

Research on intellectual property financing mode of technology-based small and medium-sized enterprises

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Abstract: Intellectual property financing is a new way to effectively alleviate the financing difficulties of technology-based SMEs. Intellectual property securitization and intellectual property pledge financing complement and promote each other, which is conducive to broadening the financing channels of small and medium-sized enterprises, improving the environment for innovation and development of market entities, and promoting a virtuous cycle of innovation resources. China has gradually paid more attention to intellectual property protection and its transformation, promoted the development of intellectual property financing through continuous improvement of existing laws and regulations, and improved the professionalism of assessment institutions. Improving the information disclosure system, establishing a diversified capital investment mechanism based on the realization of intellectual property value, and comprehensively promoting the transfer and transformation of intellectual property rights are of great significance to guiding the transfer of financial capital to high-tech industries, promoting the transformation and upgrading of traditional industries and the cultivation and development of strategic emerging industries.

1. Introduction

Science and technology-based small and medium-sized enterprises are groups engaged in the research and development, production and service of high-tech products, and are an important part of small and medium-sized enterprises. According to data from the National Bureau of Statistics, by the end of 2020, the number of technology-based small and medium-sized enterprises in China has exceeded 200,000, as the main carrier of China's technological innovation and an important driving force for economic growth, technology-based small and medium-sized enterprises play an important role in promoting the transformation of scientific and technological achievements, the development of new industries, driving employment with innovation, and building an innovative country [1]. In the actual development process, science and technology SMEs are different from traditional SMEs, they have the characteristics of knowledge-intensive and continuous innovation ability, because their own development mainly relies on scientific and technological innovation and core technology, science and technology SMEs invest less in tangible assets, so it is difficult to meet the traditional loan requirements in terms of financing, resulting in problems such as financing difficulties and high financing costs [2].

In the process of development, science and technology SMEs have the most potential and valuable resources for themselves are intellectual property rights such as technology patents and design patents. In order to meet their own needs for funds, giving full play to their own intellectual property advantages in the financing process, and realizing diversified and large-scale intellectual property financing for enterprises, it is not only an innovative problem that SMEs need to solve urgently, but also provides a strong guarantee for SMEs to implement innovation-driven development strategies and IP strategies in depth [3]. The Opinions on Further Promoting Intellectual Property Financial Services issued by the State Intellectual Property Office in April 2015 pointed out that it is necessary to deepen and expand the work of intellectual property financial services, guide and promote the effective connection of various types of financial capital such as banking, securities, insurance, venture capital and intellectual property resources, and accelerate the improvement of the intellectual property financial service system. Effectively implement the state's financial support policies for the development of small, medium and micro enterprises.

2. Traditional domestic intellectual property pledge financing model

Intellectual property pledge financing is a financing method in which an enterprise obtains a loan from a bank after evaluation of legally owned patent rights, trademark rights, property rights in copyrights, etc. In recent years, in order to improve the financing capacity of science and technology enterprises, under the strong advocacy of relevant national departments, various localities have actively explored the mode of intellectual property pledge financing, mainly represented by Beijing, Shanghai Pudong, Hunan and Zhongshan from the perspective of the operation mode of intellectual property pledge financing in various parts of China[4].

2.1. Beijing model

The Beijing model is a direct pledge financing model of "bank + enterprise patent right/exclusive right to use the trademark", which is a market-oriented intellectual property pledge loan model led by bank innovation. Under this model, the government has built a communication platform between enterprises, financial institutions and intermediary service institutions for the financing of small and medium-sized enterprises, and provided financing support to qualified small and medium-sized enterprises with the help of financial institutions and intermediary service institutions in the form of government interest discounts.

2.2. Pudong model

The Pudong model is an indirect pledge model of "bank + government fund guarantee + patent right counter-guarantee", and it is also a government-driven intellectual property pledge loan model. In this model, the Pudong Productivity Promotion Center provides loan guarantees for enterprises, and the enterprises pledge their intellectual property rights to the Pudong Productivity Promotion Center as counter-guarantees, and then the bank provides loans to the enterprises, and the relevant competent authorities play multiple roles such as "guarantee subject + assessment subject + discount support". The government has become the dominant party in the engagement.

2.3 Zhongshan mode

The "Zhongshan Science and Technology Enterprise Intellectual Property Pledge Financing Loan Risk Compensation Project" is jointly funded by the central finance and the municipal financial special fund, and the total scale of the special fund is 40 million yuan (10 million yuan contributed

by the central finance and 30 million yuan by the municipal finance) to establish the intellectual property pledge financing loan risk compensation fund, and all parties shall follow the "government (54%) + Bank (26%) + Insurance Company (16%) + Intellectual Property Service Company (4%)" for risk sharing, and the maximum loan amount is not exceeded 3 million yuan; The maximum for a single family is not more than 12 million yuan.

By introducing patent insurance for intellectual property rights by insurance companies, the legitimate rights and interests of intellectual property rights of enterprises are protected and the difficulty of intellectual property infringement and protection is reduced; And through the insurance company in the form of loan guarantee insurance, further share the loan risk. In view of the problems of intellectual property valuation, transaction circulation, and difficulty in monetization, professional intellectual property operation companies are introduced to participate in loan projects, and they bear appropriate risk ratios, strengthen the control of intellectual property operation companies in the intellectual property valuation process, and further reduce risks. Through the above measures, the loan risks of bank loans and the lack of professionalism faced by banks in IP valuation are shared.

2.4 Hunan model

The Hunan model is a professional operation of the Hunan Intellectual Property Trading Center, which was established under the leadership of the Hunan Provincial Market Supervision Bureau, by setting up intellectual property pledge financing risk compensation funds, and signing cooperation agreements with 18 banks, including China Construction Bank and China Everbright Bank, to establish a mechanism for governments, banks and operating institutions to share financing risks.

As an intermediary between banks and small and medium-sized enterprises, the Hunan Intellectual Property Exchange Center needs to meet two basic conditions for enterprises to obtain financing through the trading center: (1) it must have authorized independent core intellectual property rights; (2) Intellectual property rights have been transformed and achieved certain benefits. After the third-party appraisal agency determines the value of the patent, the bank combines the value of the patent and comprehensively considers the operation status of the enterprise, and finally determines the loan amount. The specific loan amount is lent according to the assessed value of the pledged intellectual property rights of less than 30%, generally not exceeding 5 million yuan, the loan period is not more than two years, after the loan enterprise repays the loan on schedule, it can apply for the government's special subsidy for intellectual property pledge financing, and the final financing cost borne by the enterprise is 3.2% to 3.2%. Between 5.5%.

In terms of risk prevention of loan principal, "wind supplement funds (45%) + banks (20%) + operating institutions (10%) + guarantees (25%)" and "wind supplement funds (45%) + banks are used (45%) + operating institutions (10%)" two models, each participating institution bears risks and participates in controlling risks.

3. Financing models for securitization of intellectual property assets

Although the intellectual property pledge market has developed rapidly, because most of its financing is biased towards short-term and small-scale financing, it cannot well meet the medium-term and large-scale financing needs of technology-based small and medium-sized enterprises, and intellectual property securitization can help enterprises solve the above problems to a certain extent. Intellectual property securitization refers to a financing method that is supported by the expected future returns of intellectual property rights and is financed by the issuance of outstanding securities in the issuance market. The initiator (original rights holder) transfers the intellectual property rights or its derivative claims to the SPV, which then provides financing support for the initiator by issuing tradable securities in the open market after credit enhancement of the assets through structural design

and other means[5] with the cash flow generated by the assets as the repayment support. The core of IP securitization product design is to build stable, predictable and specific cash flows as basic assets on the basis of intellectual property rights. The Figure 1 shows that securitization process can be roughly divided into the following stages:

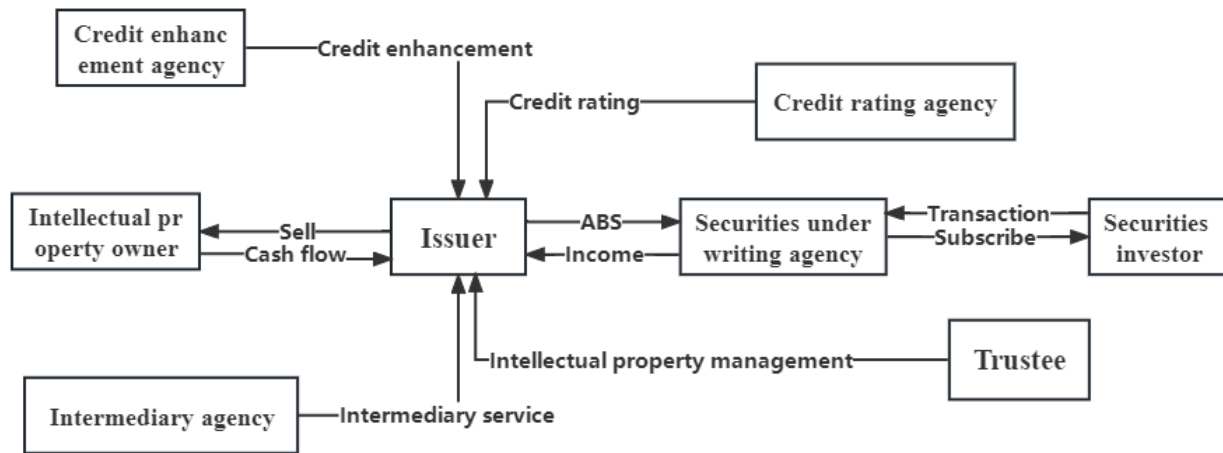


Figure 1 IP securitization process

After an IP securitization transaction, in most cases, the originator can still retain and manage the IP rights. This characteristic has special significance for innovative enterprises, which can further improve or apply intellectual property rights while obtaining funds to continuously enhance their value. If the initiator's technology has not yet applied for intellectual property rights such as patents, the SPV can also act as an agent for the intellectual property application and bear the application fee and the annual maintenance fee of the intellectual property right, and the proceeds obtained shall be shared by the intellectual property right holder and the SPV in a certain proportion.

At present, the financing models of intellectual property asset securitization in China mainly include financial leasing model, license fee model, loan and pledge model, etc.

3.1 Financial leasing model

The financial leasing model means that the lessee (enterprise) transfers its own intellectual property rights to the financial leasing company to integrate funds, and at the same time obtains the right to use the intellectual property rights by signing a lease contract with the financial leasing company, and pays the lease rent to the original owner on time during the lease period. During the lease period, the financial leasing company has the ownership of intellectual property rights, and the lessee has the option to buy back the intellectual property at the end of the lease period, and can eventually regain ownership of the intellectual property rights. A financial leasing company issues asset securitization products based on its financial lease claims against specific lessees as its underlying assets.

On the one hand, intellectual property financial leasing can revitalize the financing channels of scientific research institutions, scientific research institutions and technology-based small and medium-sized enterprises, enable institutions or enterprises to obtain development funds, and promote the transformation and industrialization of scientific and technological achievements; On the other hand, it can promote the development and improvement of the intellectual property market, so that the market value of intellectual property can be reflected.

3.2 License fee model

The license fee model refers to the exclusive license right, agreed rights and sub-licensing rights of the patent after the patentee (financier) signs a patent exclusive license contract with the patent licensee (financial leasing company), and the licensee pays the exclusive patent royalty to the patentee in one lump sum, and obtains the exclusive license right, agreed rights and interests and sub-licensing rights of the patent. The licensee then signs an exclusive patent license contract with the patentee, grants the specific patent to the patentee as the licensee to exploit the patent, and the patentee pays the patent royalties to the financial leasing company in instalments. In order to ensure that the financial leasing company collects royalties from the patentee on a regular basis, the patentee pledges the patent right to the financial leasing company. That is, the investor signs a subscription agreement with the asset plan manager, becomes an ABS holder, and entrusts the management of the subscription funds to the plan manager in the form of special asset management. The plan manager uses the special plan funds to purchase the underlying assets from the original rights holder (such as a leasing company) in accordance with the Asset Sale and Purchase Agreement signed with the original rights holder. The underlying assets are the rights of the original rights holder to claim payment of royalties, claims for damages, other rights and ancillary security rights against the patent customer from the base date of the patent license contract.

The advantage of this model compared with the financial leasing model is that the original owner of intellectual property rights does not need to transfer the intellectual property rights to other parties, ensuring the control of the original right holders over the intellectual property rights. In addition, from the perspective of compliance, the law does not prohibit a financial leasing company as an entity from accepting an exclusive license for the exclusive exploitation of a patent and sublicensing it based on the exclusive license for the patent. In addition, a patent license contract signed by a financial leasing company will not be deemed invalid because it exceeds its business scope. Therefore, as an asset service provider for such special plans, a financial leasing company does not need special qualifications.

3.3 Loan and pledge model

The loan and pledge model is to provide pledge security for intellectual property, use the income generated by intellectual property as the source of repayment, and issue asset-backed securities with this loan as the underlying asset or source of cash flow of the underlying asset. Among them, for products with trust loans obtained by pledging intellectual property rights as the underlying assets, the original rights holder entrusts the funds to the trust company to set up a single fund trust plan, and the original rights holder has the corresponding trust beneficiary rights; The single-fund trust scheme signs a Trust Loan Contract with the intellectual property holder (the actual financier) to issue trust loans to borrowers, and the borrowers pledge the designated intellectual property rights to the trust company and use the income generated by them as the source of repayment; The external guarantor signs relevant contracts with the trust plan to guarantee the repayment of the borrower; The manager of the special plan establishes a special asset-backed plan and issues asset-backed securities to raise funds from investors; The asset-backed special plan uses the raised funds to purchase trust beneficiary rights from original stakeholders.

At present, the basic assets of IP securitization mainly include patents, trademarks and copyrights. For financiers, the biggest feature of IP securitization is that they can obtain financing while retaining their autonomy over IP rights. In the securitization process, the assets transferred to ad hoc vehicles for securitization are usually the existing returns or future commissions obtained by the owner of the intellectual property rights in authorizing others to implement the intellectual property rights, rather than the intellectual property rights themselves. From the perspective of investors, IP securitization

products have better liquidity. The actual situation of many domestic science and technology-based small and medium-sized enterprises is that they own a large number of patents and other intellectual property rights, their own risk is relatively high, the overall credit capacity is relatively low, and generally lack of physical assets, it is more difficult to raise development funds through traditional financing methods, which seriously restricts the ability of high-tech to transform into productivity. Intellectual property securitization breaks through the limitations of traditional financing methods, solves the problem of financing difficulties for science and technology SMEs, provides a powerful financial support means for science and technology SMEs to transform high and new technologies into real productivity, improves the success rate of transforming scientific and technological achievements into productivity, helps to accelerate the process of industrialization of scientific and technological achievements in China, and then improves the income of existing intellectual property rights of enterprises.

Fourth, the application of intellectual property financing in small and medium-sized science and technology enterprises

3.4 The legal relationship between intellectual property assets is not clear

China's current laws are still relatively thin on the relevant regulations and systems of intellectual property financing, especially in terms of specific operations. Some related issues mainly rely on the implementation of the current relevant provisions such as the Property Law, the Guarantee Law and the Securities Law, and there are no more specific provisions on various types of intellectual property financing, whether it is the Guarantee Law or the Property Law. For example, it only stipulates that copyrights, trademark rights and patent rights can be used as the subject of pledge, but does not specifically specify the pledge of patent rights, trademark rights and copyright licensing rights. [6] Although in recent years, some local governments have established local normative opinions and measures to further promote scientific and technological innovation and support the development of technology-based small and medium-sized enterprises, this normative opinions and measures mainly rely on the implementation of local governments to promote the development of intellectual property financing. At the same time, there are also differences in the provisions on IP financing in different regions, which to a certain extent restricts the development of IP financing business of science and technology SMEs. In addition, based on the level of legislation and the level of legal effect, China's intellectual property-related laws are not uniform, except for the Copyright Law, Trademark Law and Patent Law, the legal adjustment of other intellectual property rights is mainly concentrated at the level of administrative legislation, and there is no legal protection for intellectual property right holders. It can be seen that the intellectual property financing system has not yet formed a unified and complete legal system in China, which is one of the reasons why the intellectual property financing of China's science and technology-based small and medium-sized enterprises is still in its infancy.

3.5 It is difficult to assess the value of intellectual property rights

The biggest difference between IP securitization and physical asset securitization lies in intangibility, and the main factors restricting the development of IP financing are the difficulty of valuation and realization of IP rights. Intellectual property valuation has a high degree of professionalism, and different intellectual property rights have different qualification requirements for valuation companies. The reliability and social recognition of the assessment entity, the rationality of the valuation methods used for different intellectual property rights, the significant fluctuation of the value of intellectual property rights during the existence of the bonds by factors such as the enterprise's own operation, the degree of market competition, technological changes and product life cycles, and the reliability of the final assessment results, all of which will affect the financing amount

of intellectual property securitization products[7]. , and at the same time, higher requirements are put forward for evaluation institutions. However, at present, the domestic market has not yet formed a set of standardized and mature intellectual property value assessment system, and there is a lack of professional third-party evaluation and credit enhancement institutions, resulting in a lack of credibility in intellectual property value assessment results. Therefore, financial institutions are often cautious about using intellectual property as collateral or underlying assets, and even if they accept enterprises to use this financing, they will adopt measures such as raising loan interest rates and reducing loan-to-value ratios to reduce risks, thereby increasing the cost of intellectual property financing.

3.6 The degree of marketization of intellectual property rights transactions is low

Compared with the relatively mature intellectual property trading market in foreign countries, China's intellectual property trading market has problems such as small transaction scale, disconnection between supply and demand, and large transaction risks. Intellectual property transactions are the combination of intellectual property achievements and market demand with the support of various resources, which not only involves technology and capital transactions, but also involves different stakeholders such as enterprises, scientific research institutions, intermediary service institutions, investment institutions, and guarantee institutions. In the process of intellectual property transactions in China, most intellectual property owners are far away from the market due to imperfect rule of law and imperfect systems, and due to information asymmetry, supply is disconnected from market demand, and lack of market value information of intellectual property rights, resulting in blockage of market channels. In addition, intellectual property rights are difficult to realize or dispose of as collateral. The particularity of intellectual property rights determines that its disposal and realization need to rely on professional knowledge, and professional institutions need to be hired to evaluate, and the disposal cost is high, the disposal efficiency is unstable, and the price deviation is high, which may cause the risk that the principal and interest of the product cannot be paid on time. Due to the difficulty of disposal and the lack of IP operation data, it is further difficult to evaluate IP rights, and investors will be cautious in considering that the value of IP is difficult to determine.

4. Countermeasures to improve the intellectual property financing mechanism for science and technology-based small and medium-sized enterprises

4.1 Formulate and improve uniform laws related to intellectual property rights

At present, China urgently needs to establish a unified and complete legal system for intellectual property financing, and clearly write the combination of relevant financing methods and types for the purpose of intellectual property financing into legal norms, so that China's intellectual property financing model can form a system in legal provisions. For example, when constructing a legal system for intellectual property securitization, consideration should first be given to excluding the type of intellectual property securitization and embedding it through the model of independent chapters, and at the same time considering its connection with adjacent legal disciplines, and achieving system consistency, and finally realizing the legal systematization of intellectual property securitization. In addition, the legislative work on intellectual property protection should be further improved and strengthened in China, and at the same time, the punishment for infringement should be increased, the efficiency of handling infringement litigation cases should be continuously improved, the occurrence of infringement of intellectual property rights should be reduced from the source, and a good intellectual property financing environment should be created.

4.2 Establish and improve the intellectual property evaluation system

The first is to strengthen intellectual property valuation research for different assessment purposes, and improve and supplement the corresponding evaluation criteria. In-depth study of the characteristics of intellectual property financing business, evaluation ideas and evaluation methods, and form evaluation standards for intellectual property financing business. Further clarify the definition of responsibilities of relevant intellectual property rights holders, appraisers and transaction parties, clarify the attribution of liabilities, form detailed rules for intellectual property value assessment involving litigation, promote the unification of intellectual property administrative law enforcement standards and judicial adjudication standards, and enhance the credibility of intellectual property value assessment.

The second is to further clarify the drivers of different types of IP value, improve the IP evaluation index system, and improve and optimize IP valuation methods and models. Different types of intellectual property rights have their own characteristics, and the value drivers of intellectual property rights such as patents, trademark rights, copyrights, and trade secrets are also different, and the value drivers of different types of intellectual property rights should be further studied and clarified, starting from the value drivers, and build different types of intellectual property evaluation index systems, so as to form standardized intellectual property evaluation methods and standards. At present, the valuation methods adopted in China have certain limitations in evaluating intellectual property rights, and the model selection and parameter determination of existing intellectual property value valuation methods should be further improved and optimized, and guidance on the determination of parameters for intellectual property valuation should be relatively standardized, and at the same time promote the development and application of new methods and models such as option pricing method and fuzzy pricing method, promote the application of innovative valuation models in intellectual property valuation, and build an era based on the digital economy , a new valuation method that comprehensively considers the drivers and characteristics of IP value.

4.3 Improve the risk management mechanism for intellectual property financing

The first is to build a risk compensation fund system to encourage innovation in financial products. The intangible assets formed by intellectual property rights have great uncertainty, often due to factors such as long investment cycle, high risk, uncertain value and difficulty in realizing in the industrialization process, which discourages venture capital institutions, financial institutions and investment partners, and problems such as difficulty in pledge financing and transformation of patented technological achievements occur. It is recommended that finance, banking and insurance regulators establish a "patent risk compensation fund" to innovate intellectual property financing methods, effectively control risks, reduce intellectual property financing risks, and promote the normalization, diversification and healthy development of intellectual property investment and financing activities.

The second is to adjust the assessment indicators for state-owned commercial banks. At present, domestic commercial banks play a leading role in maintaining financial order and providing financing services, so the assessment of commercial banks by regulatory authorities pays more attention to safety, and the internal guidelines for the supervision and rating of commercial banks by People's Bank of China and other regulatory authorities focus on rating their asset quality, market profitability, liquidity and market risk[8] , so that commercial banks pay special attention to the security of lending business, intellectual property because of its value volatility and uncertainty, it is difficult to win the trust of banking institutions. Therefore, the regulatory authorities should revise the rating standards for commercial banks, reduce the weight of indicators such as the non-performing loan ratio caused by intellectual property financing, tolerate the responsibilities arising from the diligent performance

of duties by relevant handling personnel and managers, and truly reduce and dispel their concerns about employment.

The third is to encourage commercial banks to establish an evaluation system for enterprises' scientific and technological innovation capabilities, and reasonably analyse enterprises' innovation and development capabilities and brand value by comprehensively evaluating the value of intellectual property rights such as enterprise patent rights, trademark exclusive rights, and copyrights. Commercial banks shall actively cooperate with relevant departments to improve the identification and evaluation mechanism for science and technology enterprises. Support commercial banks in using new technologies such as cloud computing, big data, and mobile Internet to develop new models of intellectual property financing. Commercial banks are encouraged to provide comprehensive financial services to enterprises on the basis of providing intellectual property financing services.

The fourth is to accelerate the cultivation and standardization of the patent insurance market. It is recommended that the China Banking and Insurance Regulatory Commission and other relevant departments support insurance institutions to carry out in-depth patent insurance business, focusing on promoting business operations such as patent enforcement insurance, patent infringement liability insurance, intellectual property pledge financing insurance, and intellectual property comprehensive liability insurance. At the same time, encourage and support insurance institutions to strengthen the innovation of operating models.

5. Conclusion

The sustainable development of technology-based small and medium-sized enterprises will have an important impact on China's economic development, and solving the financing pain points and difficulties of such enterprises is of great significance to the in-depth implementation of innovation-driven development strategy. With the gradual increase in domestic attention to the intellectual property financing of technology-based small and medium-sized enterprises, financial institutions and other intermediaries serving intellectual property financing are also developing. However, there are still problems such as imperfect intellectual property laws and regulations, difficulty in assessing the value of intellectual property, and low marketization of intellectual property transactions. Through continuous improvement of relevant laws and regulations, the establishment and improvement of intellectual property evaluation systems, and the improvement of intellectual property financing risk management mechanisms, etc., Make intellectual property financing move towards large-scale and standardized development, and actively promote the high-quality development of technology-based small and medium-sized enterprises with high-quality financial supply.

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