Qunying, Comparative studies on the Regime of Employee invention of Remuneration in the Main Countries and the Suggestion on Improving the Related Regime in China (2006) 2 World Intellectual Property 84-88.

⁴⁴ See Zhang Zongren, Research on the Ownership of Employment Invention and the Rewards, Intellectual Property Journal, (10) 2014.

⁴⁵ See Tao Xinliang, Agreement on the Nature of Employment Invention and the Related Remuneration and Reward, Intellectual Property Journal, (3) 2016.

⁴⁶ Xu Zhuobin, Legal Issues in the Disputes Over the Remunerations for Employment Invention, Electronics Intellectual Property,(2015) 7:33-38.

⁴⁷ See The Disputes on the Awards, Remunerations and Compensation for the Inventors and Designer of Employee inventions,

[http://openlaw.cn/search/judgement/type?causeld=6645b1df625a4fa09acedf2c5bf7e1b5.\(June 10,2017\)](http://openlaw.cn/search/judgement/type?causeld=6645b1df625a4fa09acedf2c5bf7e1b5.(June 10,2017)

⁴⁸ See Disputes on Intellectual Property, at <http://openlaw.cn/search/judgement/default?type=searchKeyword&typeValue=&keyword=%E7%9F%A5%E8%AF%86%E4%BA%A7%E6%9D%83%E7%BA%A0%E7%BA%B7>.

⁴⁹ See Wu Yan, Study on the Dispute Settlement Mechanism of Service Invention and Comments on Draft Regulations on Service Invention, (2015) China Soft Science 3:9-15.

and it is hard for the inventors to get the employers' account of the profits and their invention's contribution to business opportunities. (3) It is difficult for inventors to provide sufficient evidence to support their claims and courts may not make just judgments because of the judges' limited discretion in the application of the law.

4. THE IMPROVEMENT OF THE LEGAL REGIME ON EMPLOYEE INVENTION PATENTS

A. USEFUL EXPERIENCE FROM OTHER MAJOR COUNTRIES

(i) GERMANY

In Germany, employee inventions are either tied or free. The former refers to inventions made during the term of employment which either resulted from the employee's tasks, experience or activities of the enterprise or public authority. The latter refers to other inventions of an employee.⁵⁰ Before 2009, the inventor of an employee invention was required to report this to the employer in writing. The employer would then decide to claim the right, with or without limitations. If it is claimed with limitations, the inventor transfers ownership to the employer and for the latter, the inventor retains ownership, but the employer has a non-exclusive right to utilize the patent and will pay royalty fees to the inventor.⁵¹ But the claim must be made as soon as possible and no later than four months from the receipt of an invention report or the inventions will not be regarded as an employee invention.⁵² However, after the 2009 amendment, an invention cannot 'unintentionally become free'. Unless the employer explicitly releases the invention, the employee invention shall be deemed to have been claimed by the employer when an invention report is made by the employee.⁵³ Originally, the rights over employment inventions claimed without limitations belonged to the employee. Only if the employer made a claim on the invention, did the employee have to transfer the title to the employer. However, since 2009, the law pays more attention to the protection of employers.⁵⁴

The employee has the right to reasonable compensation from his employer as soon as the employer has made an unlimited claim to an employee invention. In assessing compensation, due consideration in particular is given to the commercial applicability of the employee invention,

⁵⁰ Article 4 of Law on Employee Inventions of Germany (1994).

⁵¹ Article 7 of Law on Employee Inventions of Germany (1994).

⁵² Article 8 of Law on Employee Inventions of Germany (1994).

⁵³ Sanna Wolk, *Remuneration of Employee Inventors - Is There a Common European Ground?* (2011)3 *International Review of Intellectual Property and Competition Law* 272-298.

⁵⁴ See Articles 4-6 of Act on Employees' Inventions (as amended by Act of July 31, 2009, on Simplification and Modernization of Patent Act); Zhang Taolve: *Simplification and Modernization of German Patent Law*, (2009) 10 *Electronics Intellectual Property*: 49-54.

the duties and position of the employee in the enterprise, and the enterprise's contribution to the invention.⁵⁵ The remuneration can be in the form of a lump sum or a royalty and is determined by the agreement between employer and employee. However, the German Labour Ministry provides guidelines, which include the methods for calculating remuneration: license royalties, remuneration based on the cost reduction of the employer and evaluated incomes from cross licensing.

If a dispute arises between the employer and employee around the employee invention, it must be settled in an amicable way. A petition can be filed at any time to the Arbitration Board established within the Patent Office. The Arbitration Board consists of a chairman or his alternate, and two assessors with special knowledge in the technical field to which the invention or technical improvement proposal applies. The chairman is appointed by the Federal Minister of Justice for a term of one year and must possess the qualifications required to hold judicial office. The two expert assessors shall be appointed by the President of the Patent Office for each case, from among the staff members or assistant members of the Patent Office. At the request of a party, the Arbitration Board shall include two other assessors, one chosen by the employer and the other by the employee.⁵⁶ Any dispute concerning an employee invention may only be brought to the court after the proceedings have been referred to the Arbitration Board. However, in some situations where no arbitration agreement exists or the employee has resigned, the parties may go directly to court.⁵⁷

(ii) FRANCE

In France, an employee invention is of two kinds: a mission invention, and a non-mission invention.⁵⁸ Where the inventor is a salaried person, and in the absence of any contractual clause more favourable to the salaried person, title to the industrial property is determined in accordance with the following provisions: (1) Inventions made by a salaried person in the execution of a work contract comprising an inventive mission corresponding to his effective functions or of studies and research which have been explicitly entrusted to him, shall belong to the employer. This is a mission invention and follows the doctrine of employer's priority. Under such conditions, the inventor will enjoy remuneration determined by collective agreements, company agreements and individual employment contracts. (2) All other inventions shall belong

⁵⁵ Article 9 of Law on Employee Inventions of Germany (1994).

⁵⁶ Articles 28,29 & 30 of Law on Employee Inventions of Germany (1994)

⁵⁷ Article 37 of Law on Employee Inventions of Germany (1994)

⁵⁸ He Rong, "A brief analysis of the system of the Employee invention patent in France" (2016)4 *Journal of Chongqing University of Science and Technology (Social Sciences Edition)* 23-25.

to the salaried person. However, where an invention is made by a salaried person during the execution of his functions or in the field of activity of the company or by reason of knowledge or use of technologies or specific means of the company or of data acquired by the company, the employer shall be entitled to the ownership or enjoyment of all or some of the rights in the patent. This is a non-mission invention. The salaried person shall be entitled to obtain a fair price, which, in case the agreement between the parties fails, shall be stipulated for by the joint conciliation board set up by the Code or by the First Instance Court.⁵⁹ The board shall take into consideration all elements supplied, in particular by the employer and employee, to compute a fair price. The price is a function of both the initial contributions of either party, the industrial applicability and commercial utility of the invention. Disputes over remuneration are submitted to the joint conciliation board set up by the Code or to the First Instance Court.⁶⁰

To summarize, employee inventions based on duties or specific tasks may belong to the employer and in other situations, the ownership of employee invention patents shall lie with the employee, but the employer may have some special rights to use the patents. As for remuneration, it is decided by an agreement between the employer and employee and if there is a dispute, it is submitted to a third party for resolution.

B. IMPROVEMENT OF THE LEGAL REGIME ON EMPLOYEE INVENTIONS

(i) IMPROVING PROVISIONS ON OWNERSHIP OF EMPLOYEE INVENTION PATENTS

It is an accepted fact that an invention can only be accomplished by a natural person. In business, the principle of "who invests who owns" and Locke's labour theory of property (namely that ownership of property is created by the application of labour)⁶¹ is followed. According to the principle and the theory, the inventor shall own the rights as intellectual investment is a kind of investment and intellectual labour is a kind of labour. The inventor makes the main contribution to the invention in intellectual form, which is the decisive factor for an invention.⁶² However, in cases like a project or a task

accomplished collectively by a group of employees, the inventor may complete a creation according to the employer's design or proposal and ownership may lie with the employer. Therefore, flexible provisions on ownership and rewards need to be adopted.

Principally, the application right and patent right of employee inventions arising from particular tasks or specific projects assigned to employees are owned by the employer except otherwise provided by law or agreed to by the parties. This situation is similar to movie production where the producer of the movie reserves the copyright over the movie. In this situation, the employer owning the patent right shall be first priority unless there is a special agreement which stipulates otherwise.⁶³ Where the invention involved the use of the resources or the technical conditions of the employer, the right of application and the ownership of the employee invention patent shall be with the inventors except otherwise provided by law or agreed to by the parties. But the employers have priority to use and license such patents by agreement. This means that a flexible policy for application and patent right ownership should be adopted. Basically, in any situation, the consensus of the parties should prevail. If there is no agreement, the patent shall be owned by the employer, the employee invention completed by mainly using the materials and technical resources, shall be owned by the employee. These provisions will produce plenty of incentives for employees to involve themselves in the commercialization process. The company may reach an agreement with the employee-inventor as to his or her rights and obligations when using the company's assets to verify or test the invention. However, in the absence of the above provision, an invention that has been materially completed prior to the verification and testing process does not count as an employee invention.

Principally, the application rights and ownership of patents for employee inventions arising from "duties" of employees will be attributed to employers if there is no legal provision or agreement. Those arising from "utilizing resources" of the employer, the rights shall be decided according to the employment contract between the

invention by mainly using resources of the company or other institutes shall observe the principle of priority of agreement, otherwise the inventor has the ownership but the employer has right to use patents; for a special invention (similar to that on duty), its right shall originally belong to an inventor, however, the inventor shall declare that he will transfer the right to the employer, and the latter finally owns the right. In Japan, for ownership, it has similar provisions as those of the US: the inventor has a prior right to own the patent right, but the employer has a right to use patents (see Article 35 of the Patent Act of Japan (2016 Revision)).

⁶³Shen Wei,Liu Qiang,"Reconstruction or Adjustment: Dilemma and Solution of System of the Ownership of Invention in China" (2016) 2 Jingyue Journal 115-21.

⁵⁹ Chen Chi, "The Regime of Employee Invention in France and Its Enlightenment to China" (2008) 2 Jiangxi Social Science 168-173.

⁶⁰ Article L611-7 of Intellectual Property Code of France (2014).

⁶¹ Karen I. Vaughn,, "John Locke and the Labour Theory of Value", *Journal of Libertarian Studies*, (1978) 4 :311-326.

⁶² Actually in the United States, there is no specific provisions on employee invention, and it is provided that an application for patent shall be made, or authorized to be made, by the inventor, except as otherwise provided in the Patent Act (See Article 111 of United States Code Title 35 – Patents, 2015 Revision).This implies that only inventors have right to apply for a patent and get a patent. However, practically, the right of patent for employee

inventors and employers. If there is no provision concerning the issue, the rights shall belong to the inventors, but the employers shall have the right to gain profits by the agreement when inventors commercialize or license patents for commercial purposes. If patents are owned by employers according to the contracts, they have the right to license or transfer patents for commercial purposes. However, if they fail to do so, inventors shall have the right to utilize the patents.

(ii) IMPROVEMENT OF THE PROVISIONS ON REMUNERATION FOR EMPLOYEE INVENTIONS

As a standard for the calculation of rewards or remuneration for employee invention, this provision is a big issue for the employee invention regime. Generally, the principle of promise first (agreement shall be the first priority) should be observed; that is, issues concerning rewards or remuneration for employee inventions (including the amount, the process and the means, etc.) should be decided by a contract.⁶⁴ But the form of rewards and remunerations shall not be limited to money; the employer and the inventor may reach an agreement to decide non-monetary means of reward and remuneration for the inventor, such as granting equity, options, promotion, wage increases or paid vacation, etc. However, owing to the employee's unfavorable position and weak negotiating power, some firm provisions on remuneration should also be defined in the regulations.

In order to protect inventors' initiatives and their legitimate rights and interests, an appropriate distribution mechanism for profits produced by patents should be established, and it should be laid down in related laws and regulations. The laws or regulations may require the entities to improve their internal management structures for employee inventions and allow the entities to conclude agreements to determine the distribution of rights and interests. The employer shall improve and implement a registration system for scientific R & D records, create a system for reporting the results of employee inventions with a clarified reporting process and establish an evaluation system for scientific research achievements and IP rights therein. The employer shall also develop and improve the management rules for distributing rewards and remuneration following due and reasonable process. The employer shall collect employee opinion and consult the inventors on an equal footing.⁶⁵ When the means and amounts for distributing the rewards and remuneration are being defined according to the internal regulations made by the employer, the regulations shall comply with

⁶⁴ Zhang Yonghua, *Analysis on Several Hot Issues in the Drafting Process of the Employee Invention Regulations* (2015) 4 *China Innovation and Patent* 14-17.

⁶⁵ Zhang, Yinglu; Liu Hua, "Study on Encouraging Mechanism of Japanese Employee invention" (2014) 3 *Forum on Science and Technology in China* 149-154.

labour law, labour contract law and other laws, which will ensure that these regulations are legitimate.

The provisions in the Patent law, Contract law and the Law on PTSTA should be enforced by specific regulations and rules, and should especially defining terminologies such as "profits", "income", "reasonable" etc.,. For example, the regulations on implementing the Patent Law provide that if there is no agreement between the employer and the inventor, the statutory standards---the rewards and remuneration no less than the minimum amount: 3000 Yuan for an invention and 1000 Yuan for a utility model and a design--- shall be adopted. When there is a dispute, the court should determine the amount based on the competitive circumstances of the industry concerned, production scales and profit of the employer. However, in most occasions, the courts just adopt the minimum account.⁶⁶ This runs against the objectives of enacting the regulations and the principle of fairness. Furthermore, with the overall increase in China's wage level in recent years, the above-mentioned minimum amount in the patent law implementation regulation is clearly too low.⁶⁷ The Draft Regulations encourage the employer to make internal rules or reach agreements with the inventors on the issues of rewards and remuneration for service inventions (such as the process, manners and amount, etc.), and in the process of making such rules, the inventors' opinions should be consulted.⁶⁸ If the employer does not lay down the rules or conclude an agreement, then the following statutory provisions should be followed: the reward for an invention shall be no less than two times the average monthly wage of the employee, and the reward for a utility model or design no less than the average monthly wage. For remuneration, the inventor shall annually gain (1) no less than 5% of the annual profit from the implementation of the invented patents or no less than 3% of the profit from other IP rights, or (2) no less than 0.5% of the annual sales revenue from the implementation of the invention patents or no less than 0.3% of the profit from other IP rights, or (3) the amount of remuneration which equals the reasonable multiples of the inventor's monthly average salary; or the inventor shall gain certain amount of remuneration at a time in a reasonable manner based on the calculation of items (1) and (2). However, the accumulated remuneration for the inventor shall not exceed 50% of the total operating profit

⁶⁶ See Tao Xinliang, *Agreement on the Nature of Employment Invention and the Related Remuneration and Reward*, (2016) 3, *Intellectual Property Journal* : 3-13.

⁶⁷ According to the National Salary Report in China which was issued on January 17th, 2017, the average salary of workers in China in the last 10 years has increased by 2.95 times, see China Issued Its First National Salary Report, *Jianghai Evening News*, January 18th, 2017.

⁶⁸ See Articles 18 &19 of Draft Regulations on Employee inventions (April, 2015)

of exploiting IP. If there are neither internal rules nor an agreement, the remuneration for the inventor shall be no less than 20% of the royalty from transferring or licensing the patent.⁶⁹ In the authors' view, these provisions may be more implementable and reasonable, for on some occasions, the inventors may not have the same negotiating power or ability as the employers. If inventors and employers fail to reach a fair agreement, these provisions should be applied.

To summarize, the methods for determining rewards and remuneration should be flexible. Firstly, they may be negotiated and reflected in a contract concluded between employees and the employers. Secondly, the employers' internal regulations should be encouraged and applied. Finally, in the absence of contractual provisions or company regulations, the statutory provisions shall be adopted.

(iii) IMPROVEMENT OF THE PROVISIONS ON DISPUTE SETTLEMENT

A reasonable dispute settlement mechanism should be established. The mechanisms in Germany and France provide good reference points in this regard. IP offices at various levels can play important roles in resolving disputes by supervision, mediation and conciliation. Boards may be established for settling disputes in IP offices. Meanwhile, internal dispute settlement mechanisms should be established and improved to encourage employees to resolve disputes by negotiation.⁷⁰ Further, a Social Surveillance Mechanism should also be established which would allow the resolution of disputes by Labor Unions or Industry Associations, Inventors Associations, etc. Judicial processes should be the last recourse for solving disputes. If the suit filed by the employer fails, the litigation fee shall be paid by the employer, as in the case of patent infringement disputes.

5. CONCLUSION

China is vigorously promoting the construction of an innovation-oriented country by stimulating enthusiasm in R & D. The government and state-owned enterprises contribute the most R & D investment. In light of what has been discussed in this paper, it is very important to improve the legal regime for patenting employee inventions, including the issue of application rights, ownership, utilization inventions and rewards for as well as remuneration of inventors. The current legal regime for employee inventions in China has deficiencies, one of which is that the employee inventor is often not paid for their contributions. This negatively affects the

commercialization of employee invention patents as without the inventors' active participation, it is impossible for employers to successfully commercialize the patents. In order to incentivize inventors to promote the commercialization of employee invention patents, we should improve the legal regime in three aspects: (1) adopt more flexible provisions on ascription of ownership, rewards and remuneration of employee inventors; (2) clarify the provisions on rewards and remunerations in the laws and regulations; and (3) implement a multi-tier dispute settlement mechanism.

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⁶⁹ Article 21 of Draft Regulations on Employee inventions (April, 2015)

⁷⁰ Shen Wei, Liu Qiang, "Reconstruction or Adjustment: Dilemma and Solution of System of the Ownership of Invention in China" (2016) 2 Jingyue Journal 115-21.

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