

Study on Institutional Constraints and Innovation of China's Sci-Tech Finance: A Case of Hubei Province of China

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Abstract Sci-tech Finance is an important component of financial development, and the combination of technology and finance is a win-win. Based on the theories of sci-tech finance development, this article analyzes current situation of the sci-tech financial development in Hubei province of China and the progresses that have been made in the construction of platform of Sci-tech financing, pilot project of sci-tech insurance and the government's promotion of sci-tech finance. This article also points out the relatively low level of sci-tech Finance. The fundamental reason of this situation is the lack of sound institution, that is, the lack of property rights of scientific and technological enterprises, government's market awareness, effective co-ordination mechanism, integral credit guarantee system and motivation of mechanisms of financial innovation. So institutional innovation should be the starting point to promote the development of sci-tech finance.

Keywords Sci-tech finance; Institutional constraints; Institutional innovation

1 Introduction

Sci-tech Finance studies the relationship of technology, finance development and economy growth, discusses the influence of the input, creation and conversion of science and technology on finance development and economy growth and analyzes the long-run influence of financial variable on technology and economy growth. As a component of theories of financial development, though the study of sci-tech financial development started later than theories of financial development, the combination of technology and finance began earlier than the theories of financial development. The development of America is a whole history of the combination of technology and finance, and it is "the technology innovation and progress promoted by financial market and the new concept and the enduring vitality of financial market put into by technology innovation". Schumpeter first analyzes the combination of technology and finance, he discusses the influence of bank system on technology innovation in his book "Theory of Economic Development"(1912), and he believes the sound banks could promote technology innovation by recognizing and supporting the entrepreneurs who can successfully commercialize and industrialize innovative products. In the 70s of 20th century, after McKinnon and Shaw proposed the theory of "Financial Repression" and "Financial Deepening"(1973), the theories of Sci-tech Finance had made great progress. Scholars discuss the positive relationship of financial development and technology innovation(Hannan, McDowell, 1984; Saint-Paul, 1992; Rin, 1997; Stulz, 2003; Keuschning, 2002; Casamatta, 2003), and analyze the effect on using technology innovation to reduce transaction costs and promote economic growth by testing the domestic and abroad data(King, Levine, 1993; Tadesse, 2007; Canepa, Stoneman, 2008; Benfratello, Schiantarelli, Sembenelli, 2007; Samaniego, Ilyina, 2008; Gorodnichenko, Schnitzer, 2010). In China, the study of Sci-tech financial development began later, but is developing fast. The studies mainly focus on the influence of financial structure, capital market, venture investment even the policy finance on sci-tech finance and researchers believe the improvement of financial development is the "booster" of technology development and innovation(Lv Wei, 2002; Wang Songqi, 2005; Gu Shengzu, Hong Qunlian, Zhang Xiang, 2007; Lu Jingui, Chen Zhenquan, 2009). The institutional problems of sci-tech financial development are not systematically discussed neither in domestic or abroad studies. This article mainly analyzes the constraint factors of sci-tech financial deepening based on the current situation of Sci-tech financial development in Hubei Province and points out the fundamental reason of the low level of Sci-tech Finance is the unsound institution and the way to promote sci-tech financial development is institutional innovation. The whole article is structured as follows: section 1 analyzes the current situation of Sci-tech financial development in Hubei Province from the prospective of achievement and problems; section 2 discusses the institutional dilemma faced by sci-tech financial development in Hubei province of China; section 3 points out the institutional innovation way of deepening sci-tech financial development in Hubei province of China.

2 The Current Situation of Sci-tech Financial Development in Hubei Province

As an important province with science and education resources, Hubei province has positively participated in the national science and technology development. The combination of technology and finance began from the 90s of 20th century and has made great progress.

One of the achievements of sci-tech financial development in Hubei province is the service system form of the financing platform of technology enterprises and the quantity of technology loan is growing fast. For instance, by the end of 2008, the quantity of technology loan has reached RMB879.538 million Yuan. There are technology banks established particularly for high-tech industries, technology enterprises and high-tech zone. On 29th of September in 2009, the Guanggu branch of Hankou Bank was established and it became the first technology bank that serves for the Small and Medium Technology Enterprises. This bank offers many innovative products of loan financing, such as Patent Pledge, Pledge Receivables, Equity Mortgage and Intellectual Property Rights Pledge. Apart from this, many banks have signed Strategic Cooperation Agreement with Science and Technology Department of Hubei province and other relevant authorities. At present, many banks, such as Bank of Communications, Industrial and Commercial Bank of China, Commercial Bank of Wuhan, Merchants Bank and Pudong Development Bank, have signed Cooperation Agreement of Technology Incubator Financing Mechanisms. These cooperation agreements do not only cover the whole city of Wuhan, but also reach the other cities in Hubei province of China. For instance, the Science and Technology Department of Huangshi have signed agreements with Merchants Bank about construct platform of Sci-tech Finance and the Mechanisms of Sci-tech Loan Cooperation. The achievements of construction of technology business and investment system are notable and the "Business and Investment Guide Fund has been established. Especially in 2008, the fund has collected about 100 million Yuan as guiding fund and founded four business and investment institutions by introducing funds, institutions and human resources from other provinces. Another achievement is the initial results of Pilot Technology Insurance. By the end of October of 2008, the Technology Insurance Premium Income has reached up to RMB8.58 million Yuan and the Risk Insurance Coverage, RMB2.52 billion Yuan. And there are total 58 enterprises engaged in this insurance, besides, the compensation amount is 203 thousand Yuan. The Science and Technology Department of Wuhan have arranged RMB4 million Yuan as insurance subsidy for high-tech enterprises from the R&D Funds. The third achievement is the government has become the promoter of sci-tech financial development and Innovation. On the condition of fast development of Sci-tech Finance in Hubei Province, the Donghu High-tech Zone of Wuhan, which is approved for the national high technology development zone, was approved for the National Independent Innovation Demonstration Zone after the Zhongguancun of Beijing was approved. The Donghu Zone has got the right to apply the Equity Incentive Pilot Program and the Deepening Pilot Program of Sci-tech Finance Reform and Innovation. This does not only bring the Donghu Zone new development opportunities, but also brings the whole province the chance to deepen Sci-tech Finance.

However, the sci-tech financial development is being faced with notable problems: firstly, the channel of Sci-tech Financing is very narrow. Though the System of Sci-tech Financing and Service begins to take shape, the Technology Enterprises heavily rely on the money from banks. And the quantity of loan is at a low level. As a result, the proportion of loans from financial institutions in total loans is less than 3%. Moreover, there are lack of Equity Financing and Margin. In 2009, the city of Wuhan issued Small and Medium Enterprises Small Collection of Trust which is worth of 200 million Yuan. But this progress has met many difficulties and not lived up to its anticipative issuing scale. Though the city of Wuhan has decided to increase the scale of Small and Medium Enterprises Small Collection of Trust and established multi-level structure of bond financing, the program is only under the stage of survey and investigation. Secondly, the deepening level of technology insurance is not high enough. The deepening level, which is measured by the proportion of premium income in GDP or the proportion of premium income in all kinds of insurance, is still very low even after Wuhan became the Technology Insurance Pilot City in 2007. Thirdly, the sci-tech financial development in Hubei province is unbalanced. The city of Wuhan in China is developing the fastest, but the levels of the outside areas of Wuhan are on the uneven level. The city of Huangshi is in the second place, but in other cities, such as Yichang and Jingzhou in Province of China, the Sci-tech Finance is developing relatively slow.

3 Institutional Constraints on Sci-tech Finance in Hubei

Advanced financial system and environment are the guarantees of the technology development and innovation. Meanwhile, the development of technology and innovation could boost the economy growth

including the finance industry and financial modernization in return. The two aspects are in a positive relationship. Moreover, the system could boost the deepening of the relationship. The reason for the low level of Sci-tech Finance in Hubei province lies on the unsound system of sci-tech finance development. The first aspect is the lack of Property Rights of Scientific and Technological Enterprises. The second is the lack of government's market awareness. The third is the ineffective co-ordination mechanism. The fourth is the unsound integral credit guarantee system and the fifth is the lack of motivation of mechanisms of financial innovation.

3.1 The lack of property rights of scientific and technological enterprises

The scientific and technological enterprises in Hubei province are mainly small and medium enterprises. They are faced with the similar financing difficulties like other small and medium enterprises, that is, the scientific and technological enterprises are the typical enterprises with no funds, guarantees or collaterals. But this is not the fundamental problem. The key problem is the lack of Property Rights of Scientific and Technological Enterprises. The property rights problem mainly lies on that the own rights of the technology properties are ambiguous. Such kinds of enterprises are mainly based on universities or research centers, which belong to these universities or research centers. However, as a result of bifurcation on the own rights of the technologies developed, the property rights are lack of main body. Thus, these enterprises may not be well managed and the accounting system may be unsound. As a consequence, on one hand, these enterprises could hardly get loans from banks; on the other, they can not get financed in the financial market. What's worse, the property rights market in Hubei Province is not so advanced, so the supportive effect is not notable.

3.2 The lack of government's market awareness

The lack of government's market awareness represents on that the input effect of technology is not significant. The government plays a positive role in sci-tech financial development and devotes the most funds in this field. But the kind of devoted funds is free so that it could not change these enterprises' reliance on government and low level of participation. So the government input could not bring about the Leverage Effect.

3.3 The Lack of sound co-ordination mechanism

Because of the limitation of the small and medium enterprises, they also have contradictions with financial institutions. Though a great of effort has been made, the problem has not been settled. That is, there is no co-ordination mechanism among government, enterprises and financial institutions to allocate financial resources for the purposes of making a better environment for the sci-tech finance dDevelopment. This could especially makes those graduates with great passion on carving out break out just because of the lack of start capital, or makes these enterprises get financed by relative way or geo way.

3.4 The unsound credit guarantee system

From 2007, China has issued many collection notes of Small and Medium Enterprises(SMEs), with the total collected money over 200 million Yuan. As an innovative method of direct debt financing for these enterprises, collection notes are recognized by the market, but this also represents the low level of the Credit Guarantee System. At present, apart from Sichuan Province, the city of Chongqing and Hei Longjiang province of China, Hubei province is positively preparing for the issuing of Collection Notes of Small and Medium Enterprises in order to construct the bond financing structure consisting of collection notes of Small and Medium Enterprises, district financing platform and cities and provinces financing platform. The credit guarantee system represents the trend of multi-structure developing and the method of funding has changed from the government-leading way to the market-leading way, but the problem lies on the unsound system. One of the main problems is the relatively small scale of credit guarantee institutions. There are many guarantee companies can not achieve the Registered capital requirement and the guarantee premium is at a high level, sometimes at the level of tens of thousands of Yuan, which makes the contradiction between enterprises and banks. Another problem is the lack of effective quantitative index to evaluate the credit level of small and medium enterprises. The third problem is the lack of risk diversification and compensation mechanisms. There are about 120 Credit Guarantee Institutions in Hubei Province, the proportion of compensatory damage in total credit guarantee is less than 1%, which is lower than the national criterion-5%.The fourth problem is the unbalanced practice and policies. For instance, the Hubei Province sets the cost of compensating, discharging and transferring, and the registration department should relief some cost according to the government's provisions. But in the practice, some small guarantee companies breach these provisions.

3.5 The lack of motivation of mechanisms of financial innovation

Similar with most small and medium enterprises, this kinds of enterprises in Hubei province are

faced with the long period of time to be maturity and the uncertain risk, so the development of these enterprises does not only rely on the support of funds, but also on the financial service offered by the financial system according to different stages. And this must be made by the effective financial innovative mechanism which could create appropriate products to satisfy the financing demands of these enterprises. At present, Hubei Province is lack of sound financial innovation mechanisms. Though the authorities and banks could offer financial products such as patent pledge, pledge receivables, equity mortgage and intellectual property rights pledge, these products are of narrow extension and their clients are mainly those from the Donghu zone. For those technology enterprises that are in the period of growing, the services banks could offer are still traditional ones.

4 The Institutional Innovation to Deepen Sci-tech Financial Development in Hubei Province

The sci-tech financial development should be deepened by settling the system problems, that is, to improve the environment of the property rights and the government's market awareness, establish the co-ordination mechanisms of financing and strengthen the construction of credit guarantee system and boost the impetus of Financial Innovation.

4.1 Improve the environment of the property rights

Small and medium enterprises are faced with problems about property rights and the difficulties in property rights trading. So the property rights reform is the key step to enhance the combination of the technology small and medium enterprises and finance. First of all, the main body of corporate property rights and ultimate ownership should be definite, especially for the technology enterprises based on universities and research centers. Moreover, the platform effect of property rights exchange enter should be improved in order to facility the industrialization of technology products and the development of small and medium enterprises.

4.2 Improve the government's market awareness

The enhancement of government's market awareness depends on the change of the funding channel, that is, from the government-leading pattern to market-leading pattern, in order to scale up the amount of outlay. At present, many encouragement measures have been taken to facility the support from policy and commercial banks to technology enterprises, but this is not enough. On one hand, the policy banks should be guided to offer services in R&D. On the other hand, the credit management system should be established on the condition of commercial banks' risk control, and with the help of media, the influence of commercial banks that greatly support small and medium enterprises with great potentials could be expended.

4.3 Establish the co-ordination mechanisms of financing

In China, the combination of technology and finance began earlier and is developing fast, but there is always lack of co-ordination mechanisms of financing. It is better to establish particular co-ordination institutions. These institutions are not merely responsible for the co-ordination of technology and finance, but also for building and maintaining sci-tech financial resources database. The database should be open and transparent in order to offer a strong data platform for the researchers of sci-tech finance.

4.4 Strengthen the construction of credit guarantee system

To strengthen the construction of credit guarantee system, firstly, the credit database of enterprises should be founded with the help of the sci-tech finance co-ordination Institution; secondly, the scale of guarantee institutions could be enlarged by developing commercial guarantee institutions; thirdly, establishing guarantee institutions that is composed of membership small and medium enterprises could reduce and diversify risk; fourthly, the disjoint of practice and policy could be coped with by increasing confiscated income.

4.5 Boost the impetus of financial innovation

The impetus of financial innovation comes both from the government and market which means the development of sci-tech banks. The number of sci-tech banks is too small to satisfy the demand of financial service. So from the aspect of government, it is better to enhance the support of the outlay and establish more sci-tech banks with no constraints market economy. From the aspect of market, commercial banks should transform from the traditional management pattern of pursuing margins to developing more financial product to earn more profit.

5 Conclusions

The interaction between technology and finance could not only facility the Financial development theories, but also improve the quantity and quality of the economy. Based on the current situation of Sci-tech financial development in Hubei Province, this article points out the main problems of sci-tech financial development are the low level of Institutional innovation and it is better to facility the development of technology and finance by improving the environment of the property rights, enhancing the government's market awareness, establishing the co-ordination mechanisms of financing, strengthening the construction of credit guarantee system and boosting the impetus of financial innovation. But there are some inadequate as follows: this article is lack of positive analysis between the technology and finance development and discussion of the causality of them; this article does not analyze the short-run and long-run influence on economic growth from the combination of the technology and finance from theory and positive analysis aspect. And these inadequate are the directions of the future study.

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