

# A Comparative Analysis of Financing Models for the Development of International High-Tech Zone Technology

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## Abstract

The innovation of financing mode of technological development, is of great significance to the development of China's high-tech development zone. From the perspective of the level of economic development and development regarding financing mode differentiation, this paper selects three representative high-tech development zones; namely the Silicon Valley in the United States; a software park in Bangalore, India; and the Daedeok Valley in South Korea. This paper sorts out and analyzes the materials from three aspects, namely, innovation in the environment, financing channels, and financing practices. Furthermore, this paper makes a comparative analysis of the representative significance of the development of China's high-tech development zone between the Beijing Zhongguancun, and the Shanghai Pudong (Zhangjiang) development zones. On the basis of the comparative study on technology development modes of high-tech parks in China and in foreign countries, the authors give the results of a comparative analysis and suggest countermeasures. The comparative analysis is carried out according to the expert scoring method, in order to help the innovation and development of China's high-tech development financing mode.

## Keywords

High-tech zone; Financing mode; Technology development; Comparative analysis.

## 1. Introduction

It has been more than thirty years since the establishment of China's national high-tech industrial development zone, since the early days of China's economic reform was initiated, which opened China to the world markets. By 2019, 169 high-tech zones had been approved at the state-level. China's national high-tech zone is mainly based on its superior technology and business environment, as well as intensive intellectual base. China's economic strength and her scientific and technological innovation ability in science and technology, was made possible through the absorption and digestion of the world's best technology and innovation resources. It included study and reference of capital and an advanced management method, the preferential policies and reform measures. This was done under the support of hard and soft environment where scientific and technological innovations and industrial innovations, local optimization, maximized the scientific and technological achievements into realistic productivity. These factors drove innovation in regional technology, industry, and management.

However, China's national high-tech zone has had a serious lack of support for science and technology in terms of financial backing, which has seriously hindered the technological innovation and the upgrading of the industrial park, thereby making it somewhat cumbersome for the state-level entity to play its due role. It is found that the R&D intensity of national high-tech zones is far lower than that of developed countries such western European countries, USA, Canada, Japan, Switzerland and India. As a result, the regional technological

innovation, regional leadership, regional radiation and international competitiveness of China's domestic high-tech zones are considerably insufficient. This is mainly due to the unsound financial support system for the scientific and technological research and development, achievement transformation, scientific and technological entrepreneurship, and the development of scientific and technological enterprises. China's national high-tech zone, are characterized by an unsound scientific and technological financial model, and the lack of scientific and technological financial products. The scientific and technological financial support of China's national high-tech zones, is still in the general sense of scientific and technological support, which does not match the R&D intensity, requirements, specifications, and the positioning of China's national high-tech zones. Especially, at the municipal levels of the Chinese government, a concrete manifestation for total quality management, results in a low number of financial platforms for science and technology. Moreover, the government's financial guide limits funding for science and technology. Finance, science and technology, combined with the mechanism and the achievements for an effective management system are not apparent. The transformation of scientific and technological achievements of research and development, and the market main-body to develop fully, the risk management mechanism is not soundly, the financial support transformation of scientific and technological achievements of support service system is not perfect, as there are scientific and technological problems, such as an imperfect financial system's architecture.

The above background undoubtedly highlights the importance of the research on this issue, which has become a major issue urgently needed to be studied. By studying the national experience of financing mode of high-tech development, this paper summarizes the existing experience of China, and makes a comparative analysis of the two, so as to obtain the innovation of financing mode of high-tech development.

## 2. Literature Review

### 2.1. Domestic Research

At present, there is a lot of research activity on the financial support for new companies providing high technologies. Zheng Lei et al. (2018) studied the non-linear influence of finance on science and technology innovation, but inadequate research on the science and finance support for China's national high-tech zones. Qin Zhi and Wei Xiaohua (2012) took Liuzhou national high-tech zone in Guangxi as an example, and Ji Feifei et al. (2013) took Wuxi national high-tech zone as an example to analyze the existing problems of science and technology investment and financing in national high-tech zone and their causes. Chen Xiaofang and Cheng Yu (2017) studied the influence of finance on science and technology for the development of high-tech enterprises in Fujian province. Some researchers started to study the construction of science and technology financial system, based on the development stage of science and technology enterprises (Zhao Banghong, 2011), while some scholars proposed the construction of a financial system for science and technology, in a certain province, and province based research on the actual science and technology finance of different provinces and cities (Che Zhenghong et al., 2010). The basic contents are much the same with minor differences. Tang Jiqiang (2011) systematically and deeply analyzed the theoretical basis, practice and development of "trapezoidal financing mode", especially the practice and development of trapezoidal financing mode in Chengdu high-tech zone. Sun Wei (2015) analyzed the Chengdu high-tech zone science and technology financial model, the content and essence of the "four" and as an example the development of science and technology in our country, the financial phase definition of science and technology, financial markets and rational expectations that exist in the financial market failure phenomenon of science and technology. Chen Xianglong etc. (2019) analyzed the Zhengzhou national hi-tech

industrial development zone financial development model of science and technology. Chen Fei et al. (2019) studied the Shantou model of science and technology financing-led development. Further, Han Xiao (2019) evaluated the development status of science and technology finance, in Shanxi Province.

## **2.2. Foreign Research**

Schumpeter, an Austrian economist, put forward his theory of innovation comprehensively in the theory of economic development, and affirmed the correlation between innovation activities and finance. Due to historical limitations, Schumpeter's theory does not involve the capital market, especially the venture capital market of the direct financing of small and medium-sized high-tech enterprises. Ronald & Gilson (1998), (Begrmenan and Hege, 1998), McMaughton (1998), Cooper (1999), Beaudry & Peter Swann (2001), and other scholars, based on case studies of global outstanding high-tech industrial park of science and technology, financial risk of the issuer was studied (adverse selection and moral hazard), and also the path of risk aversion, means and tools for the thorough system of theoretical research and design operation were researched. In addition, the systematic and in-depth research on financial deepening by foreign scholars, provides a theoretical basis for this paper from the perspective of finance.

## **3. Foreign Experience in Technology Development Financing Mode of High-Tech Zone**

### **3.1. Financing Mode of Silicon Valley, USA**

#### **3.1.1. Technology Innovation Environment in Silicon Valley**

The technology innovation environment in Silicon Valley is an important factor for its success in technology and finance, which mainly includes the advantages of cultural environment, knowledge environment, talent environment and service environment.

##### **(1) Cultural Environment**

The culture that characterizes Silicon Valley in the United States, is one that allows for failed innovation, promotes competition, openness, and the traditional risk-taking spirit of the "Old West," making it a haven for global knowledge and technology innovators, entrepreneurs, and venture capitalists. Most importantly, Silicon Valley's unique innovation investment reward mechanism, the pricing mechanism of innovation resources, encourages all capital to gather around knowledge and technology, and accelerates the rapid integration of corporate economy and entrepreneur economy. In addition, the Silicon Valley region has formed a stable social horizontal structure and collective learning motivation and mechanism, further strengthening the spirit of social innovation and cooperation, knowledge exchange and business venture.

##### **(2) Knowledge Environment**

Silicon Valley has state-of-the-art resources in terms of knowledge creation, and knowledge application. Silicon Valley is also home to the world's top universities and research institutions that are at the heart of global technological innovation. Colleges and universities include, but not limited to Stanford University; University of California, Berkeley; University of California, Davis; San Francisco State University, University of California; Santa Clara University; San Jose State University; West Coast of Carnegie Mellon University; San Francisco's Golden Gate University; East Bay State University, and other famous universities. Many research institutions, including the U.S. state research institutes, private research institutions, and famous multinational enterprise of science and technology research center, mainly include the NASA's AMES Research Center, Department of Energy (DOE) Lawrence Livermore National Laboratory, Department of Energy (DOE) Lawrence Berkeley National

Laboratory, the Stanford Linear Accelerator Center, Ministry of Agriculture in the western region research center, five national laboratories and Xerox PARC, intelligent auxiliary research center, as well as Google, Apple, Intel, Microsoft, and multinationals such as General Motors, Ford, R&D center.

### (3) Talent Environment

Silicon Valley of the United States enjoys the global resources of scientific and technological talents, and its superior entrepreneurial environment and culture. They have a huge new attraction to the global scientific and technological elite. The world-renowned universities in and around Silicon Valley, provide tens of thousands of outstanding scientific and technological innovation talents, and high-quality management talents, every year. At the same time, more than thirty Nobel Prize winners, and thousands of members of the National Academy of Sciences, have worked in Silicon Valley. These knowledge innovation elites, management elites, and knowledge application elites, support Silicon Valley, and have become the decisive force in the world, where science and technology originated.

### (4) Service Environment

Silicon Valley has an integrated service system and a coordinated division mechanism that integrates professional collaboration among engineers, market development, internal management, financial operations, information sifting, electronics companies, expert consultants, venture capital and infrastructure suppliers. At the same time, it has a complete professional and social network, which is conducive to information sharing, contact and trust. This constitutes the Silicon Valley's unique scientific and technological innovation, investment, industrialization, social "automatic operation" and rapid growth of the soft environment. In this case, the government has a flexible approach to management. The government basically does not interfere in the venture capital, technology entrepreneurship, and other free development.

## 3.1.2. Silicon Valley Financing Environment

### (1) Capital Channels

Silicon Valley has a good financing environment. By the end of 2013, Silicon Valley had accumulated more than 200 local startup institutions, which managed 25 percent of the nation's startup funds. Sources of venture capital include pension funds, insurance companies, banking institutions, fund institutions, universities, domestic and foreign enterprises, individuals and families. At the same time, a large number of venture capital management institutions provide fund management services, fund channel management and project channel management as well as project demonstration and promotion agencies. More importantly, thanks to America's developed financial system, technology financial instruments are also mature and diversified.

### (2) Exit Mechanism

Silicon Valley has had a smooth capital entry and exit mechanism. In terms of the exit mechanism, Silicon Valley makes full use of the financial, securitization and marketization of technology financing to achieve the exit of investment and financing through IPO, M&A, equity buyback or transfer, and company liquidation. The exit mechanism is diversified and smooth.

### (3) Platform Services

Another feature of the financing environment in Silicon Valley is a sound system of government services, park management and technology financial services. Firstly, America has a liberal legal and cultural climate, for technological innovation. Secondly, the park management in Silicon Valley is strict and efficient. The leading idea of the park management is to break boundaries, promote exchanges, and collaborative innovation. Thirdly, the United States government provides strong support, including government public procurement support, corporate loan guarantee, tax incentives, and other support measures; Fourthly the

National Association of Securities Dealers Automated Quotation Systems (NASDAQ) platform, provides significant direct financing support and convenience for small and medium sized technology enterprises and technology start-ups. Fifthly, Silicon Valley bank provides convenient banking services, venture capital, consulting, information sharing and other business services for venture capital.

### 3.1.3. Financing Practices for Technological Innovations in Silicon Valley

#### (1) Network Financial Service Model

Silicon Valley Internet financial service platform is very effective, thanks to a large number of famous Silicon Valley Internet start-ups. Search engines such as Google, Facebook and other search and social topics network companies, 3com, Cisco, Netscape, Oracle, Yahoo, Soft Armour companies and Akamai, Ariba, Commerce One, and other new generation of network services enterprises are some examples of enterprises not only lead the world's industrial technological development wave, but also provide the technology possibility for the perfect financial network services in Silicon Valley. Based on the rapid development of ICT technology, the United States has upgraded its financial system in the form of "informationization" and the emergence of "Internet banking", which became popular for a time. The upgrading of "information" has brought about the revolutionary development of the technology and finance business in Silicon Valley, such as the Internet, the network of payment system, the information of credit business and the virtualization of currency network.

At present, American network finance has constantly been innovating in Silicon Valley. The I-phone uses Apple-pay to replace credit CARDS and move into payment and settlement. Walmart, the world's largest retailer, which uses QR code to fight Apple Pay, is testing it out with Current C, an alliance of retailers. Coin, on the other hand, USES "one card instead of many". Ripple Labs has announced a partnership with earth-port, which is engaged in international settlement business. If earth-port uses Ripple system in the settlement processing of Banks, the transaction data will be recorded securely, accurately and instantaneously in the data block chain. That could upend a payment system that previously required more than two days to send money abroad and was not as secure. The convenience of online finance further improves the efficiency of Silicon Valley's technology finance.

#### (2) Venture Capital and Private Independent Funds

The biggest premise of technology innovation and industrialization in Silicon Valley is venture capital. At present, there are more than 1,000 venture capital firms and more than 2,000 investment intermediary services in Silicon Valley, among which the fusion of scientific research and venture capital of Stanford University is a classic. According to a survey by the national venture capital association (NVCA), the contribution of venture capital to product development, technology breakthrough, technology entrepreneurship, talent attraction and job creation of small and medium-sized Silicon Valley technology companies is significantly greater than that of other regions of the United States, and even greater than that of large Silicon Valley companies that do not receive venture capital.

Silicon Valley venture capital comes from a variety of sources, including wealthy companies, institutions, and wealthy families and individuals. Silicon Valley venture capital firms are capital managers, project selectors, and investment decision makers. About 80 percent of Silicon Valley's venture capital comes from private independent funds (private equity, institutional investors, private equity and mutual funds). The world's leading electronic information companies have benefited from the investment of private independent funds. Companies such as Apple, Intel, Cisco, Sun and other technology giants are some examples. Moreover, venture capital can promote enterprises to optimize their operation, improve the internal motivation of innovation, and form a good social relationship between enterprises and investors.

### (3) Decisive Role of NASDAQ

The national association of securities dealers automated quotation systems (NASDAQ) provides important financing facilities for Silicon Valley companies to go public, and solves the problems of market financing and risk diversification for the development of high-growth technology companies. The NASDAQ stock market has created favorable conditions for Silicon Valley technology based companies to go public, and it is an important source of direct financing for Silicon Valley small and medium-sized enterprises before listing on the New York stock exchange.

NASDAQ's small market system for Silicon Valley enterprises will provide a lower listing threshold, access to market capital. Silicon Valley's small enterprises will provide a fair opportunity for competition. Since its inception, NASDAQ has mainly housed an early-stage, high-risk, high-tech companies, could not be listed on the New York stock exchange. Micro transactions were introduced in the 1980s, to make it easier for small investors, and thus for start-ups, to raise money. Between 1990 and 1997, for example, NASDAQ raised \$100 billion on the market, of which \$75 billion went to American high-tech companies, most of them in Silicon Valley. \$100 billion was twice the amount of private venture capital in America at the time. At the same time, NASDAQ has developed an exit mechanism suitable for specific types of investment -- IPO. IPO entrepreneurs can regain the control of the enterprise, entrepreneurs have a great incentive.

### (4) Promotion of Silicon Valley's Banks

Silicon Valley enterprises and banks, securities companies and other financial institutions have a close cooperation. Take Silicon Valley bank as an example, where the shareholders and partners of the Silicon Valley bank are composed of more than 200 venture capital fund companies. A large number of enterprises and financial institutions have gradually formed a financial resource network through Silicon Valley bank. Silicon Valley bank has broken through the restrictions of debt and equity financing. Silicon Valley bank not only extends credit to enterprises through loans, but also conducts equity financing through agreements with enterprises.

Silicon Valley bank startup attaches great importance to the choice of investment field. The investment stage is mainly in the growth stage (after venture capital investment), and it adopts "leverage" and "equity" investment or "hybrid" investment. Silicon Valley banks even invest directly in start-ups or reinvest through "investment companies". Adopt a combination of "enterprise growth stage" and "investment mode". Silicon Valley banks use tools such as "risk isolation", "portfolio investment", "co-investment" and "professional investment" to avoid risk.

## **3.2. Financing Mode of Bangalore Software Park, India**

### **3.2.1. Financing Environment of the Software Park in Bangalore, India**

#### (1) Management System

In order to focus on the development of the Indian computer industry, and give the industrial park more autonomy and resources, the Indian government has directly raised the administrative level of the software park in Bangalore, and established the electronics ministry, which is directly under the administration of the Indian electronics ministry. The head of the park has broad powers and authority on industrial development design, so that he can consciously serve the development of Bangalore's software industry as a "friend, philosopher and guide". In order to protect software technology innovation in the park, the Indian government has introduced software protection laws such as the information technology act and the Copyright Act, to encourage and protect technology and knowledge innovation in the park. This directly protects the interests of investors who support

technology and knowledge innovation, reduces the risk of technology investment or technology investment, and improves the financing environment of the software park in Bangalore.

### (2) Infrastructure

Research and development scale, research achievement, achievement technology, technology product and product industrialization are the inevitable process of scientific research service industry. These processes require the necessary infrastructure to be implemented, and sound infrastructure can facilitate, or accelerate the evolution process. In order to meet the development of the information technology software industry in Bangalore, the Indian government and the Karnataka state government, have made considerable investment in the Bangalore software park. In the early stage, information technology mainly focused on the infrastructure construction, including the rapid improvement of the power, water, and communication facilities in the park. At the same time, according to the special requirements of the park, the high-speed data microwave communication network SoftNET, and the satellite base station were established as the network operation center. It has greatly promoted collaborative R&D, collaborative production and offshore collaborative R&D in the park. By reducing the time of research investment and product marketization, reduces research and development risks, improves the expectation of venture capital return and investment return cycle, and significantly improves the confidence of entrepreneurs and investors.

### (3) Government Support

The Indian government and the Karnataka state government's support for the Bangalore software park is mainly manifested in the aspects of taxation, licensing and government purchase. In terms of tax policy, the Indian government stipulates that the export tariff, income tax on production and operation, tax on goods and services, and other preferential tax policies of zero tax, exemption and low tax, are granted to cover the park. The government implements zero tariff, zero circulation tax, and zero service tax, on software export. The government also implements an exemption of double taxation on import and export software, allowing it to retain 50% of export earnings; The government imposes a 5 per cent tariff on capital goods imported by any sector. The government has also eased restrictions on the import of computers and drastically reduced tariffs. All software products are exported to the enterprise, exempt from income tax; All forms of software export revenue (including part of information technology driven service export revenue), exemption from income tax, tax exemption period for five years, the annual exemption rate of 20% decline; Venture fund enterprises are exempt from income tax on any investment, including interest income.

In terms of import and export support policies, enterprises in the software park are exempted from goods tax when purchasing goods from the domestic bonded areas. Since 1999, software service enterprises are exempted from labor tax. Starting on March 2nd 2000, the tax on computers and computer-related peripheral industries was only 0.25%, the lowest rate in India's history. Exempt the hardware industry from 4% of the annual renewal of labor contract tax; The purchase of computers and software by individual citizens is partially exempted from personal income tax.

In terms of licensing, according to the policy promulgated in 1999, no license is required for the import of all kinds of computers; Starting in 2000, licenses were no longer required for second-hand capital goods imported for less than 10 years at the disposal price; From 1997 to 2002, the company granted special import license to software enterprises with ISO9000 quality qualification certification and above CMM2 level for offshore product development and online consulting services. In 2000, the previous qualification examination of relevant enterprises was changed from one year to four years.

In terms of government procurement, the central and state governments in India have forced the government to purchase domestic information technology products to support the growth of the domestic software industry.

### **3.2.2. Technology Innovation Financing Practice in Bangalore Software Park, India**

#### **(1) Government Input**

The central and state governments provide 85% of India's R&D funding. Governments at all levels spent 200 billion rubles on research and development during the eighth five-year plan period, 1,000 times more than during the first five-year plan period. The proportion of R&D expenditure in GDP was 0.05 % in the past 50 years, and maintained a steady growth after 1996. To raise enough science and technology research and development spending, the government adopted the policy of the following measures: increase the national fiscal expenditure of scientific research, technology development and application of funds, the collection research and development tax ordinance was introduced, and encourage scientific research institution and enterprise innovation and development, promote the commercialization and industrialization of scientific research achievements.

#### **(2) Bank Loans**

Commercial banks such as the industrial development bank of India offer preferential loans to software companies, and commercial bank branches set up a special information technology finance department to serve software companies. In addition, commercial banks often participate in the investment of technology enterprises in the form of equity capital to provide value-added services for technology enterprises.

#### **(3) Convenience of Listing**

The government has created an easy environment for software companies to access domestic and foreign securities markets for financing. It allows it firms to raise money by listing publicly within a year of being registered. The Bangalore Stock Exchange (BSE) was built on the Bangalore campus to facilitate direct financing and local listing of companies in the Bangalore software technology park.

#### **(4) Venture Capital**

In late 1985, when the Indian government enacted its long-term fiscal policy (LTFP), it proposed a pilot venture capital program to develop the country's new technology industry to address the poverty that has long plagued India. In the regulations on research and development tax promulgated in 1986, 40% of the research and development tax was used to subsidize the venture fund; Tax exemption for all investment income of venture capital; Venture funds of different levels and nature have been established, including national venture funds, federal venture funds and private venture funds; venture capital was set up with the government.

Ever since India's economic reforms began in 1991, the Indian government has vigorously supported domestic venture capital. In 1992, the SFC was authorized to centralize and unify the management of venture capital. Especially since 2003, venture capital has made great progress.

India's biggest venture-capital firms (such as TDICI, Draper, Walden-Nikko, Jump-Startup) are based in Bangalore. Two other prominent personal-venture firms, Chrysalis (based in Mumbai) and Infinity (based in New Delhi), have offices in Bangalore. Bangalore has extensive ties to the venture capital firms clustered on Sand Hill Road in Silicon Valley. Key features of venture capital in the Bangalore software technology park: First, venture capital is mainly initiated by financial institutions, including financial development institutions controlled by the central federal government, financial development institutions controlled by state governments, public commercial banks, foreign banks and private banks. Second, venture capital mainly invests in the growth stage, during the later stages and has listed venture enterprises.



### 3.3. Financing Mode of Daedeok Valley in South Korea

#### 3.3.1. Technological Innovation Environment in South Korea

After 30 years of development, Daedeok Valley in South Korea has become a world-renowned high-tech development zone, and the cradle of the world's advanced technology. It is the source of technology and the accelerator of economic growth in South Korea. Its technological innovation environment, financing environment, and mode, can provide reference for nationwide high-tech zone.

##### (1) Knowledge Environment

South Korea's Daedeok Valley is home to many famous South Korean and international universities, such as Daedeok University (DDU), Chungnam National University (CNU) and Korea's Advanced Institute of Science and Technology (KAIST). These universities provide Daedeok Valley with a solid source of talent preparation and technological innovation. Many of Daedeok's researchers, technical experts, productions, and management positions, come from universities in the region. In addition to universities, the Daedeok Valley is home to a large number of research institutes. In 2013, the park had 36 R&D enterprises and 100 high-tech companies. In addition, it is estimated that 20 foreign research institutions will be in the region by 2015.

The favorable entrepreneurial environment, employment opportunities, and working environment in Daedeok Valley, attract a large number of graduates with doctor's degree, master's degree and bachelor's degree to work in the park. The region is home to an active and talented pool of global intelligence and communications, bioengineering, atomic energy, mechanical, chemical, aerospace and other cutting-edge technologies. According to the statistics in 2013, the total number of researchers and technical experts in Daedeok Valley reached 24,434, among which more than 7,000 have doctor's degrees and 7,500 have master's degrees, each accounting for nearly 30%. The proportion of highly educated researchers and managers in the region is also very high.

The Daedeok special research and development area has sufficient scientific research funds, and its scientific research investment accounts for about 15% of the national scientific research investment. In 2012, South Korea's R&D investment in the Daedeok development zone was 6.65 trillion won, a threefold increase from 2005. There were 46,661 patents registered in China and 10,246 patents registered overseas, both of which doubled from 2005. Technology transfer 906, the corresponding transfer fee of about 100 billion won.

##### (2) Operation Mechanism

For Daedeok, the role of the central government is particularly important. In the development of the Daedeok industrial park, the central government constantly modifies the development policies and plans of the park according to the economic development environment and changes of the situation, so as to make the development of the park consistent with the development of the national innovation system. At the same time, the government led the establishment of a large number of intermediary organizations, such as the high-tech venture enterprise center, Daedeok valley venture enterprise association, Daejeon software support center and Daejeon SMEs support center, established in the 1990s. These institutions provide a platform for the commercial application of scientific research and innovation activities, and also scientific and technological achievements in the park, and make significant contributions to the development of Daedeok R&D zone.

South Korea and Germany have introduced policies to encourage research universities and institutions to participate in major national and corporate projects and share experimental and information platforms. At the same time, centers for technology transformation, regional research and technological innovation have been set up, and specialized bases for accelerating

the transformation of scientific and technological innovation achievements have been built in Daedeok special zone of South Korea.

### (3) Scientific Planning

After more than 30 years of development, the park has become increasingly mature in policy and planning. The government has led the technological development, industry-university-research and economic cooperation in the park (special zone), and formulated a series of policies and plans, including the development path, comprehensive planning, control planning, distributed planning and special planning, to ensure the smooth development of the park. It also upgraded from RIS to NIS.

The spatial function of the German research and development special zone is divided into reasonable and complete zones, including the Daedeok science city, which focuses on scientific research activities, the Daedeok science and technology valley. It was established in the later period and mainly undertakes the commercial application of scientific research results, and the incubation function of high-tech enterprises, and the Daedeok industrial park with production as the main function. The local government of Daedeok began to participate in the development and construction of Daedeok science city. Later, with the integration of the third and fourth industrial zones into the Dada R&D zone, the main production bases of Dada concentrated in the Dada industrial zone, promoting the closer industrial ties between the Dada R&D zone and Dada city.

### 3.3.2. Financing Environment of Daedeok Science and Technology Park in South Korea

#### (1) Legislative Support

Since the establishment of the Daedeok science city in South Korea, the government has introduced a series of laws to guarantee investment, research and development and industrialization of the park. From 1986 to 2005, the Korean government successively promulgated the administrative law of the Daedeok science city (1993), the management law of the Daedeok research center (1994), and the Daedeok venture enterprise special law (1997). The law on the promotion of foreign investment (1998), the law on the management of Daedeok science city (1999), the law on the promotion of technology transfer (2000) and the law on Daedeok research and development special zones (2004) were amended. It can be seen that the South Korean government attaches great importance to the Daedeok R&D special economic zone by raising the management of Daedeok R&D to a legal level. It has effectively improved the attractiveness of investment in this region, and reduced the risk of investors, and met the venture capital and financial needs of Daedeok Valley.

#### (2) Effective Management System

The park is directly under the central government and directly administered by the ministry of knowledge economy (formerly the ministry of science and technology). A national minister-level official serves as the chairman and CEO of the management body of the park, and sets up the management office of Daedeok science city (TAO). The main purpose is to mobilize the national science and technology innovation resources, to realize the development of Daedeok Valley into the world's top science and technology innovation cluster.

At the same time, in order to ensure the quality of moving units, also set up a special "moving units review committee" as an advisory body of the ministry of science and technology, moving units qualification. In 2005, with the establishment of Daedeok R&D zone, the management organization of the zone was reorganized, and the administrative office of Daedeok R&D zone (DMO) was established. The management organization consists of three departments: technology commercialization center, management support center and welfare center.

### (3) Preferential Policy Support

The law on promotion of foreign investment and the regulations on reduction and exemption of municipal tax formulated by the Korean government provide substantial reduction and exemption of national tax for domestic and foreign enterprises settled in the Daedeok Valley, and 50%-100% reduction and exemption of corporate income tax, individual income tax, property tax, registration tax and purchase tax for 3-15 years.

At the same time, Daedeok valley enterprises can enjoy preferential land purchase, site selection, land rent. According to the provisions of the law on promotion of foreign investment and the regulations on reduction and exemption of municipal tax, a certain proportion of reduction and exemption or cash subsidy shall be given to qualified foreign direct investors in land purchase, site selection and land rent.

### **3.3.3. Financing Practice of South Korea Daedeok Science and Technology Park**

#### (1) Venture Capital Promotes Entrepreneurship Incubation

Many science and technology incubators have been established in Daejeon, including 19 incubators including KAIST, Daejeon SMEs support center, Chungnam National University (CNU) and Daejeon science and technology park. These institutions have many incubators. Among them, there are 88 enterprises under KAIST, 63 enterprises in Daejeon science park, 33 enterprises in Chungnam National University and 31 incubators in Daejeon SMEs support center. These incubators can get venture funds from the park management or incubators. On behalf of the government, the administrative authority of the park establishes a technology and financial support institution for incubating start-ups and provides venture capital funds. At the same time, foreign enterprises are allowed to conduct hostile mergers and acquisitions to incubators to ensure the competitive growth of high-tech enterprises.

#### (2) Government Supports and Guides Venture Capital Investment

The government has introduced a number of financial promotion policies, with a focus on revitalizing venture capital. One of the channels for venture capital investment in Daedeok Valley is government aid loan, which guides private investment and foreign venture investment. At the same time, the South Korean government has set up a venture fund to support research institutions and enterprise R&D centers in the Daedeok Valley. The government has also set up various guidance funds and support funds, including the technology revitalization fund, the industrial foundation fund and the technology development fund, to support the technology development activities of specific sectors.

#### (3) KOSDAQ Market Support

The Korea Association of Securities Dealers Automatic Quotation System (KOSDAQ) was set up in 1996 to create a direct financing channel to support the high-tech industry. KOSDAQ greatly facilitates the financing of knowledge-intensive, high-value-added and creative technology enterprises and small and medium-sized enterprises, as well as provides new investment tools and channels for investors seeking high-risk, high-expected returns.

According to 2008 statistics from the world federation of exchanges, the Korean stock exchange market is second only to NASDAQ in terms of volume and turnover. Through KOSDAQ, Daedeok's high-tech and risky enterprises have been listed with rapid growth. It has greatly supported the development of Daedeok high-tech innovative enterprises.

## 4. China's Experience in the Financing Model of Technology Development in China's High-Tech Zones

### 4.1. Zhongguancun Technology and Finance Model

#### 4.1.1. Zhongguancun Technology Financing Innovation Policy

(1) Construction of Zhongguancun National Innovation Center for Science, Technology and Finance

In August 2012, 9 ministries and commissions including the national development and reform commission, in conjunction with the Beijing municipal government, issued the opinions on the construction of a national science and technology and finance innovation center in Zhongguancun national independent innovation demonstration zone. The gathering of technology financial institutions in Zhongguancun is further strengthened.

One is to build a "credit area". Enterprises in the park are increasingly aware of credit. Zhongguancun enterprise credit promotion association has 3,810 members, and more than 9,000 enterprises have used more than 14,000 copies of various credit products. Zhongguancun credit enterprises (the most influential and most potential enterprises) reached 412, credit star enterprises 632. A total of four issues of small and micro enterprises issued collective credit loans of RMB102.8 million. Second, the enterprise restructuring and listing group to accelerate the growth, "Zhongguancun plate" benefits further enhanced. A total of 251 enterprises have participated in the pilot project of Zhongguancun agent, among which 186 have been listed or registered. In 2012, 79 new enterprises were listed or registered, equivalent to the sum of the previous four years. In September 2012, China's SMEs share transfer system Co., Ltd. was incorporated in Beijing. In 2012, there were 21 new listed companies, bringing the total number of listed companies to 224, and the amount of IPO financing exceeded RMB190 billion. Among them, gem listed companies reached 62, accounting for one seventh of the country, forming the "Zhongguancun board". Third, Zhongguancun science and technology credit innovation continues to deepen, enterprise financing problems have been alleviated. At present, more than 20 banking institutions have set up credit in Zhongguancun, granting credit of nearly RMB 100 billion to enterprises. We organized more than 200 SMEs to issue direct financing products. At the same time, these banking institutions through credit insurance, trade financing, the release of intellectual property mortgage loans, equity mortgage loans for listed enterprises financing only RMB 50 billion. Beijing Zhongguancun high-tech zone has studied and issued several financial support measures for key gazelle cultivation enterprises, selected 896 key gazelle cultivation enterprises, and guided nearly 30 commercial banks to launch special financial service programs.

(2) Pilot Construction of a Multi-Channel Technology and Financial System

Implementation of Equity Incentive Pilot

The ministry of finance and the ministry of science and technology issued the implementation measures for equity and dividend incentive of enterprises in Zhongguancun national independent innovation demonstration zone (Caiqi [2010] No. 8), and the state-owned assets supervision and administration commission of the state council issued the notice on carrying out the pilot work of incentive of bonus distribution in some central enterprises (state-owned assets development reform [2010] No. 148). At present, 350 units have participated in the pilot program, of which 146 are centrally owned units and 204 are city-owned units.

(3) Promote the Pilot Reform of Science and Technology Financial Policies

With the support of the people's bank of China, the China banking regulatory commission and the China securities regulatory commission, the total number of enterprises that have been listed or registered on behalf of Zhongguancun in the trial of quotation transfer has reached

more than 100, and the number has increased rapidly in 2015. More than 10 commercial banks have set up science and technology financial credit franchise institutions in Zhongguancun to carry out credit loans and intellectual property pledge loans. The total number of listed companies reached 254, including 156 in China and 98 overseas. The total market value of Zhongguancun listed companies reached RMB 3080.4 billion, initially forming the "Zhongguancun plate".

#### **4.1.2. Zhongguancun Financing System**

In January 2006, the state council issued the outline of the national program for medium - and long-term scientific and technological development (2006-2020) and the spirit of supporting policies, which defined China's development strategy of building an innovation-oriented country and the development path of independent innovation. As a demonstration area of national independent innovation, Zhongguancun has initially established a science and technology financial innovation system with "one foundation, six mechanisms and ten channels"

#### **4.1.3. Government Support and Financing Structure**

##### **(1) Government Financing Support**

Zhongguancun administrative committee consists of science and technology, finance, it business includes management of Zhongguancun national independent innovation demonstration zone listed enterprise restructuring and mergers and acquisitions support funds, venture investment subsidy funds, risk enterprise guarantee financing support for capital, credit insurance and trade finance support, small and mid-sized enterprise credit support for capital and equity pledge loan support. These funds are mainly government support funds. To support the Zhongguancun national innovation demonstration zone for the development of integrated circuit industry a number of financial measures, for example, "to comply with the Zhongguancun national innovation demonstration zone angel investors and venture capital funding management method" (Zhongkeyuan issued [2014] No. 41) of venture capital institutions, according to the integrated circuit enterprises to set up five years 10% of the actual investment (investment in form of currency) to give subsidies to support. The amount of subsidy for a single venture investment institution shall not exceed RMB 1 million (inclusive), and the accumulative amount of subsidy for a single venture investment institution applying for investment in the same enterprise shall not exceed RMB 1 million(inclusive). The annual subsidy for a single venture capital institution shall not exceed RMB 2 million(inclusive) ".

##### **(2) Financing Structure**

Zhongguancun main financing channels include bank loans, bond financing and equity financing (IPO). From the perspective of the amount of financing channels in Zhongguancun demonstration park from 2009 to 2012, the accumulated balance of bank financing increased rapidly, especially the amount of bank financing in the park from 2010 to 2012. It is estimated that the total amount of bank loans of high-tech enterprises accounts for more than 75% of the total amount of financing. On average, a high-tech enterprise borrows about RMB 7 million from the bank. In short, bank loans and equity financing as the main financing channels

In terms of IPO financing, the amount of new IPO financing in Zhongguancun in 2011 has exceeded that of Silicon Valley. In terms of the growth of IPO financing from 2009 to 2012, the average annual average is RMB 30 billion. The amount of bond financing reached a breakthrough in 2011-2012, and the year-on-year increase in 2012 was 94%, reaching RMB 40.7 billion. The total number of listed financing features is small, and the number from 2009 to 2012 is very fast, with an average annual growth rate of 95%.

## 4.2. Shanghai Pudong New District (Zhang Jiang High Tech Park) Technology and Finance Model

The Pudong new district in Shanghai is the first national comprehensive reform pilot zone. At present, Pudong new district has remarkable scale and innovation in high-tech industry, biomedicine, cultural creativity and financial information industry. Among them, Zhang Jiang national high-tech park has been one of the most excellent high-tech industrial development zones in China. The science and technology finance of Pudong new district or its subordinate Zhang Jiang high-tech park plays an obvious leading role in the whole country and has important reference value for this research. In view of this, this part will analyze the technology and financial environment and mode of Shanghai Pudong new district (including Zhang Jiang high-tech park).

### 4.2.1. Financing Environment of Shanghai Pudong New Area (Zhang Jiang High-tech Park)

#### (1) Comprehensive Situation

At the national level, Shanghai Pudong will be built into a global financial center, so the development of the financial sector is particularly important. The main contents of development include the construction of financial market system, the exploration of financial reform and the creation of a sound financial development environment. The Pudong district of Shanghai has a lot of financial innovation, including the national inter-bank lending market transfer system, stake in custody center, consumer finance companies, the introduction of 64 single ship single SPV for financial leasing companies, in order to obtain 24 companies to develop qualified domestic or foreign limited partners (QFLP pilot), the new center for international trade settlement pilot, pilot futures bonded delivery, etc.

Zhang Jiang high-tech Park is a state-level key high-tech development zone, with information technology, biomedicine, cultural creativity, low-carbon environmental protection as the key leading industries. Zhang Jiang Park gathers 20 banking financial institutions and 34 venture capital institutions. A total of 28 listed enterprises were supported, 25 listed enterprises on the new third board and 19 listed enterprises in the stock exchange center. The park has successively launched incubation loans, SEE loans, mutual loans, innovative fund loans, "Zhang Jiang SMEs collection trust and financial management" products, Zhang Jiang SMEs collection bills, science and technology one-card, etc., in an effort to solve the financing difficulties of SMEs.

#### (2) Technological Innovation Promotes Industrial Upgrading

Shanghai Pudong new district is constantly transforming its R&D strength into industrial strength. Through scientific research achievements, it has continuously broken through foreign technology monopoly and formed a group of high-tech enterprises that are "oriented to high-end development and enjoy patent returns", such as bio-pharmaceutical enterprises such as CP Guojian Pharm, Wuxi AppTec and Desano. The achievements of scientific and technological research have promoted the emergence of a number of promising high-tech enterprises in the fields of integrated circuits, micro-semiconductors, bio-medicines and software information in Pudong new district. For example, Shanda online has become one of the 100 fastest growing enterprises in the world published by fortune 2009, ranking the seventh, much higher than Amazon (52nd) and Google (68th). Pudong new district of science and technology research and development to promote a frontier and its overlapping and borderline new formats, and appeared a batch of new formats, including e-commerce, digital culture, such as information technology with the new industry, these industry highlight the interaction of "the human brain and computer" as the main characteristics of the industry development of enterprise development, geographical constraints, small policy constraints, occupy less space, and remarkable economic and social benefits.

### (3) Innovative Talent Support

Pudong is striving to attract world-class science and technology leaders! Innovative talents and entrepreneurial talents of all kinds, quickly build a talent highland. According to incomplete statistics, over the past 20 years since Pudong was developed, the number of scientific and technological personnel with college degrees or above has reached 300,000, with a net increase of 15,000 per year. More than 8,000 overseas students have returned to Pudong, and more than 700 overseas enterprises have been founded. Most of them are involved in finance, venture capital, chips, software, biomedicine and other high-tech fields, and have become a new force for Pudong's economic growth. The Zhanjiang high-tech park alone has attracted nearly 5,000 students. In 2011, there were more than 20 academicians of the Chinese academy of sciences and Chinese academy of sciences, more than 2,000 doctors, more than 6,000 masters, and more than 43,000 innovative and entrepreneurial talents.

### (4) Service System Innovation

After 2004, the Pudong new district gradually became equipped with basic scientific and technological innovation institutions. These early research institutions include Shanghai maritime university, Shanghai University of Traditional Chinese Medicine, China Europe international business school, Shanghai second university of technology, Shanghai institute of finance and other higher education institutions. By 2004, Pudong new district has introduced the national human genome research center, Chinese Academy of Sciences Shanghai Institute of Materia Medica, Shanghai supercomputing center, China national engineering research and development center, a large number of major research and development institutions, and Shanghai Jiaotong University, Fudan university, Tongji university, Beijing university, Tsinghua university and other important innovation resources of colleges and universities. Pudong new district has gradually become a gathering place for R&D headquarters and R&D centers of multinational companies, as well as a global R&D center of more than 100 multinational companies among the world's top 500 companies such as general electric and a R&D center of large domestic enterprises.

Pudong new district attaches great importance to industry-university-research cooperation, and has set up the "Pudong international industry-university-research resource allocation center" to promote the sharing of industry-university-research resources and information, coordinate scientific and technological cooperation and exchanges, and realize the effective connection between scientific and technological innovation achievements and enterprises and capital, so as to solve the major common and fundamental technical problems. Through technology trading, foreign direct investment, enterprise R&D investment, service system to strengthen innovation, investment in human resources training, innovation of public service platform, making full use of government investment in science and technology and the advantages of encouraging policies, to improve the ability of science and technology innovation in Pudong new district.

#### **4.2.2. Technological Innovation and Financial Support**

##### (1) Venture Capital Guidance Fund

Pudong new district has set up a venture capital guidance fund (RMB 1 billion in 2006 and 2 billion in 2008). In 2009, more than RMB 30 billion of venture capital has been accumulated through the venture capital guidance fund, of which RMB 5.1 billion has been invested in Pudong science and technology enterprises. In 2007, the pilot program of venture capital investment guide fund policy was promoted from Shanghai to the national level, and received higher level policy support. In 2010, Pudong venture capital fund was included in the key cooperation unit of the ministry of science and technology to jointly set up venture capital fund.

## (2) Debt Financing Channels

In 2006, Pudong new district launched a trial of financing by pledging intellectual property rights, and by 2010 118 technology enterprises had obtained "first loans". From 2008 to 2010, science and technology service companies, small loan companies, credit guarantee platforms for SMEs, and "bank-enterprise-government cooperation" platforms were established in Pudong new district to carry out credit financing business for science and technology enterprises. Meanwhile, Pudong new district expands credit financing channels for science and technology enterprises by cooperating with national and regional policy banks, guarantee institutions, and insurance institutions. In 2010, based on the "National intellectual property pledge financing pilot program", Pudong new district coordinated RMB 300 million to guide commercial banks to conduct intellectual property pledge financing for science and technology enterprises through risk subsidies, loan awards, business subsidies and discount subsidies.

## (3) Listing Financing of Technology Enterprises

The Pudong new district of Shanghai issued the detailed rules for subsidizing the share reform of small and medium-sized scientific and technological enterprises, encouraging the share reform of enterprises, and promoting the listing of enterprises through the establishment of the Shanghai securities regulatory commission, securities companies, professional intermediaries and other professional institutions. At present, more than 100 enterprises in Pudong new district have been listed or entered the listing channel through GME, "new third board" and overseas listing channels. At the same time, Pudong new district promulgated the implementation measures of Zhangjiang high-tech park to support the financing of science and technology enterprises (August 2010), giving one-time subsidies of RMB 300,000 to 500,000 for enterprises to participate in the new third board or to be listed on the new third board.

### 4.2.3. Policy-Based Financial Support for Scientific and Technological Innovation

Many policies in Pudong new district of Shanghai have promoted and supported the rapid development of high-tech enterprises and formed a supporting system of policy funds for science and technology financing in Pudong new district. On the whole, there are three types of support funds for science and technology enterprises, namely angel fund, entrepreneurship guide fund and risk compensation fund. Venture guidance fund and risk compensation fund include many models. Their overall purpose is to provide direct and indirect financial help for technology entrepreneurship, or directly provide funds, or guide technology financing or gather technology financing forces, and provide financing facilities for small and medium-sized enterprises in science and technology.

## 5. The Finding and Conclusion

Enlightenment of financing mode of foreign high-tech development

Based on the analysis of sci-tech finance in sci-tech industrial parks at home and abroad, we can divide the models or channels of sci-tech finance in the parks into the following categories, including indirect financing, direct financing, government support, venture capital and private equity, intellectual property pledge, SMEs association or financing platform. There are differences in the application of these financing modes between domestic and foreign countries, as well as between high-tech parks in different countries.

### 5.1. Technology Financing Comparison Method for Each Park

According to the above practices of science and technology financing in the park, the research group designed the evaluation table of science and technology financing in the park. It can be divided into two ways: intra-park comparison and cross-park comparison. By sorting out the



situation of science and technology finance in each park, and asking 10 experts for "scoring method" to score and evaluate the financing mode of each park.

The scoring rules for comparison within the park are as follows: First, each park scores independently; Second, the score takes the contribution proportion of financing model as the standard and also considers the efficiency of the corresponding model; Third, the application score of financing mode in each park, the highest score is 10; Fourth, through the expert scoring method, and then calculate the simple average. The scoring rules for cross-campus comparison are as follows: First, the evaluation standards of each participating park are unified, with the highest score of 10 for single financing mode; Second, the evaluation is based on the efficiency and contribution of each financing mode in the park, and the long-term effect of mode selection is considered. Second, through the expert scoring method, and then calculate the simple average.

## 5.2. Comparison of Technology Financing Score within the Park.

By the expert scoring method, we obtained the following scale. As can be seen from table 3.3, Silicon Valley has great advantages in market direct financing, venture capital and private equity. Secondly, it has high efficiency in enterprise associations and financing platforms, while indirect financing and intellectual property pledge of Banks are relatively low. This is because the USA financial market is mature, the capital market is large and the relevant laws are perfect. The venture capital resources are abundant, the venture capital information channel is perfect, the investment and the exit mechanism is sound and the channel is unimpeded. The US government and the California government mainly allocate industrial financial resources through market means, so the government support is weak.

**Table 1.** Comparison of Science and Technology Financing Scores in the Park

| Park name           | Indirect financing | Direct financing | Government supported | Venture capital and private | Association/Financing platform | Intellectual property pledge |
|---------------------|--------------------|------------------|----------------------|-----------------------------|--------------------------------|------------------------------|
| Silicon valley      | 8.50               | 10.0             | 6.50                 | 10.0                        | 8.00                           | 7.50                         |
| Bangalore           | 9.00               | 9.00             | 10.0                 | 8.00                        | 7.00                           | 5.50                         |
| Daedeok             | 9.00               | 9.50             | 10.0                 | 9.00                        | 8.50                           | 7.00                         |
| Zhongguancun        | 10.00              | 9.50             | 9.0                  | 7.50                        | 10.0                           | 3.50                         |
| Pudong new district | 10.00              | 8.50             | 10.0                 | 6.50                        | 10.0                           | 3.50                         |

Source: Calculated by Expert Scoring.

For Bangalore, India's level of economic development, market maturity and market capital is nowhere. The Indian government attaches great importance to the development of Bangalore, so the government guidance fund plays an important role; Under the government's intervention, bank loans have made a great contribution to the park's science and finance. The Indian ministry of information allows information technology companies to raise funds by

listing on the Bangalore stock exchange (BSE) within one year after registration, which makes it easy for companies to raise funds directly.

The government of the republic of Korea set up the technology credit guarantee fund, the small and medium-sized enterprises industrial league and the venture capital company and other institutions to provide financial support to the technology enterprises by means of the government industry-oriented venture capital fund and venture capital subsidy. In specific areas of technology development and industrialization, government-managed funds such as the fund for science and technology revitalization, the fund for industrial foundation, the fund for industrial technology development, and the fund for small and medium-sized enterprise entrepreneurship play a major supporting role. In addition, in terms of direct financing of technology enterprises, KOSDAQ provides the most important direct financing channel in the growth stage of Daedeok technology enterprises. At the same time, the South Korean government led the organization of more than 100 billion won enterprise venture capital, also played an important role. Comparatively speaking, bank financing efficiency is less than direct financing and government support, while platform financing is weaker than the former. Zhongguancun and Shanghai Pudong new district (Zhang Jiang high-tech Park), as the best developed science and technology economic zones in China, have the same financing capacity as Silicon Valley, Bangalore and dada. From the perspective of financing practice, the main sources of financing for Zhongguancun and Pudong new district (Zhang Jiang high-tech Park) are Banks, followed by debt financing, the third is the park's IPO equity financing through the "new third board", and the fourth is the policy-based entrepreneurship guidance fund set up by the government. Although Zhongguancun and Shanghai Pudong new district venture capital investment, but the information asymmetry and transaction costs are too high, the current proportion of venture capital investment is not high, the results are not significant. In addition, the government has built many platforms, but the scale of financing through the platform is limited due to the low qualification of enterprises and the lack of funds.

### **5.3. Comparison of Science and Technology Financing Scores across the Park.**

Through the horizontal comparison of the parks, it is found that the direct financing and venture capital of the technology finance in Silicon Valley are very developed, which has become the main financial support for the scientific research and development of the park and the development of high-tech industry. The new bank-based indirect financing and government-supported venture capital guidance funds in Bangalore, Daedeok, Zhongguancun and Pudong are playing an important role. But whether Bangalore, greatness, Zhongguancun, and Pudong new district has a common new financing means to promote scientific and technological enterprise, namely, to establish the support technology of small and medium-sized enterprises of direct financing platform, including China "share transfer system" (old and new 3 edition), Bangalore, India, the stock exchange (BSE), Korea association of securities dealers automated quotation system (KOSDAQ). These financing platforms play a role in promoting the growth of science and technology enterprises in the park. However, the operational efficiency, capital capacity, stability and long-term performance of these platforms are far from that of the national association of securities dealers automated quotation systems (NASDAQ) in Silicon Valley.

In addition, in terms of venture capital, private equity and pledge of intellectual property, Silicon Valley works best, followed by Bangalore and Daedeok. China's Zhongguancun and Shanghai's Pudong new district are relatively backward, due to their operating experience, quantity and quality of park technology, and market awareness. In terms of government support, whether in high-tech industrial parks in India, South Korea, or China, government support is particularly important and has the most direct effect. This is determined by the economic level, technological level, social capital status, financial market mechanism and

science and technology support policies of these countries, and is mainly determined by the basic conditions such as park culture and financing environment.

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