

Comparative Study on the Commons Mechanism of Key Patent Technologies in Public Health Emergencies

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Abstract

This paper makes a comparative analysis of the three patent commons mechanisms, that is, compulsory patent licensing, patent pool, and voluntary pledges. It is found that different patent commons mechanisms have different characteristics, and the research and development costs of different technologies and their impact on public health also vary to a certain extent.

Relevant enterprises and patent operation institutions are encouraged to active patent value through multiple channels and accumulate more local experience in stimulating innovation through the IP system.

Keywords: Patent Commons Mechanism; Compulsory Licensing; Patent Pool; Voluntary Pledges

Introduction

When dealing with sudden public health emergencies, it is necessary to quickly and widely provide drugs, devices, vaccines, and other products. However, the production and supply of these products often involve patented technology, and patent rights will prevent unauthorized manufacturers from producing, transporting, selling, and using products that fall within the scope of patent protection. In order to ensure a balance between patent holders and the public interest, international treaties and patent laws of various countries allow for compulsory licensing of patent rights when significant public interests are involved. In addition, some large technology companies also use patent pools to share their patent achievements for a fee. During the epidemic, many pharmaceutical companies also advocated the Open COVID Pledge to use patent technology more efficiently to jointly respond to the COVID-19 crisis. This paper mainly compares and analyzes three patent commons mechanisms: compulsory patent licensing, patent pool, and voluntary patent licensing, in order to explore legal mechanisms for ensuring timely and effective implementation of key patent technologies to fully supply essential products in response to public health emergencies.

Patent Compulsory Licensing

Compulsory licensing is a mechanism where a government can suspend the marketing exclusivity of a patent if a national dire need or necessary thereto justifies such a suspension.ⁱ According to the Trade Related Aspects of Intellectual Property (TRIPS) Agreement of the World Trade Organization (WTO), countries should provide for the right to use compulsory licensing in their legislation to reduce the production cost of generic patented drugs and solve medical problems in underdeveloped countries. At the Fourth Ministerial Conference of the WTO held in Doha in November 2001, the Doha Declaration on TRIPS Agreement and Public Health was issued, granting greater flexibility to the compulsory licensing conditions for patents stipulated by TRIPS.ⁱⁱ

Despite that developed countries often advocate for imposing various restrictions on patent compulsory licensing in international intellectual property negotiations, their domestic laws

often provide more flexible provisions for compulsory patent licensing. The UK Patent Law provides for two compulsory licensing mechanisms for patent rights. The first one is crown use. According to Article 55 (1) of the current 1977 UK Patent Act, the use of patented products and methods without the consent of the right holder, in order to meet the needs of government services, under the authorization of government departments, including the provision or production of a specific drug, does not constitute patent infringement. The right holder can obtain compensation through consultation with the government in the future. The second option is compulsory licensing. According to Articles 46 to 54 of the UK Patent Law, if the patent involved is a product patent and the demand for that product is not met within a reasonable time, a compulsory license to implement the patent can be granted. The US law also provides various mechanisms that allow for compulsory licensing of patent rights in specific circumstances. For example, the US Bidu Act provides for “march-in” rights, which means that if a patent is obtained through federal funding, the government has the right to enforce the patent. The US Patent Act also provides for government use, allowing the US government or authorized third parties to use patents for government purposes without liability for infringement.ⁱⁱⁱ Article 54 of PRC Patent Law stipulates two situations for issuing compulsory licenses: "in the event of an emergency or extraordinary situation in the country" or "for the purpose of public interest", the patent administrative department of the State Council may grant compulsory licenses for the implementation of patents. In addition, the patent laws of civil law countries such as Germany, the Netherlands, Switzerland, and Japan all stipulate that compulsory licensing of patents can be granted on grounds of public interest.

Legislative practices both domestically and internationally have shown that patent compulsory licensing provides a basic legal tool for enforcing key patented technologies in response to public health emergencies. However, a single patent licensing mechanism cannot meet the needs of responding to public health emergencies. Firstly, in response to public health emergencies, the production of drugs, vaccines, and other medical facilities often requires the implementation of a set of patented technologies rather than a single patented technology. In complex technological environments, only mandatory licensing of a specific patent of a patentee does not clear the way for the production of patented drugs and equipment. Secondly, when producing patented drugs or devices, in addition to patented technology, there is also a large amount of proprietary technology protected by trade secrets, and these technical details

often play a crucial role in the production of drugs and devices. Due to the fact that trade secrets are not subject to compulsory licensing, without the active cooperation of technology holders to provide technical support, even if a compulsory license for implementing patented technology is obtained, the products produced often do not meet the predetermined standards and effects.^{iv} Finally, compulsory licensing may harm the function of the patent system to promote the disclosure of technological inventions to the public. The patent system grants inventors exclusive rights to their technical solutions on the condition that they disclose the technology to the public, thereby promoting the diffusion of patented technology and the dissemination of relevant knowledge and information.^v Potential mandatory licensing may lead to developers refusing to disclose all technical details, adopting partial technology disclosure for patent applications, and taking measures to protect trade secrets for some technical details, ultimately resulting in companies that obtain mandatory licensing being unable to produce products of the same quality even if they are able to implement the patented technology.

Patent Pools

IP pools have been formed for nearly a century and often appear in information technology industries such as semiconductors (ICT). Due to the complexity of ICT industry products, a single product may include hundreds or thousands of technology patents, with intertwined claims forming a “patent thicket”. In order to avoid infringement disputes during the production process, multiple innovative entities will put relevant patents into a large pool, voluntarily sign a sharing agreement, and allow third parties to obtain a package of patent usage rights in the pool based on the agreement.

During the Covid-19 pandemic, the World Health Organization (WHO) and the European Commission (EU) established IP pools for technologies related to the COVID-19 epidemic. In fact, WHO has always set up a "Medicine Patent Pool (MPP)" to serve the medical sector in low-income and middle-income countries, so as to increase access to other essential drugs such as HIV and reduce the cost of generic drug production. After the outbreak of the COVID-19, MPP is also gradually incorporating Covid-19 related drug patents, regulatory experimental data, copyrights, etc., establishing COVID-19 Technology Access Pool (C-TAP) to provide

free products to WHO Member States, or open technology licensing under reasonable and affordable conditions. On April 3rd, the WHO once again expanded the scope of patent pool authorization to help address any health technologies related to Covid-19 globally. On July 10th, the EU officially announced that it will actively participate in and promote WHO's C-TAP sharing program and donate 400 million euros.

Patent pools are increasingly favored by enterprises in market competition due to their advantages of eliminating authorization barriers in patent implementation, reducing transaction costs, reducing litigation disputes, and promoting technological innovation. Especially under the promotion of technology patentization, patent standardization, and standardization internationalization, the patent pool has become its highest competitive form in determining technical standards in its own field. Mastering technical standards means enjoying greater discourse power. Driven by interests, patent pools often inappropriately expand the boundaries of rights granted by the patent system, abuse patent rights, and have the effect of excluding and restricting competition.^{vi} However, research has shown that the transaction cost of patent pool licensing increases with the number of patent holders. At the same time, the formation of a patent pool requires a threshold value for the number of patent holders, which varies in the opposite direction with transaction costs and patent licensing rates.^{vii} In addition, the current relevant laws in China are not yet fully effective in regulating the abuse of patent pool rights, and regulations directly regulating patent pools have not yet been introduced. In addition, the Antimonopoly Law has a gap in responding to the increasingly severe abuse of patent pool rights, ultimately reducing social welfare and even affecting the healthy and orderly operation of China's market economy.

Patent Voluntary Pledges

More and more organizations have publicly pledged to free access to their IPR in combating COVID-19.^{viii} These IPR 'pledges' come in a variety of forms, with a common aim to support the use of interoperability standards, open software and emerging technology platforms.^{ix} Thus, such pledges, and the licenses attached thereto, are irrevocable when they are granted, and are

legally enforceable. This has been recognized as a common practice in jurisdictions around the world.

For example, IBM has pledged to let anyone working on solutions to the coronavirus pandemic use its patents for free.^x More than 80,000 valuable IBM patents (including AI patents) and patent applications can now support researchers everywhere who are developing technologies to help prevent, diagnose, treat or contain Covid-19. The move will not only let researchers avoid paying licensing fees for innovations that derive from the patents, but will also allow them to avoid the time and effort of navigating the licensing process. The IBM commitment is part of a broader program, known as the Open COVID Pledge. The company also recently helped launch the COVID-19 High Performance Computing Consortium, which has made available enormous computing capacity, including some of the world's fastest supercomputers, to help researchers better understand COVID-19, its treatments and potential cures. For example, the design of a so-called macromolecule could be effective against whole classes of viruses, including the coronavirus. Another IBM invention, added to the patent collection this year, involves algorithms that predict the time and geographic range of events, including crime, traffic congestion and the spread of epidemics.^{xi}

In spite of their variations, all of the aforementioned patent pledges have one key feature: they allow users, usually anywhere in the world, to exploit the promised patent rights without risk of legal action, and to do so for at least a certain amount of time. Although free promises do not immediately provide patent owners with monetary compensation, they are not economically irrational. Although the patent owner will necessarily forego direct income from the exploitation of his/her patent, he will do so only for a limited time (for the duration of the pandemic and for one year after that) and will be able to negotiate a fee-bearing license for areas outside of COVID-19.

Some patent owners may fear that users of their promised patent right will charge too high a price for the end product, which is neither in line with their promise nor with society's expectations during the current pandemic crisis. In order to prevent such situation, some pledges such as the HMS University pledge and the pledge of Oxford University, require users to charge "fair" or "cost-plus" prices. The Open COVID Pledge, on the other hand, does not include any such user-pricing provisions, since the designers fear that this restriction may

discourage certain manufacturers from exploiting the promised IPR in an environment in which the widespread distribution of necessary goods and services is essential.

The most important feature of the patent voluntary pledges is that it allows users to use the patent without litigation risk for a certain period of time for production or technological improvement. For innovators, although there were no licensing benefits in the early stages, they had bargaining chips for technology licensing after the end of the pandemic. Therefore, based on rational considerations of economic benefits, innovators will also be willing to share relevant patents, so as to publicly disclose their patented technologies for free and in real-time, promote technology spillovers, and reduce the production costs of epidemic prevention and control related products.

Comparison and Conclusion

From the above analysis, it can be seen that different patent commons mechanisms have different characteristics, and the research and development costs and impact on public health of different technologies also vary to a certain extent. Therefore, it is necessary to select based on the characteristics of different IP commons mechanisms.

Firstly, from the perspective of technology usage costs, several types of IP commons mechanisms are all "free and open for patent use", but the more individual innovators dominate the sharing mechanism, the more initiative they hold. For example, restrictions on open object attributes, restrictions on usage conditions, restrictions on continuous sharing among users, and pricing restrictions on related products. Meanwhile, in the long run, if individual innovators hold the pricing power for the use of related technologies after the end of the epidemic, the cost of technology use may increase after a certain period of time.

Secondly, from the perspective of the income of innovators, due to their free nature in the early stage, they all profit through long-term means. It can be the income from the use of technology after a certain period of time, resource exchange with technology users, or expanding the market through technology users. However, under the compulsory licensing mechanism, it is difficult for innovators to have any related benefits.

Thirdly, although mechanisms with more participants, especially those endorsed by regional organizations, have higher policy stability, in practice, mechanisms with more participants also have higher negotiation difficulty coefficients. At the same time, when organizational members grow to a certain scale, their terms of use, pricing, etc. will also be limited by market competition clauses.

Besides, for diseases with mature treatment methods but significantly uneven medical resources, such as HIV/AIDS, Ebola, dysentery, etc., compulsory licensing in specific regions is more effective. However, the R&D of COVID-19 related technologies may face long-term, high and sustained R&D investment, and even require global innovation cooperation. Based on the emergency level, development difficulty, regional production capacity of technology, as well as the different attributes of different types of IP commons mechanisms in terms of cost, innovation incentives, stability, etc., the optimal settings are made.

What's more, whether it is a government-led patent pool or voluntary pledge of relevant technology patents by enterprises, it involves extremely professional legal norms, corporate strategy, industrial policy formulation, and other issues. Currently, both enterprises and patent operation service institutions in China do not have sufficient practical experience, which is not conducive to Chinese enterprises participating in international research and development innovation cooperation. At the same time, it also restricts the improvement of China's ability to participate in global scientific and technological governance. Compared to the situation where several major technology giants have filed patent lawsuits in the ICT industry, the innovation and subsequent development of Covid-19 related industries are not yet clear. However, this chaotic state also provides growth space for enterprises and intellectual property operation institutions. It is advisable to encourage relevant enterprises and patent operation institutions to actively participate, boldly try, activate patent value through multiple channels, and accumulate more local experience in stimulating innovation through the IP system.

Funding: This work was supported by the Research Foundation for Talented Scholars of the Guangdong University of Foreign Studies (GDUFS) [2022RC025].

Endnotes

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- ⁱ Jean E. Aki, 'Patent Exceptions in the time of a Pandemic' IP Asset Management, July 28, 2020, <https://www.sabaip.com/wp-content/uploads/2020/07/Patent-exceptions-during-a-pandemic-FICPI-BLOG-July-28-2020.pdf> last visited November 23, 2023.
- ⁱⁱ Article 5 of the Doha Declaration on the TRIPS Agreement and Public Health.
- ⁱⁱⁱ See Jean E. Aki (n 1).
- ^{iv} See Liguozhang, 'The Licensing Mechanism of Key Patented Technologies in Public Health Emergencies' 6 (2021) Tsinghua University Law Journal, p 165.
- ^v See Xiaoqing Feng, 'Research on the Purpose and Interest Balance of Intellectual Property Law' 3(2004) Nandu Academic Forum (Journal of Humanities and Social Sciences), pp 77-83.
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- ^{vii} Wenbang Yuan, 'Analysis of Threshold Factors for the Number of Manufacturers in the Formation of Patent Pools' 3 (2021) Operations Research and Management Science.
- ^{viii} See Sonia Gupta, 'Artificial Intelligence in the Era of covid-19' 2020 APPLIED RADIOLOGY 36-27, p 36.
- ^{ix} Peters, D. M. 'Understanding Patent Pledges: An Overview of Legal Considerations' (2006); https://patentcommons.org/publications/OSDL_Whitepaper_Final_final_4-12-06.pdf.
- ^x Diane Cardwell, 'Sharing Patents to Fight Covid-19, IBM Taps a Broad research Portfolio' <https://newsroom.ibm.com/index.php?s=34178&item=31937> last visited November 20, 2023.
- ^{xi} Ibid.