

The Experience of Rule of Law in the Innovation and Development of Science and Technology in the United States and Its Enlightenment to the Guangdong-Hong Kong-Macao Greater Bay Area

Zhengmin Xu¹, Zehua Feng²

¹Master Degree Candidate of Law School, Guangdong University of Foreign Studies, Guangzhou, 510006, China

²Doctoral Candidate in University of Chinese Academy of Social Sciences (Graduate School), Beijing, 102488, China

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Abstract: Supported by the perfect rule of law in science and technology, with the joint support of government, social participation and financial personnel, American scientific and technological innovation has gradually stabilized in the first place in the world. After learning from the experience of the United States, Guangdong, Hong Kong and Macao Great Bay Area can mainly promote the development of scientific and technological innovation from two aspects. On the one hand, China should build a government support system. Guangdong, Hong Kong and Macao Great Bay Area can start with perfecting the system of scientific and technological innovation and breaking administrative barriers in the Bay Area, focusing on the core issues of innovation integration and transformation of achievements, and the resolution of scientific and technological disputes. On the other hand, China should build a market-oriented mechanism. Guangdong, Hong Kong and Macao Great Bay Area can play a leading role in the market, and promote the development of science and technology in the Bay Area by building a community of industry, education and research, improving the administrative reward system, and promoting the wide participation of all sectors of society, so as to jointly build an international scientific and technological innovation center.

1. Introduction

Guangdong, Hong Kong and Macao Great Bay Area (GHMGBA) is a strategic deployment area for national key scientific and technological innovation. It has a high-quality domestic high-tech industrial chain, high-tech enterprises with a high degree of concentration and a good comprehensive innovation ecological system. It is the most possible frontier and reform pilot area for the development of scientific and technological innovation. Under the decision-making and deployment of the Chinese government, the development of scientific and technological innovation in the GHMGBA will become the pilot of China's economic development in the future. However, under the background of "one country, two systems and three jurisdictions" in the GHMGBA, the conflicts between the policies of scientific and technological innovation and the relevant laws and regulations in the three places result in the weak legal basis of scientific and technological innovation, unscientific government intervention and regulation, inadequate integration of scientific and technological resources in the three places, and the disconnection between production, education and research and market transformation and reality, which lead to the bottleneck of the integration of scientific and technological innovation and development in GHMGBA. Compared with the GHMGBA, the technological innovation of the Bay Area of the United States has more mature and rich experience. The United States is one of the early countries to establish a national innovation system. As the world's first economy, the United States has always maintained a leading position in technological innovation and research, while forming an efficient and developed innovation system. New York Bay Area and San Francisco Bay Area in the United States are the world's leading Bay areas. The innovative development of science and technology in the Bay Area

has brought about further development and upgrading of the American economy. Therefore, GHMGBA can learn from the experience of scientific and technological innovation in the United States, which can bring some inspiration to the construction of international scientific and technological innovation centers.

2. The Rule of Law in the Development of Scientific and Technological Innovation in the USA

The essence of the development of scientific and technological innovation in the United States is to further lead the Bay area scientific and technological innovation and promote the further optimization of economic growth through the support of the rule of law, reasonable government support, multi-party talent introduction and other measures. Its concrete realization is the following three levels.

First of all, in terms of the role of the government, the promotion and support of the government is an important prerequisite for the development of science and technology in the United States and the Bay area science and technology innovation, mainly in the following aspects. The first is the role of Congress as a coordinator. The United States Congress does not directly manage the specific matters of technology transfer, but through legislation and hearings and other means to regulate technology transfer, these ways promote the market technology transfer to a good direction. Second, the role of government agencies at the federal level. Such as the White House Office of Science and Technology Policy (OSTP), the National Science Foundation (NSF), the Department of Commerce and so on. Among them, OSTP dominates the internal coordination and cooperation among various agencies of the federal government to form and implement reasonable and correct science and technology policies and budgets, and cooperates with other departments to achieve this goal. [1] The purpose of NSF is to promote scientific and technological progress, promote national prosperity, provide adequate welfare for society and safeguard national security. [2] Its main role is to determine the frontiers of science and technology, to identify pioneers in these areas after the provision of funds and equipment to ensure that these pioneers can continue to develop. [3] Third, the catalytic role of the Department of Commerce. The main organization set up within the Department of Commerce for the transformation of scientific and technological achievements is the Bureau of Technology Management. [4] He cooperates with domestic industries to maintain and enhance the competitiveness of the U.S. economy, and through collaboration with industry to explore and apply high-tech technologies, test new methods and standards, and thereby promote economic development.

Secondly, in terms of policy and legal support, the United States promotes scientific and technological innovation and transfer through the enactment and improvement of patent laws, the promulgation of laws to promote the transfer of scientific and technological innovation achievements, the formulation or updating of innovative strategic policies, and the improvement of administrative laws, and so on. And constantly according to the actual needs of legislation to promote the transfer of science and technology to consolidate the achievements. This series of initiatives has laid the groundwork for the United States to continue to lead the world in technology and become the sole superpower. On the one hand, in terms of policy support, the basic principles of government support for scientific and technological innovation and development have always been consistent. For example, first, the United States government to create tax exemptions and tax rebate benefits to encourage people to conduct scientific activities. Second, improve the intellectual property system and fully protect the transformation and use of scientific and technological patent achievements. Third, the United States formulated a number of industrial policies to form a fair and competitive market environment to support the development of domestic industry and commerce. [5] On the other hand, in the specific legal support, such as the “Bayh–Dole Act” in promoting economic development in the United States has been widely recognized and highly evaluated. In the world has also had a great impact, the affected countries (such as China, Japan, Brazil, etc.) have formulated similar laws and regulations. [6]

Finally, in terms of talent support, the United States sees talent as a treasure. In order to maintain its leading position in science and technology, the United States tries to develop future technology

industry to overcome the bottleneck of economic development. On this basis, it is emphasized that the future national security of the United States lies in the overall strength of the economy and technology, so it is necessary to adhere to science and technology to secure the leading position in the world. [7] It can be seen that the United States attaches great importance to the training of technical personnel, the talent is widely sought, through attractive treatment and a first-class research environment to attract scientists from all over the world to settle in the United States. In addition, in terms of immigration policy, the United States Government has been implementing the H-1B visa policy since 1990. The policy is mainly aimed at attracting professionals from outside the United States. Between 1990 and 2013, the United States brought in about a growing number of highly skilled people each year, and waived the H-1B visa limit for foreign students with a master's degree or above, allowing high-end talent to stay in the United States.

3. GHMGBA's Path of Rule of Law in the Development of Scientific and Technological Innovation

3.1. Construction of government support mechanism

First of all, the Chinese government should reasonably intervene in the Greater Bay area's scientific and technological innovation activities. The government not only plays an important role in promoting the development of science and technology and improving the competitiveness of science and technology, but also plays an important role in the system reform and breaking through the system barriers of the three places. During the construction of GHMGBA's International Science and Technology Innovation Center, the government should co-ordinate all factors, solve the institutional and administrative barriers, and focus on the key issues of innovation and transformation of achievements. Under the provisions of the Law of the people's Republic of China on the Promotion of the Transformation of Scientific and technological achievements and the Law of the people's Republic of China on the Progress of Science and Technology, China can make use of the practical experience of CEPA to promote a new mode of inter-governmental cooperation in administrative scientific and technological innovation among Guangdong, Hong Kong and Macao. Thus, the barrier of "one country, two systems and three legal areas" to the development of scientific and technological innovation in the GHMGBA can be effectively solved. Finally, under the reasonable intervention and co-ordination of China's overall management and governance, through maximizing the initiative of Hong Kong and Macao in autonomy, China can make full use of the scientific and technological resources of two kinds of capital and three places to create a brand-new world-class bay area for scientific and technological innovation.

Second, China should establish an interregional legal system for scientific and technological innovation to ensure the integrated development of scientific and technological innovation in the Greater Bay area. The establishment of a corresponding interregional legal and institutional framework for GHMGBA's scientific and technological innovation can build a bridge of trust between enterprises, scientific research institutions, universities, individuals and governments in the Bay area. For example, under the existing legal framework, based on the in-depth practice of CEPA, to explore the interregional rules as a new source of law. CEPA is signed by the mainland and Hong Kong and Macao heads of state, with the characteristics and conditions of the origin of the law, and the integration of science and technology innovation system is far easier than other aspects of integration. Therefore, an interregional scientific and technological innovation system can be established on a trial basis in the Bay area. In addition, the informal system can be supplemented by administrative agreements or administrative contracts. In short, the integration of local resources in the form of systems to lay the institutional foundation for technological innovation in the Bay area can accelerate the realization of the goal of building an international center for scientific and technological innovation.

Finally, China should improve the dispute resolution system of scientific and technological innovation in the Greater Bay area as soon as possible. Under the background of China's "one country, two systems" policy, GHMGBA will inevitably face various conflicts and contradictions in

the activities of the main bodies and elements of industry-university-research in the course of scientific and technological innovation and development. For example, due to inadequate protection of intellectual property rights caused by infringement disputes. On the one hand, due to the different intellectual property protection systems in Guangdong, Hong Kong and Macao, and the fact that the joint enforcement system of intellectual property rights in the GHMGBA has not yet been established, it will inevitably lead to disputes in the application for patents, trademarks and copyrights of many cooperative projects in the Bay area. For example, Hong Kong and Macao have a patent protection period of 25 years and need to be renewed once every five years, while those in the mainland have a 10-year patent protection period. On the other hand, as Hong Kong and Macao attach importance to the protection of intellectual property rights, while the protection and enforcement of intellectual property rights in the mainland is relatively weak, it is easy to imitate the achievements of technological innovation in the Bay area. For example, many “fake” technology products have disrupted the market in the GHMGBA, causing great damage to domestic and foreign enterprises with intellectual property rights owned by GHMGBA. Therefore, there should be a sound mechanism for resolving scientific and technological disputes in the Bay area. In order to promote the protection and rational use of property rights in the GHMGBA, China should focus on building a dispute resolution mechanism for scientific and technological innovation by GHMGBA, and strengthen the construction of an administrative law enforcement system for intellectual property rights. In this way, Hong Kong and Macao can safely enter the mainland market and carry out technological exchanges and cooperation, thereby further prospering the scientific and technological innovation field in the GHMGBA and creating a good environment for trade and business interests.

3.2. Constructing market-oriented mechanism

First of all, build the industry-university-research-application community and focus on the transformation of scientific and technological achievements. In order to break the plight of the transformation of the existing scientific and technological achievements, China should focus on two aspects. On the one hand, the government should pay attention to the purchase of services. Government purchase of services has the characteristics of high demand and high credibility, which can provide great support for science and technology enterprises, thus encouraging enterprises to introduce more scientific research results. For example, in the judiciary, law enforcement and administrative departments are in need of a large number of scientific and technological products to improve service efficiency. China can encourage these institutions to purchase enterprise science and technology products to stimulate market demand, forming a virtuous cycle of mutually beneficial development trend of government-industry university-research. On the other hand, from the reality of Chinese science and technology enterprises, science and technology enterprises to become stronger and bigger, the most suitable to take the road of the United community. Therefore, China should build a technical innovation community organization based on market mechanism, give full play to the research results of scientific research institutions of Guangdong, Hong Kong and Macao University, speed up the transformation of government functions to service innovation, so as to promote more scientific and technological achievements to be transformed and landed in the GHMGBA.

Second, improve the system of administrative rewards. Incentive system should include both material and spiritual incentives, and include social security, medical care, housing and other welfare incentives. Drawing on the experience of the United States in attracting the world's high-tech talents to build the San Francisco Bay area, GHMGBA's incentive system should also cover measures to attract talents from all regions of China and even innovative talents from all over the world. At the same time, it is necessary to formulate the reward policy system of science and technology innovation in GHMGBA. For example, China can further improve the enterprise innovation incentive policy and innovation security system, so as to provide institutional protection for enterprise science and technology innovation and talent attraction, and enhance the initiative and enthusiasm of high-tech talents in the GHMGBA.

Finally, promoting broad participation by social forces. Public-private interaction, public-private cooperation, public law and private law in the administrative management more and more become the trend of development. [8] The broad participation of society can promote a good transformation environment between science and technology and society and market. Therefore, among GHMGBA, first of all, it is necessary to encourage society to extensively participate in the construction of scientific and technological innovation and jointly build and share GHMGBA's scientific research infrastructure. And then to create a good ecology of GHMGBA's basic research and the transformation and application of his achievements. Secondly, under the leading role of the government to promote the broad participation of social forces in the ranks of technological innovation, scientific and technological innovation to promote the further development of enterprises and individuals. At the same time, China will strongly encourage the combination of venture capital and scientific and technological research and development, increase the proportion of investment in results transformation, and establish a good mechanism for achievements transformation. Finally, encourage the construction of socialized scientific and technological service institutions. In particular, China encourage people from all walks of life to participate in the construction of intermediary agencies for the transformation of scientific and technological achievements, and jointly build a specialized, open, and international platform for scientific and technological exchange, so as to promote the effective transformation of scientific and technological achievements.

4. Conclusion

As long as the GHMGBA, with the reasonable support of the government, can bring into play the power of the rule of law to integrate scientific and technological talents from all walks of life, and develop scientific and technological innovation through a market-led mechanism. At the same time, China should firmly grasp that China itself is the main engine of world economic development and the perfect opportunity for the smooth progress of the "Belt and Road" construction. Gathering all kinds of advantages and forces to promote GHMGBA's scientific and technological innovation and development, and promoting the deep integration of the industrial chain, innovation chain, and financial chain, the building of an international scientific and technological innovation center in the GHMGBA with strong guiding power and radiation power will soon be around the corner.

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