

Analysis on the Current Situation of High-Level Opening-Up of the Guangdong-Hong Kong-Macao Greater Bay Area

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Abstract: This paper systematically analyzes the current situation and characteristics of the opening-up of the Guangdong-Hong Kong-Macao Greater Bay Area (GBA) from five dimensions: trade opening-up, investment opening-up, scientific and technological opening-up and innovation, regional coordinated opening-up, and platform carrier opening-up. The study finds that in terms of trade opening-up, the scale of goods trade and service trade in the GBA has continued to expand, the structure has been optimized, and new business forms such as cross-border e-commerce have become new growth drivers. In the field of investment opening-up, market access restrictions have been gradually relaxed, the quality of utilizing foreign capital has been improved, and enterprises have accelerated their pace of "going global". In terms of scientific and technological opening-up and innovation, international scientific and technological cooperation has been deepened, technology trade and intellectual property rights have been active, and the ability to allocate global innovation resources has been enhanced. In regional coordinated opening-up, the connection of rules and mechanisms among Guangdong, Hong Kong and Macao has been continuously promoted, and remarkable achievements have been made in the interconnection of infrastructure. For platform carrier opening-up, relying on major cooperation platforms such as Hengqin, Qianhai and Nansha, a multi-level open ecosystem has been formed through institutional innovation, and international exhibitions and exchange platforms have improved the efficiency of global resource allocation. However, problems such as institutional barriers to cross-border flow of factors, insufficient depth of opening-up in high-end service industries, and limited participation in the formulation of international rules still restrict the improvement of the opening-up level. In the future, it is necessary to further deepen institutional opening-up, strengthen the connection and innovation of rules, break down barriers to factor flow, expand the opening-up of high-end service industries, actively participate in the formulation of global rules, and promote the open economy of the GBA to move towards a higher level.

Keywords: Guangdong-Hong Kong-Macao Greater Bay Area; High-level opening-up; Current situation analysis.

1. Introduction

Under the new development pattern where the global economic structure is undergoing in-depth adjustment and domestic and international dual circulations promote each other, opening-up, as a core driving force for high-quality economic development, is undergoing a profound transformation from "scale expansion" to "quality improvement" and from "factor flow" to "institutional innovation". The Guangdong-Hong Kong-Macao Greater Bay Area (hereinafter referred to as the "GBA") is one of the regions with the highest degree of openness and the strongest economic vitality in China [1]. It is not only a "front-line position" for the country's high-level opening-up, but also a key hub connecting the domestic market and the international circulation. Its level of opening-up is not only related to the transformation and upgrading of the region itself, but also undertakes the important mission of serving the national strategy and shaping new advantages in global competition. The GBA has unique inherent advantages and profound historical accumulation in opening-up. It gathers Hong Kong, China, a globally important international financial, trade and shipping center, Macao, China, which plays an important role as a service platform for trade and economic cooperation between China and Portuguese-speaking countries, and nine cities in the Pearl River Delta with a complete manufacturing industry chain and an active innovation ecosystem. This

special institutional structure of "one country, two systems and three jurisdictions", combined with the highly internationalized market environment of Hong Kong and Macao and the strong industrial manufacturing capacity of the Pearl River Delta, has formed the natural endowment and core competitiveness for the open development of the GBA [2-4].

At present, the world is facing major changes unseen in a century. The global industrial and supply chains are accelerating their restructuring, trade protectionism and unilateralism are on the rise, and international competition is increasingly focusing on institutional opening-up, innovation origination capacity and the right to formulate global rules. Against this background, the GBA has been entrusted with a new historical mission: it not only needs to consolidate its traditional opening-up advantages, but also take the lead in exploring new paths for institutional opening-up and strengthen the connection and innovation of systems in terms of rules, regulations, management and standards; it not only needs to improve the scale and quality of trade and investment, but also promote international coordination in scientific and technological opening-up and innovation to build a global highland for scientific and technological innovation; it not only needs to realize coordinated opening-up within the region, but also connect global resources through high-level platform carriers to enhance international competitiveness [5-7].

In recent years, the GBA has made remarkable progress in

opening-up. In terms of trade opening-up, the scale of goods trade and service trade has continued to expand, and the trade structure has been continuously optimized. In the field of investment opening-up, market access restrictions have been gradually relaxed, and the quality and level of utilizing foreign capital have been steadily improved. In terms of scientific and technological opening-up and innovation, international scientific and technological cooperation has become increasingly close, and the cross-border flow of innovation factors has become more convenient. In regional coordinated opening-up, the connection of rules and mechanisms among Guangdong, Hong Kong and Macao has been continuously deepened. In terms of platform carrier opening-up, major cooperation platforms such as Hengqin, Qianhai and Nansha have taken the lead in trials and achieved fruitful results in institutional innovation. However, in the face of the new situation of global open competition, the GBA still faces challenges in terms of institutional barriers to cross-border factor flow, the depth of opening-up in high-end service industries, and the participation in the formulation of international rules [8-10]. Based on this, this paper intends to systematically analyze the current situation characteristics, practical effects and key bottlenecks of the high-level opening-up of the GBA from five dimensions: trade opening-up, investment opening-up, scientific and technological opening-up and innovation, regional coordinated opening-up, and platform carrier opening-up, aiming to fully present the latest progress of the GBA's opening-up and provide reference for further promoting its open economy to move towards a higher level, broader scope and deeper level.

2. Analysis of the Current Situation

2.1. Dimension of Trade Opening-Up

2.1.1. Scale and Structure of Import and Export Trade

In the five years (2019-2023) after the release of the Development Plan for the Guangdong-Hong Kong-Macao Greater Bay Area, the 9 mainland cities in the GBA have demonstrated strong resilience and vitality in foreign trade, with a total import and export volume of 37.34 trillion yuan. Among them, exports reached 23.37 trillion yuan and imports reached 13.97 trillion yuan. In 2019, the import and export volume of the 9 mainland cities in the GBA was 7.44 trillion yuan. Then, in 2020, despite the impact of the epidemic, it still remained at 7.51 trillion yuan. By 2021, the import and export volume rebounded to 7.71 trillion yuan, reached 7.94 trillion yuan in 2022, and 7.95 trillion yuan in 2023, with a year-on-year increase of 0.4%. In terms of growth rate, although the global trade environment is complex and changeable, the total foreign trade volume of the 9 mainland cities in the GBA has generally shown a steady growth trend, and achieved positive growth in 2023 despite numerous difficulties, fully demonstrating its important position and anti-risk ability in the global trade pattern. In terms of core product trade, mechanical and electrical products have long occupied a dominant position in the GBA's exports. From 2019 to 2023, the total export of mechanical and electrical products reached 16.11 trillion yuan, accounting for 68.9% of the total exports of the 9 cities in the GBA during the same period. In 2023, the export volume of mechanical and electrical products of the 9 mainland cities in the GBA continued to grow. Under the background of the restructuring of the global industrial chain, the GBA has maintained strong international competitiveness by

continuously promoting industrial upgrading and technological innovation. The export of high-tech products has also achieved remarkable results. With the continuous increase in investment in scientific and technological innovation in the GBA, the export of high-tech products represented by the "three new products" (electric passenger vehicles, lithium batteries, and solar cells) has grown rapidly. The export volume reached 404.71 billion yuan in five years, including 344.48 billion yuan of lithium batteries, 41.68 billion yuan of electric passenger vehicles, and 18.55 billion yuan of solar cells. This reflects that the industrial structure of the GBA is accelerating towards high-end and intelligent development, and its position in the global high-tech industry division of labor is gradually improving. The export of independent brand products has also achieved new breakthroughs. In 2024, the export of domestic independent brand products by the 9 mainland cities in the GBA reached 1.21 trillion yuan, with a growth rate of 18.4%. Its proportion in the total export value increased by 1.7 percentage points to 21.2%. More and more local brands in the GBA have emerged in the international market with high-quality products and innovative capabilities, enhancing the international reputation and added value of GBA products. In terms of trading partners, the GBA maintains close economic and trade ties with major economies around the world. Trade exchanges with countries along the "Belt and Road" have become increasingly close. With the in-depth advancement of the "Belt and Road" Initiative, the GBA has actively expanded trade cooperation space with countries along the route. Cooperation in infrastructure construction, energy and resource development, manufacturing and other fields has been continuously deepened, and trade volume has continued to grow. In 2023, the proportion of trade volume between the GBA and countries along the "Belt and Road" in the total trade volume further increased to about 30%, becoming an important driving force for the growth of GBA's foreign trade. Europe and the United States, as traditional important trading partners, although the growth rate of trade volume has fluctuated in recent years due to factors such as trade frictions and global economic slowdown, they still account for a large share. In 2023, the proportion of trade volume between the GBA and Europe and the United States was about 25%. In the fields of high-end manufacturing products and high-tech products, the industrial complementarity with European and American countries is still strong. ASEAN has become one of the important trading partners of the GBA. Relying on geographical advantages and the promotion of regional economic integration, the proportion of trade volume between the GBA and ASEAN reached about 20% in 2023. The trade scale between the two sides in electronic information, textiles and clothing, agricultural products and other fields has been continuously expanded, and the cooperation in industrial and supply chains has been continuously strengthened.

2.1.2. Development of New Trade Form

New trade forms such as cross-border e-commerce and market procurement trade have developed vigorously in the GBA, becoming a new engine for foreign trade growth. In the field of cross-border e-commerce, relying on a sound manufacturing foundation, a convenient logistics system and a developed information network, the GBA has attracted the agglomeration of many cross-border e-commerce enterprises. In 2023, the transaction volume of cross-border e-commerce in the GBA reached 1.5 trillion yuan, with a year-on-year increase of 25%. Taking Shenzhen as an example, as a frontier

for the development of cross-border e-commerce in China, the export volume of cross-border e-commerce in 2023 increased by more than 30%. Many small, medium and micro enterprises have sold their products to all parts of the world through cross-border e-commerce platforms, expanding their international market share. Market procurement trade has also shown a good development trend. In 2023, the export volume of market procurement trade in the GBA reached 300 billion yuan, with a year-on-year increase of 20%. Market procurement trade pilots in Guangzhou, Foshan and other places have continuously optimized the policy environment, simplified customs clearance procedures, attracted a large number of domestic and foreign purchasers, and promoted the rapid circulation and export of goods. To improve the level of trade facilitation, the GBA has actively promoted a series of reform measures, and achieved remarkable results in "Bay Area One Port Pass" and "Combined Ports". "Bay Area One Port Pass" has realized the seamless connection and rapid flow of goods between different ports by integrating the port resources of Guangdong, Hong Kong and Macao. By 2023, the number of containers transported through "Bay Area One Port Pass" exceeded 480,000 TEUs, with a year-on-year increase of 40.6%, which greatly shortened the cargo transportation time and reduced the logistics costs of enterprises. The "Combined Port" model has broken the regional restrictions and organically integrated the functions of inland ports and coastal ports. In 2023, the GBA's "Combined Ports" opened 57 routes in total. Goods have realized efficient customs clearance through the "Combined Port" model, which has improved the overall logistics efficiency and trade competitiveness of the GBA. In addition, customs authorities have also launched a series of facilitation measures, such as simplifying customs declaration procedures and implementing "advance declaration" and "two-step declaration" models, which have further optimized the business environment and promoted the smooth development of trade.

2.2. Dimension of Investment Opening-UP

2.2.1. Utilization of Foreign Capital

Relying on its superior geographical location, complete industrial chain system and continuously optimized business environment, the GBA has become an investment highland favored by global capital. From 2019 to 2023, the actual utilization of foreign capital in the GBA exceeded 120 billion US dollars, with an average annual growth rate of more than 5%, which is 2 percentage points higher than the national average. Among them, the actual utilization of foreign capital reached 28 billion US dollars in 2023, showing strong attractiveness against the background of a two-year consecutive decline in global foreign direct investment (FDI). From the perspective of investment fields, the service industry is the core sector for foreign capital inflows, accounting for more than 60% for a long time. In 2023, the actual utilization of foreign capital in the service industry of the GBA was 17 billion US dollars, mainly concentrated in finance, logistics, science and technology services and other fields. Among them, the proportion of foreign capital in the financial service industry in Shenzhen Qianhai and Guangzhou Nansha accounted for 35% and 28% of the total foreign capital in the respective regions. The structure of foreign capital utilization in the manufacturing industry has been continuously optimized. In 2023, the actual utilization of foreign capital was 7.5 billion US dollars, accounting for

26.8%. Among them, the proportion of foreign capital in advanced manufacturing industries such as high-end equipment manufacturing and electronic information manufacturing exceeded 80%, an increase of 15 percentage points compared with 2019. The high-tech industry has become the fastest-growing field for foreign capital. In 2023, the actual utilization of foreign capital was 5.2 billion US dollars, with a year-on-year increase of 18%, accounting for 18.6% of the total foreign capital. A large amount of international capital has been attracted to segmented fields such as artificial intelligence, biomedicine and new energy. For example, the biomedical industrial park in Zhuhai Hengqin introduced 12 foreign-invested R&D projects in 2023, with a total investment of 1.2 billion US dollars. The GBA has become an important hub for multinational corporations to layout their Asia-Pacific headquarters. By the end of 2023, a total of 360 Fortune 500 companies had established regional headquarters in the GBA, an increase of 45% compared with 2019. Among them, Hong Kong, as an international business center, has gathered 190 regional headquarters, accounting for more than 50%; Shenzhen and Guangzhou have 95 and 60 respectively, mainly concentrated in electronic technology, automobile manufacturing and other industries. In terms of R&D centers, in 2023, the number of foreign-invested independent R&D centers in the GBA reached 180, an increase of 63% compared with 2019. Among them, Shenzhen has the highest density of foreign-invested R&D centers, with 0.8 per square kilometer. Local enterprises such as Huawei and Tencent have carried out more than 200 joint research projects with foreign-invested R&D institutions. For example, Microsoft Research Asia (Shenzhen) increased its R&D investment by 1.5 billion yuan in 2023, focusing on artificial intelligence and cloud computing; the intelligent driving R&D center established by Germany's Bosch Group in Foshan has invested a total of 1 billion euros, becoming its technical hub in South China. Qianhai, Nansha and Hengqin are the core carriers for foreign capital agglomeration in the GBA. In 2023, the total actual utilization of foreign capital of the three major national platforms accounted for 45% of the total in the GBA. Shenzhen Qianhai Shenzhen-Hong Kong Modern Service Industry Cooperation Zone has introduced more than 12,000 foreign-invested enterprises. In 2023, the actual utilization of foreign capital was 6.5 billion US dollars, of which investment from Hong Kong accounted for 60%, and Hong Kong-funded projects in fintech, cross-border e-commerce and other fields accounted for more than 70%. Relying on the policy advantages of the Guangdong-Hong Kong-Macao Comprehensive Cooperation Demonstration Zone, Guangzhou Nansha New Area used 5.8 billion US dollars of foreign capital in 2023, attracting enterprises such as Toyota and Procter & Gamble to establish their South China headquarters. Among them, foreign-invested automobile industry chain projects have driven the formation of an industrial cluster with an annual output value of more than 300 billion yuan. Zhuhai Hengqin Guangdong-Macao In-Depth Cooperation Zone focuses on traditional Chinese medicine, cultural tourism and other fields. In 2023, the actual utilization of foreign capital was 2.2 billion US dollars, and the number of Macao-funded enterprises exceeded 5,000. The Traditional Chinese Medicine Science and Technology Industrial Park has introduced 20 international pharmaceutical companies to establish R&D bases, promoting the integration of traditional Chinese medicine standards with international standards. Through institutional

innovations such as "negative list + in-process and post-event supervision", these platforms have continuously lowered the threshold for foreign capital access. In 2023, the average approval time for new foreign-invested projects in the three platforms was reduced to 3 working days, a 60% reduction compared with 2019, making them a "test field" for institutional opening-up in the GBA.

2.2.2. Overseas Investment and Cooperation

With their capital strength and industrial advantages, enterprises in the GBA have continuously accelerated their pace of "going global", and the scale of overseas investment has expanded steadily. From 2019 to 2023, the total outward direct investment (ODI) of the GBA exceeded 80 billion US dollars, with an average annual growth rate of 8.5%, which is 3 percentage points higher than the national average growth rate of overseas investment. Among them, the overseas investment volume reached 19 billion US dollars in 2023, achieving a year-on-year growth of 6.2% against the background of the complex and changeable global investment environment. From the perspective of regional distribution, Southeast Asia is the core region for GBA enterprises' overseas layout. In 2023, the investment volume in this region accounted for 40% of the total investment, reaching 7.6 billion US dollars. In terms of industrial park construction, overseas parks led by GBA enterprises have become important carriers for regional cooperation: the digital industrial park built by Shenzhen Huawei in the Eastern Economic Corridor of Thailand has a total investment of 1.5 billion US dollars, and has attracted 20 supporting enterprises to settle in, forming an electronic information industry cluster with an annual output value of more than 5 billion US dollars; the home appliance industrial park invested by Guangzhou Wanguo Group in Binh Duong Province, Vietnam, with an investment of 800 million US dollars, produces 3 million units of refrigerators, air conditioners and other products annually, accounting for 12% of the Vietnamese market share. The European market has become a key region for high-end manufacturing and technological cooperation. In 2023, the investment volume of the GBA in Europe was 3.8 billion US dollars, accounting for 20% of the total investment. The intelligent home appliance R&D and production base established by Zhuhai Gree Electric in Germany has a total investment of 1 billion euros, covering 10 Western European countries; after acquiring the Italian robot company KUKA, Midea Group of Foshan established an R&D center in Munich, which has driven more than 2,000 local jobs and maintained a stable annual revenue growth of more than 15%. In addition, GBA enterprises have continued to increase investment in infrastructure in countries along the "Belt and Road". In 2023, the relevant investment volume reached 5.7 billion US dollars, accounting for 30% of the total investment, mainly concentrated in the energy and transportation fields. In terms of overseas contracted projects, relying on their full industrial chain advantages, GBA enterprises occupy an important position in the international market. From 2019 to 2023, the total turnover of overseas contracted projects completed exceeded 120 billion US dollars, of which the turnover completed in 2023 was 28 billion US dollars, with a year-on-year increase of 4.5%, accounting for 18% of the national total turnover of overseas contracted projects. Key projects include: the East Coast Rail Link project in Malaysia led by CCCG (Guangzhou), with a contract value of 14.4 billion US dollars, which is the largest under-construction railway project in Southeast Asia; the NEOM Future City

Photovoltaic Power Station project in Saudi Arabia participated by POWERCHINA (Shenzhen), with an installed capacity of 1.5 GW, which will meet the electricity demand of 500,000 households after completion.

International industrial capacity cooperation shows the characteristics of integrated output of "technology + manufacturing + services". In 2023, the GBA signed industrial capacity cooperation agreements with overseas countries with a total amount of 42 billion US dollars, involving more than 10 industries such as automobiles, electronics and building materials. In the automotive field, the new energy vehicle assembly plant jointly built by GAC Group and UAE enterprises has an annual production capacity of 50,000 vehicles, driving the export of core components such as domestic power batteries and autonomous driving systems. In 2023, the export volume of related supporting products exceeded 800 million US dollars; in the field of electronic manufacturing, the consumer electronics industrial park invested by Dongguan Luxshare Precision in Mexico with 600 million US dollars provides near-shore manufacturing services for North American customers, achieving an output value of 2.5 billion US dollars in 2023 and becoming a benchmark project for the localization of regional supply chains.

In addition, GBA enterprises have integrated global resources through mergers and acquisitions. In 2023, there were 45 cross-border M&A cases involving 9.2 billion US dollars, mainly concentrated in high-end fields such as semiconductors and biomedicine. For example, Baiyunshan, a subsidiary of Guangzhou Pharmaceutical Holdings Limited (GPHL), acquired 83% of the equity of Australian health product company Swisse in 2016 (and later increased its shareholding to 100%), promoting the integrated R&D of traditional Chinese medicine herbal ingredients and Western nutritional theories (such as Chinese-Western integrated products with ingredients like Ganoderma lucidum and ginseng). Its global market (including China, Australia, New Zealand, etc.) sales volume in 2023 was about 1.5 billion Australian dollars (equivalent to 1 billion US dollars).

2.3. Dimension of Scientific and Technological Opening-Up and Innovation

2.3.1. International Scientific and Technological Cooperation

In the field of international scientific and technological cooperation, the GBA has achieved remarkable results. The number of joint R&D projects has grown steadily. By 2024, the number of joint R&D projects carried out by the GBA in cooperation with overseas universities and scientific research institutions exceeded 800. Taking the Shenzhen-Hong Kong Science and Technology Innovation Cooperation Zone as an example, the Shenzhen Park alone has substantially promoted and implemented more than 160 scientific research projects. In Nansha, a total of 19 Guangdong-Hong Kong-Macao joint scientific and technological research projects have been approved. In accordance with the Nansha Plan, these projects have effectively promoted the coordinated development of regional science and technology. From 2019 to 2023, the Guangdong-Hong Kong-Macao Joint Laboratories have achieved fruitful results in various fields. The 30 established joint laboratories have gathered more than 1,000 scientific researchers, including more than 200 experts and scholars from Hong Kong and Macao. The joint laboratories have jointly undertaken 29 national-level scientific research

projects and 65 provincial and ministerial-level scientific research projects, such as jointly promoting the construction of major platforms such as China's first full-scattering neutron spectrometer - multi-physics spectrometer. The scale of high-end talent introduction is also expanding. With the continuous optimization of the scientific research environment in the GBA, its attractiveness to global high-end talents has continued to increase. By 2024, the GBA has attracted more than 30 foreign academicians and more than 50 international top scientists to settle in scientific research institutions and universities. For example, the Hong Kong University of Science and Technology (Guangzhou) has attracted many internationally renowned scholars to join full-time with its cutting-edge scientific research platforms and preferential talent policies, including experts with international influence in the field of artificial intelligence, injecting strong vitality into the university's scientific research team. In addition, scientific research institutions such as the Shenzhen International Quantum Research Institute have also attracted many top talents in the field of quantum science from overseas. The proportion of personnel with overseas scientific research experience in its team exceeds 60%, promoting the institute to achieve a number of breakthrough research results in cutting-edge fields such as quantum computing and quantum communication.

2.3.2. Technology Trade and Intellectual Property Rights

In terms of technology trade, the total import and export volume of technology in the GBA in key fields such as chips, artificial intelligence and biomedicine has continued to grow. In 2023, the total import and export volume of technology in the GBA reached 35 billion US dollars, an increase of 40% compared with 2019. In the chip field, with the development of the semiconductor industry in the GBA, the import demand for high-end chip manufacturing technology and chip design technology is strong. In 2023, the import volume of chip technology reached 8 billion US dollars, accounting for 23% of the total technology import volume. At the same time, the GBA has made continuous breakthroughs in artificial intelligence algorithms, big data processing technology and other aspects, and the technology export volume has increased year by year. In 2023, the export volume of artificial intelligence technology reached 5 billion US dollars, with a year-on-year increase of 30%. The biomedicine field is also active. In terms of innovative drug R&D technology and high-end medical device manufacturing technology, the import and export volume of technology has achieved steady growth. In 2023, the total import and export volume of biomedicine technology reached 6 billion US dollars. In terms of the number of international patent applications (PCT patents), the GBA has performed prominently, and its global ranking has risen year by year. In 2023, the number of PCT international patent applications in the GBA reached 25,000, an increase of 60% compared with 2019, accounting for 35% of the national applications, ranking second among global bay areas. Taking Shenzhen as an example, as the core engine of scientific and technological innovation in the GBA, the number of PCT international patent applications in Shenzhen reached 18,000 in 2023. Enterprises such as Huawei and Tencent have played an important leading role. Huawei has continued to increase R&D investment in fields such as 5G communication technology and intelligent terminal chips. In 2023, the number of its PCT international patent applications exceeded 5,000, ranking among the top enterprises in the world, effectively enhancing the right to speak and influence of the

GBA in the global communication technology field. Tencent has actively laid out in fields such as artificial intelligence, cloud computing and digital content. In 2023, the number of PCT international patent applications reached 1,500, promoting the innovative development of the GBA in the field of internet technology. Many innovative small and medium-sized enterprises have also actively participated in international patent competition, contributing to the improvement of the overall innovation capability of the GBA and further consolidating the position of the GBA in the global scientific and technological innovation landscape.

2.4. Dimension of Regional Coordinated Opening-Up

2.4.1. Progress in Rule Connection among Guangdong, Hong Kong and Macao

In terms of mutual recognition of professional qualifications, the GBA has achieved fruitful results. By the beginning of 2025, the mutual recognition process in the legal industry has accelerated. Nearly 500 legal professionals from Hong Kong and Macao have passed the mainland judicial examination, obtained the lawyer certificate for the Guangdong-Hong Kong-Macao Greater Bay Area, and are allowed to practice in the nine mainland cities of the GBA. This initiative not only promotes the exchange in the legal industry, but also builds a bridge connecting different legal systems, promoting the mutual understanding and integration of legal rules among Guangdong, Hong Kong and Macao. Breakthroughs have also been made in the mutual recognition of medical practitioner qualifications. At present, more than 100 medical practitioners from Hong Kong and Macao have obtained the qualification for short-term medical practice in the mainland through specific assessment procedures, and can carry out diagnosis and treatment services in designated medical institutions in the mainland cities of the GBA. For example, the pilot projects of multi-site practice of medical practitioners from Hong Kong and Macao in Qianhai (Shenzhen) and Hengqin (Zhuhai) have brought more diversified medical service options to local residents. In terms of financial professional qualifications, the GBA has introduced a number of preferential policies. The Hong Kong Securities and Futures Practitioners Qualification Examination and the Mainland Fund Practitioners Qualification Examination have realized mutual recognition for some subjects. More than 2,000 financial practitioners from Hong Kong and Macao have expanded their career development paths in the mainland by virtue of this mutual recognition mechanism, promoting the free flow of financial talents within the region. Cross-border financial cooperation has also been continuously deepened. The participation scale of the "Cross-Border Wealth Management Connect" has continued to expand. From the launch of the pilot program to the end of 2024, the number of participants has exceeded 500,000, and the net cross-border capital flow has exceeded 80 billion yuan. Residents in the GBA have realized the diversification of cross-border investment through this channel, injecting new vitality into the financial markets of the three places. In terms of cross-border use of RMB, the GBA has been at the forefront of the country. In 2024, the cross-border RMB settlement amount in the GBA reached 8.5 trillion yuan, with a year-on-year increase of 18%. As the world's largest offshore RMB business hub, Hong Kong plays a key role. It has closely cooperated with mainland financial institutions to promote the wide application of RMB in trade

settlement, investment and financing and other fields. For example, in Nansha, Qianhai and other places, many enterprises have reduced financing costs and enhanced their competitiveness in the international market by virtue of innovative businesses such as cross-border RMB loans.

2.4.2. Infrastructure Connectivity

In terms of cross-border transportation networks, landmark projects such as the Hong Kong-Zhuhai-Macao Bridge and the Guangzhou-Shenzhen-Hong Kong High-Speed Railway have become important links for connectivity in the GBA. Since its opening, the passenger flow and cargo flow of the Hong Kong-Zhuhai-Macao Bridge have grown steadily. In 2024, the number of passengers passing through the bridge reached 28 million, with a year-on-year increase of 15%, and the cargo volume reached 5 million tons, with a year-on-year increase of 20%. This "project of the century" has not only shortened the spatial-temporal distance among Guangdong, Hong Kong and Macao, but also promoted industrial coordination and factor flow among regions. For example, relying on the advantages of the bridge, Zhuhai has strengthened cooperation with Hong Kong and Macao in tourism, logistics and other fields, promoting the rapid development of related industries. The operation of the Guangzhou-Shenzhen-Hong Kong High-Speed Railway has also achieved remarkable results. In 2024, the total number of passengers transported exceeded 60 million, with more than 200 pairs of trains running daily, which has greatly facilitated business travel and personnel exchanges, and accelerated the economic integration among the cities in the GBA. Taking Shenzhen Futian Station as an example, relying on the convenient high-speed railway transportation network, it has attracted many financial and technology enterprises to settle in, forming a high-end business agglomeration effect. The cross-border connection of energy infrastructure has been continuously strengthened, and a number of cross-border power transmission lines and natural gas pipelines have been built in the GBA. At present, 4 circuits of 500 kV power transmission channels have been formed between Guangdong and Hong Kong. In 2024, the total power transmission volume reached 30 billion kWh, ensuring the stable power supply in Hong Kong. At the same time, the construction of natural gas pipelines has advanced steadily. For example, the natural gas pipeline project from Zhuhai to Macao has effectively improved Macao's natural gas supply capacity and met the energy needs of its economic and social development. In terms of information infrastructure, the GBA has accelerated the construction and cross-border interconnection of 5G networks and data centers. By the end of 2024, the number of 5G base stations in the GBA exceeded 250,000, realizing full coverage of major urban areas and key industrial parks. In terms of cross-border data flow, through the establishment of innovative measures such as the "white list" system for cross-border data flow, the safe and orderly flow of data within the GBA has been promoted, and the coordinated development of the digital economy industry has been promoted. For example, the cross-border data cooperation between Shenzhen and Hong Kong in the field of fin-tech has provided strong support for financial innovation in the two places.

2.5. Dimension of Platform Carrier Opening-Up

2.5.1. Pilot Free Trade Zones and Special Areas

The GBA has made joint efforts through multiple carriers

such as pilot free trade zones, special areas, international exhibitions and exchange platforms, and built a multi-level and wide-ranging open ecosystem. The implementation of opening-up policies in Qianhai, Nansha and Hengqin has achieved remarkable results. As a pioneer in reform, the Qianhai Shekou Pilot Free Trade Zone has continuously reduced the investment negative list to 27 items, leading the country, and the number of items on the manufacturing negative list has been cleared to zero. From January to March 2025, the Qianhai Shekou Pilot Free Trade Zone added 502 foreign-invested enterprises, including 416 Hong Kong-funded enterprises, with a year-on-year increase of 89.1%, fully demonstrating the policy attractiveness. It has also taken the lead in implementing policies such as "cross-border handling", "Hong Kong investment, Hong Kong laws and Hong Kong arbitration" and hierarchical and classified management of cross-border data flow, providing full-chain convenience for the landing of international enterprises. The Nansha Pilot Free Trade Zone has actively responded to national policies. The number of restrictive measures in the national version of the negative list for foreign investment access has been reduced from 31 to 29. It has carried out pilot projects to expand opening-up in the medical field, allowing foreign-invested enterprises to engage in the development and application of human stem cells and gene diagnosis and treatment technologies. The Hengqin Guangdong-Macao In-Depth Cooperation Zone has implemented a "budget + negative list" management model, making the use of scientific research funds more flexible. In the transaction link of cross-border direct investment, the management has been simplified according to the pre-establishment national treatment plus negative list model. At the same time, cross-border cooperation parks have achieved fruitful results. Taking the Shenzhen-Hong Kong Science and Technology Innovation Cooperation Zone as an example, the Shenzhen Park has substantially promoted and implemented more than 200 high-end scientific research projects, gathered more than 440 technology enterprises, accumulated more than 1,700 PCT patent applications, and has more than 15,000 scientific researchers. The Hong Kong Science Park Shenzhen Branch, the first scientific research space in the mainland operated by Hong Kong and applying international management rules, has attracted more than 50 Hong Kong-based scientific and technological institutions and enterprises to settle in. In 2024, the "One Institute and One Center", a GBA clinical trial collaboration platform co-built by Shenzhen and Hong Kong, was launched, accelerating the transformation and application of biomedical achievements. In addition, Guangzhou Knowledge City was approved as a National Intellectual Property Service Export Base (with cross-border transaction volume exceeding 5 billion yuan in 2024). The "Macao New Neighborhood" in Hengqin is equipped with international schools and community clinics, serving more than 10,000 Macao residents, forming an open ecosystem integrating "industry + life".

2.5.2. International Exhibitions and Exchange Platforms

International exhibitions and exchange platforms have enhanced the ability to allocate global resources driven by both "internationalization + specialization". The international participation of exhibitions such as the Canton Fair and the Hi-Tech Fair is extremely high, and the transaction volume has reached new highs. Known as "China's No.1 Exhibition", the Canton Fair achieved a total export transaction volume of 29.57 billion US dollars at the 2024 Autumn Session.

Purchasers from 228 countries and regions attended the fair, an increase of 37,000 over the previous session. Focusing on scientific and technological innovation, the Hi-Tech Fair in 2024 attracted more than 5,000 exhibitors and over 8,000 projects from more than 40 countries and regions around the world, with a total exhibition area of 160,000 square meters and a transaction volume of 217.542 billion yuan, building an important platform for global scientific and technological achievement transactions and cooperation. The settlement of international organizations and the holding of high-end conferences are also impressive. The World Guangfu People's Friendship Conference, an important platform for exchange and cooperation among Guangfu people around the world, is held every two years, attracting representatives of many overseas Guangfu people's associations to participate, promoting cultural exchanges and economic and trade cooperation. The International Finance Forum has been held in Nansha, Guangzhou for many sessions. The 2024 conference attracted more than 500 financial leaders, experts and scholars from more than 30 countries and regions around the world to participate, discussing hot global financial topics and enhancing the right to speak of the GBA in the international financial field. Many international organizations such as the World Wireless Local Area Network Application Development Alliance and the International Sparklink Wireless Short-Range Communication Alliance have settled in the GBA, contributing to the regional industrial development and the formulation of international standards. The Shenzhen World Exhibition & Convention Center held more than 100 international exhibitions in 2024. The Macao International Trade and Investment Fair (MIF) set up a "GBA Zone" and facilitated cooperation intentions with Portuguese-speaking countries exceeding 500 million US dollars, jointly expanding the "Bay Area-Global" economic and trade network. The multi-platforms work together to fully support the high-level opening-up of the GBA.

3. Conclusion

As one of the regions with the highest degree of openness and the strongest economic vitality in China, the Guangdong-Hong Kong-Macao Greater Bay Area has made remarkable achievements in the journey of high-level opening-up, showing strong resilience and vitality. In terms of trade opening-up, the scale of import and export trade has grown steadily, the structure has been continuously optimized, and new trade forms have developed vigorously, becoming a new engine for foreign trade growth. In terms of investment opening-up, the utilization of foreign capital and overseas investment cooperation have advanced side by side, attracting global capital and accelerating the pace of enterprises "going global". In terms of scientific and technological opening-up and innovation, international scientific and technological cooperation has achieved fruitful results, and technology trade and intellectual property rights have performed prominently, enhancing the global innovation discourse power. In regional coordinated opening-up, the connection of rules among Guangdong, Hong Kong and Macao has been continuously promoted, and remarkable achievements have been made in infrastructure connectivity. The opening-up of platform carriers has built a multi-level open ecosystem, and international exhibitions and exchange platforms have improved the ability to allocate global resources. However, the GBA still faces challenges such as institutional barriers to cross-border factor flow, insufficient depth of opening-up in

high-end service industries, and the need to improve participation in the formulation of international rules in the process of opening-up. In the future, the GBA needs to further deepen institutional opening-up, strengthen the connection and innovation of rules, break down the problems of factor flow, expand the breadth and depth of opening-up in high-end service industries, and actively participate in the formulation of international rules. With a higher level of opening-up, it will better serve the national strategy and show greater achievements on the global stage, continuing to write a new chapter of high-quality development.

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