

Research on the Improvement of Pledge Financing of Data Intellectual Property

Shurui Xiao^{1, 2, a}, Haipeng Mo^{1, 2}, Baiqing Xu³

¹ Hainan Vocational University of Science and Technology, Haikou, 571126, China

² Hainan Guangzhe Law Firm, Haikou, 571126, China

³ Hainan Rural Commercial Bank, Haikou, 570200, China

^a819139925@qq.com

Abstract: Data is an emerging factor of production and an important innovation asset, and China has formulated a series of policies and measures to stimulate its innovation vitality. As an innovative financing method, data intellectual property pledge financing takes the data legally owned by enterprises and certified in the data intellectual property registration system or depository platform as the pledge, which plays a positive role in releasing the intrinsic value of data elements. At present, China's data intellectual property pledge financing still faces such problems as unreasonable risk sharing mechanism, imperfect value evaluation system and asymmetric information. Based on the analysis of practical experience at home and abroad, this paper puts forward some suggestions, such as building a perfect legal system, promoting the construction of information platform, improving the risk sharing mechanism and strengthening the financing support, in order to provide reference for improving the financing service system of data intellectual property pledge in China and promote its healthy and sustainable development.

Keywords: Data Intellectual Property, Pledge Financing, Property Pledge, Financing Guarantee, Equity Financing

1. Introduction

As an innovative financing method, data intellectual property pledge financing has attracted wide attention and discussion. This financing method uses the data legally owned by enterprises, especially the data obtained from the data intellectual property registration system or the certificate platform as the pledge, which provides a new financing channel for enterprises. Enterprises can obtain financial support by pledging the intellectual property rights of data to financial institutions, thus promoting their own innovation and development. Enterprises obtain financing through intellectual property rights, which has become one of the important sources of funds [1]. As an innovative financing method, data intellectual property pledge financing has attracted wide attention and discussion. This financing method uses the data legally owned by enterprises, especially the data obtained from the data intellectual property registration system or the certificate platform as the pledge, which provides a new financing channel for enterprises. Enterprises can obtain financial support by pledging the intellectual property rights of data to financial institutions, thus promoting their own innovation and development. Enterprises obtain financing through intellectual property rights, which has become one of the important sources of funds. Advancing the sustainable development of intellectual property pledge financing can broaden the funding avenues for technology companies, spur these companies to boost their R&D investment, and facilitate the commercialization of technological achievements. This is highly significant for driving national technological innovation and economic growth.

2. Current Situation of Intellectual Property Pledge Financing in China

2.1 Overview of Development

Data intellectual property (IP) pledge financing differs from traditional real estate pledge financing. It involves enterprises obtaining loans from financial institutions by using legally owned data IP rights—such as patents, trademarks, and copyrights—as collateral. During the loan period, if the debtor fails to repay the loan, the creditor can exercise its rights by disposing of the pledged data IP rights. In recent years, China has seen a rapid increase in the number of patent and trademark applications, as well as the effective number of patents and trademarks. This trend provides a foundation for expanding the scale of data IP pledge financing [2]. Meanwhile, as the relevant system for data IP pledge financing continues to improve and as governments at all levels actively promote it, the total scale of data IP pledge financing has grown rapidly, and the number of enterprises benefiting from it has expanded. In recent years, the central bank has implemented two reserve requirement ratio (RRR) cuts and one interest rate cut. These measures aim to reduce the funding costs of financial institutions, guide capital into the real economy, and steadily promote its development. The Central Economic Work Conference proposed that “financial institutions should be encouraged to increase their support for the real economy, especially for small and micro enterprises, technological innovation, and green development.” In China, the main drivers of technological innovation are technology-based enterprises, which contribute to building an innovative country by facilitating the transformation of technological achievements. These enterprises face a financing dilemma characterized by “light assets and lack of collateral” due to their high R&D investment, strong capital needs, fewer physical assets, and more intangible assets. Data IP pledge financing is a crucial solution to this challenge.

2.2 Main Models

China has started the pilot work of data intellectual property pledge financing in many regions. After years of exploration and development, it has initially formed a variety of distinctive models, among which Beijing, Shanghai Pudong and Wuhan are the most representative.

Beijing Model: Market-oriented direct pledge financing model. In the Beijing model, companies seek intellectual property pledge financing loans from commercial banks. Law firms conduct legal risk assessments of intellectual property rights and issue review reports. Asset appraisal agencies determine the value of these rights, and guarantee institutions provide collateral support to commercial banks for financing. Additionally, the government offers a certain percentage of discount support for intellectual property pledge financing activities. Under this Beijing model, commercial banks primarily bear the risks associated with intellectual property pledge financing, while the government plays a supportive role in guiding, coordinating, and providing services.

Shanghai Pudong Model: indirect pledge financing mode promoted by the government. Shanghai Pudong mode is a government-led intellectual property pledge financing mode. The government and relevant departments not only provide discount support for enterprises, but also provide guarantee, evaluation, and other services for enterprises. In the Pudong model, while submitting credit applications to banks and other financial institutions, enterprises submit guarantee applications to the Pudong Productivity Promotion Center. A series of examinations are carried out by the Center and intellectual property rights are assessed by the Intellectual Property Office. The government establishes the special fund for the development of science and technology in Pudong New Area as the source of funds for the guarantee of the center to provide credit guarantee for science and technology enterprises, enterprises use their own intellectual property rights to provide counter-guarantee for the center, and finally commercial banks grant loans to enterprises.

Wuhan Model: a mixed model combining the characteristics of Beijing and Shanghai Pudong models. In the Wuhan model, enterprises apply to commercial banks for intellectual property pledge financing loans, commercial banks entrust evaluation agencies to issue evaluation reports for intellectual property rights, and Wuhan Science and Technology Guarantee Co., Ltd., a professional guarantee agency introduced by the government, provides guarantees for enterprises, while enterprises use equity, accounts receivable, patent rights and other rights. Finally, commercial banks grant loans to enterprises. Wuhan model is a mixed model that integrates Beijing model and Shanghai Pudong model. The technology guarantee company established by the government assumes part of the guarantee responsibility. At the same time, the Finance Bureau will provide financial subsidies for eligible enterprises.

3. Main Problems of Intellectual Property Pledge Financing in China

3.1 The Risk Sharing Mechanism Is Not Reasonable Enough

In recent years, with the implementation of the strategy of intellectual property power, a series of normative documents have been promulgated to promote the development of intellectual property pledge financing, but there are gaps in the legal system derived from different legislative purposes. Among them, the practices in Beijing, Shanghai, Wuhan, and Hangzhou have attracted much attention. Taking Beijing as an example, the city has issued several policy documents. These policies include loan discounts and risk compensation funds in Beijing's financial budget, providing 50% interest compensation with a maximum amount of 400000 yuan, aiming to reduce the financing burden of enterprises. No matter what financing method is adopted, the core goal of the policy is to support enterprises by reducing the real cost of bank loans. However, for the intellectual property pledge financing activities of SMEs, banks still have cooperation concerns and lack of trust. Because risk compensation is not a real guarantee, it cannot provide banks with full protection against loan losses. Although there are risks in any loan, tangible assets can be quantified and realized, while the value of intellectual property rights cannot be accurately assessed, and its realization is relatively difficult. In addition, the government intervenes in the operation of bank assets business through administrative orders and sets foot in the legal market boundary, which reflects the government's distrust of intellectual property pledge financing. The author believes that the core of the problem is that the legal design of intellectual property pledge is not perfect, mainly in the value evaluation system, the object scope of intellectual property pledge and the definition of intellectual property rights ownership.

3.2 The Value Assessment System Is Not Perfect Enough

Intellectual property (IP) pledge financing can help ease the financial constraints faced by small and medium-sized micro-enterprises to some extent, thereby driving financial innovation. The evaluation of collateral value is a crucial pre-loan review procedure, which is essential for facilitating corporate financing, safeguarding the credit assets of financial institutions, and maintaining the healthy development of financial markets [3]. The valuation of IP is integral to many key aspects of IP pledge financing, such as pledging, guaranteeing, and the realization of pledges. Additionally, IP infringement involves a wide range of issues, including infringement damages, licensing fees, and the use of IP rights to establish companies or shares, all of which require the valuation of IP rights. Therefore, it is particularly important to enhance the relevant legal framework for IP valuation. At present, the laws and regulations governing IP valuation in China mainly include the Asset Valuation Law of the People's Republic of China. These laws and regulations clearly define the subjects, procedures, appraisal institutions, requirements for appraisers, appraisal methods, and related legal liabilities for IP value appraisal. Thus, it can be said that China's legal system for IP value evaluation has been preliminarily established. The Guide outlines relevant issues and considerations for different purposes of IP valuation, such as assignment, licensing, or pledging.

3.3 Information Asymmetry Restricts Enterprise Loans

In the process of financing, banks, intermediaries, and emerging technology enterprises belong to different levels, and they have different institutional functions and cognitive concepts. As a result, there is an inevitable loss of information and poor information exchange in the exchange of information, especially when data intellectual property rights are involved. Financial institutions need to assess the risk of loans when considering the loan application of enterprises. The completeness, objectivity, and authenticity of information disclosure in the evaluation report directly affect the recognition of the pledgee [4]. If enterprises have valuable intellectual property rights, but financial institutions can not accurately assess the value and protection of these intellectual property rights, it will increase the risk of loans. This could lead financial institutions to be more cautious, requiring higher interest rates or offering smaller loan lines to protect against potential risks. And it is often easier for financial institutions and investors to understand and trust tangible assets, such as real estate or machinery. In contrast, data intellectual property rights, as intangible assets, are not easy to determine their value and to be used as collateral. The issue of trust could cause financial institutions to view data intellectual property pledge financing with skepticism, thereby restricting the range of financing opportunities available to businesses. The challenge of valuing intellectual property in data can also impact lending decisions. Valuing data

intellectual property typically demands specialized knowledge and resources, which many enterprises lack, making it difficult for them to accurately assess the value of their own intellectual property. Moreover, the fact that different types of intellectual property—such as patents and trademarks—require distinct valuation methods further complicates the assessment process for financial institutions.

4. Practical Experience of Data Intellectual Property Pledge Financing in Developed Countries

4.1 Improve the Legal and Policy System

The United States, Japan, South Korea and other countries have established a legal system for the creation, application and protection of intellectual property rights, and combined the intellectual property system with industrial policies and scientific and technological policies. In 1953, the United States promulgated the Small and Medium-sized Enterprises Act, which made it clear that banking institutions could provide consulting and loan services to technological innovative enterprises with intellectual property rights as security. Korean science and technology laws and regulations account for 1/4 of the total number of national laws and regulations, and the Korean Science and Technology Credit Guarantee Fund Act and the Korean Patent Act provide legal support for the intellectual property pledge financing of small and medium-sized enterprises. In order to support small and medium-sized enterprises and technology enterprises whose cash flow has deteriorated due to the COVID-19 epidemic, the Japanese Legislative Council has improved and updated the Intellectual Property Pledge Financing Act and submitted a revised bill to the Diet in 2023. In addition, most countries have also established legal protection mechanisms for overseas intellectual property rights to deal with legal disputes related to international intellectual property rights protection, overseas litigation, license renewal and so on.

4.2 Give Full Play to the Guiding Role of the Government

Britain, Japan and other countries are typical representatives of the leading role played by the government in intellectual property financial services. Most of the European countries represented by the United Kingdom guide the development model of intellectual property financial services by issuing development plans and research reports. In Asia, countries such as Japan and South Korea typically adopt government-led approaches to advance the development of intellectual property (IP) pledge financing. This is achieved through the establishment of specialized institutions, the introduction of targeted policies, and the allocation of dedicated funds. For example, Japan primarily promotes IP pledge financing through policy-oriented financial institutions like the Development Bank of Japan (DBJ). As the main institution in this field, the DBJ focuses on supporting small and medium-sized technology enterprises in their start-up and seed stages—phases where financing is challenging and IP rights are relatively concentrated. Japan also issues specific policies, such as the Guidelines for the Disclosure of Intellectual Property Information, to fully integrate the competitive advantages and market values of IP rights held by technology companies for the use of banks, securities firms, evaluation agencies, and IP intermediary organizations. Similarly, South Korea, under government leadership, has launched institutions like the Korea Technology Finance Corporation and the Korea Credit Guarantee Fund to promote IP pledge financing by providing loan guarantees and re-guarantees.

4.3 Establish a Value Evaluation System

Providing reliable valuation of intellectual property is the cornerstone of creating an economic value chain for intellectual property. Japan has formulated the Practical Guidelines for the Management of Intellectual Property Assets of Small and Medium-sized Enterprises, which regulates and guides the evaluation institutions to carry out value evaluation, and organizes personnel training, skills training and international exchanges of intellectual property evaluation institutions. The Korean Intellectual Property Office issues online intellectual property asset evaluation documents, according to which enterprises obtain bank credit funds. The Korean Patent Office has developed a classification system for intellectual property value evaluation, which integrates technical and commercial information related to intellectual property market value, reduces errors caused by subjective human factors in the evaluation process, and provides intellectual property value inquiry services to financial institutions. In 2022, 915.6 billion won (equivalent to 5.036 billion yuan) of intellectual property guarantee financing was issued based on the system. By the end of 2022, the balance of intellectual property guarantee financing of the system reached

2192.9 billion won (equivalent to 12.061 billion yuan), an increase of 71.7% over the beginning of the year.

4.4 Construct a Financial Ecological System

A complete intellectual property financial system can enable intellectual property to enter and exit the financial system in a legal form. American Patent Advisory Company (M-cam) is a company specializing in investment and financing of intangible assets in the United States. It is also the largest insurer of intangible assets in the world. It has a strong database of intellectual property rights, including the application, promotion and application of intellectual property rights, which provides a basis for its evaluation, guarantee and risk control. M-cam has established extensive cooperative relations with external institutions such as asset management, insurance, banking, securities and appraisal to coordinate the handling and realization of intellectual property rights in case of loan default, so as to realize risk transfer and decentralization. Japan's Policy Investment Bank, in cooperation with securities institutions, launched intellectual property securitization to enhance the enthusiasm of financial institutions to carry out intellectual property pledge financing business.

5. Suggestions on Improving the Development of Data Intellectual Property Pledge Financing

5.1 Construct the Legal System of Data Intellectual Property Financing

It is suggested that China should take into account the existing legal basis in the fields of finance, accounting, taxation, intangible assets evaluation and transaction management as a whole, fully absorb and draw lessons from the experience of the United States, Japan, South Korea and other developed countries in the construction of the legal system of data intellectual property rights, and establish and improve data intellectual property rights according to China's actual conditions. Unify relevant standards, norms, and requirements to protect enterprise data intellectual property financing. At the same time, we should strengthen the protection of intellectual property rights of overseas data, promote the effective integration of relevant laws with international standards, ensure coordination inside and outside the legal system, and crack down on garbage patents and fraudulent compensation according to law. The government should ensure that there are laws to follow in the financing process, provide a strong legal basis for financing, and work together with relevant departments to promulgate a set of laws and regulations suitable for data intellectual property pledge financing according to the characteristics of each department. The operability of laws and regulations should be strong, and the scope and standard of pledge should be reasonably defined to make the rights, obligations and liabilities for breach of contract of both parties clearer. Moreover, we should strictly deal with the infringement of data intellectual property rights, crack down on the breach of pledge financing, reduce the cost of safeguarding rights, and make the infringement pay a heavy price. Only by establishing and improving a complete legal system can pledge financing be more guaranteed, data intellectual property rights can be better protected, and enterprises can have no worries about pledge financing through data intellectual property rights to truly help enterprises find an effective way of financing.

5.2 Promote the Construction of Information Platform for Pledge of Data Intellectual Property Rights

Relevant government departments regard the construction of data intellectual property online evaluation system as a key construction project of data intellectual property financial infrastructure to help solve the problems of information asymmetry and unsmooth disposal. Taking advantage of the abundant data resources, the concentration of data intellectual property talents and the strong data analysis ability of data intellectual property, the mathematical model of data intellectual property value evaluation is designed, the quantitative standards and operation rules are defined, and the market prospects of data intellectual property and the value range with high market recognition are accurately estimated. And reduce the cost of evaluation by providing public services to financial institutions and science and technology enterprises. Continuously improve the national data intellectual property pledge information platform [5]. It is suggested that the platform should be continuously improved to effectively integrate the validity, ownership, litigation-related situation and protection scope of data intellectual property rights on the basis of free patent and trademark pledge information and financial product information inquiry, and to provide information to data intellectual property transaction intermediaries,

data intellectual property operation companies, banks and investment companies. Reduce the information asymmetry and transaction costs in the financial circulation and realization of data intellectual property rights. We will vigorously promote the development of big data and blockchain technology, establish a complete information disclosure system, solve the problem of information transmission of data intellectual property pledge financing, and enhance the basis of trust between borrowers and lenders. At the same time, we should promote the deep integration of data intellectual property, finance, and Internet technology, establish an effective risk prevention and control system, and enhance the universality of data intellectual property pledge financing.

5.3 Improve the Risk Sharing Mechanism of Data Intellectual Property Pledge Financing

We aim to enhance the risk-sharing mechanism for data intellectual property pledge financing and fully leverage the government's role in risk sharing and loss compensation. The government will establish policy-based guarantee institutions to provide credit guarantees for data intellectual property pledge financing, thereby maximizing the guiding and exemplary functions of these institutions. On this foundation, we can further marketize policy-based credit guarantee institutions and actively establish science and technology guarantee companies with the participation of private capital. Under the leadership of central finance and in collaboration with local finance, a risk compensation fund for data intellectual property pledge financing will be set up at a certain proportion. If an enterprise fails to repay the loan upon maturity of the data intellectual property pledge loan, and the financial institution, as the creditor, cannot fully realize its creditor's rights through the disposal of the pledge, the special fund will offer risk compensation for data intellectual property pledge financing. Meanwhile, the government can jointly develop new data intellectual property pledge financing products with commercial banks, with the government and commercial banks sharing the risk of loss at a specified proportion. Through the government to set up risk compensation, after the maturity of the loan, the disposal of the pledge is still unable to repay the loan, the risk compensation will be used to compensate the bank, so that financial institutions have no worries, so that the bank's lending risk can be controlled. The use of intermediaries, guarantee companies and other forms of guarantee, strict examination of projects, strict management of financing. As a bank, we should make detailed statistics on the financing needs of enterprise data intellectual property pledge, establish a detailed dynamic database of enterprise projects, innovate loan products, simplify financing procedures, make the process clearer, introduce insurance mechanism, share risks, and reduce financing costs.

5.4 Strengthen the Support of Data Intellectual Property Pledge Financing

Policy banks can enhance their support for data intellectual property pledge financing and collaborate with commercial banks to increase the scale of funding for such financing. On one hand, policy banks can establish special loans for the pledge of intellectual property rights related to scientific and technological innovation data, focusing on supporting the pledge financing activities of technology-based enterprises. They can offer differentiated policies, such as preferential loan interest rates and terms, open fast-track credit assessment channels, and channel funds into the development of these enterprises. On the other hand, policy banks can provide loans to commercial banks that offer data intellectual property pledge financing services, cooperating through a "wholesale fund transfer" model. These funds would be earmarked for data intellectual property pledge financing projects, thereby further expanding the financing scale for technology-based enterprises. Increasing investment can significantly enhance the independent innovation capabilities of enterprises and create high-value data intellectual property rights. Investment can notably improve the quality of enterprise innovation and the commercial value of data intellectual property, thus facilitating the circulation of data intellectual property. Additionally, it is essential to eliminate unreasonable incentive policies for patents and trademarks to continuously enhance the market value of data intellectual property rights. The number of patents should be decoupled from utilitarian purposes such as title evaluation and fund application, allowing patents to return to their original purpose of promoting scientific and technological progress and commercial development. We will also abolish all policy subsidies for registered trademarks, continue to crack down on market disorders such as malicious rush registrations and trademark hoarding, regulate the development of the trademark market, and promote the high-quality development of data intellectual property rights in China.

6. Conclusion

With the continuous improvement of the legal system of data intellectual property pledge financing and the growing maturity of the intellectual property trading market, it will be easier for enterprises to obtain financing through intellectual property pledge. This form of financing can not only give full play to the value of intellectual property rights, but also stimulate the vitality of the market economy and provide strong support for the prosperity and development of China's economy. However, it also faces a series of challenges. In order to solve these problems, all parties should cooperate closely. Based on the analysis of the current legal and practical situation of data intellectual property pledge, this paper expounds the plight of the current data intellectual property pledge financing business, and puts forward the corresponding solutions, in order to provide a reference for improving the data intellectual property pledge financing service system in China.

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