CHAPTER 4

Global Digital Economy and Evolution of Opening-Up Rules

In recent years, there have been significant developments in new-generation information technologies, from big data and cloud computing to the Internet of Things and artificial intelligence, with digital powering all walks of life, and the digital economy has become an important form of economy following the agricultural and industrial economies, and an important aspect of countries' opening up for development and international cooperation. The construction of rules and governance systems for the digital economy plays a vital role in the development of the digital economy and is of great concern to the international community.

1. Digital Economy Continues to Release Vitality

The scale of the digital economy continues to expand. Various digital technology facilities and application settings are flourishing. The global industrial chain, supply chain, and value chain have experienced significant changes, and the industrial structure has been deeply transformed. As the key application fields of the digital economy, digital trade and digital finance have developed substantially in recent years, with promising prospects.

(1) Digital economy empowering economic growth

Digital economy[1] effectively enhances global economic energy. The Global Digital Economy White Paper (2022) by the China Institute of Information and Communications Technology shows that in 2021, the value added of the digital economy (including industrial digitization and digital industrialization) of the world's 47 major economies amounted to US$38.1 trillion, a year-on-year increase of 15.6 percent, and accounted for 45 percent of GDP.

Box 4.1 Industrial digitization and digital industrialization

1. Industrial Digitization

Industrial digitalization refers to the process of shifting traditional industries into the digital economy. In industrial digitization, enterprises digitize their traditional production processes, business models, management methods, etc., and through the introduction of various information technology and digitization tools, enabling them to achieve digitized management and automated operations covering their production, supply chain, and customer relations.

2. Digital Industrialization

Digital industrialization is not only about digitizing traditional industries but also about cultivating and developing new industries based on the digital economy. Digital industries cover a variety of industries related to digital technology, such as the Internet, e-commerce, software development, and cybersecurity. Based on digital technology, these industries use the Internet and communication technology to provide a variety of digital products and services, creating new business models and opportunities.

3. Relationship between the Two

Industrial digitalization serves as a major pillar and driving force for digital industrialization. With the digital transformation, traditional industries can better adapt to the development trend of the digital economy and improve their innovation ability and competitiveness. Meanwhile, digital industrialization promotes the further development of industrial digitization and provides more opportunities and challenges for the industrial digitization of traditional enterprises through the growth and expansion of digital industries. The mutual integration of industrial digitalization and digital industrialization is the future development trend.

The "top three powers" of the digital economy are clear. The ICT report shows that in 2021, the scale of the digital economy of the US, China, and Germany ranked among the top three in the world, with US$15.3 trillion, US$7.1 trillion, and US$2.9 trillion, respectively. According to the Digital China Development Report 2022 by China's National Internet Information Office, the scale of China's digital economy reached RMB 50.2 trillion in 2022, the total amount of which ranked second in the world, and its share of GDP rose to 41.5 percent.

Industrial digitization, the main driving force for the development of the digital economy. The ICT calculated that in 2021, global industrial digitization accounted for 85 percent of the digital economy, and digital industrialization accounted for 15 percent. The tertiary industry has the most noticeable effect of applying the digital economy, with the value added in the digital economy accounting for 45.3 percent.

New digital infrastructure[2] accelerates the layout. ChatGPT, as a new artificial intelligence digital technology, has received enormous attention from all sectors of society since its release in November 2022, triggering a boom in AI research and development in all countries. The data center is one of the core infrastructures of the digital economy, and Synergy, a US research institute, pointed out that the US accounts for nearly 40 percent of the total number and 50

percent of the capacity of the world's mega data centers currently; followed by China, Ireland, India, Spain, Israel, Canada, Italy, Australia and the UK.

The role of data factors and resources in empowering the digital economy has become more prominent. Data is a key production factor, the foundation, and the important carrier for the development of the digital economy. The International Data Corporation predicts that the global data circle will increase from 33ZB in 2018 to 175ZB in 2025. According to the statistics of the State Internet Information Office, China's data production hit 8.1ZB in 2022, a year-on-year increase of 22.7 percent, with a global share of 10.5 percent, ranking second in the world. Globally, there remains immense potential for effective use and value transformation of data elements.

(2) Digital economy promoting changes in the GVCs

The digital economy brings about changes in business models and industries. The value chain of the digital economy is more value-added, the chain is longer, and it is less limited by time and space, and the efficiency of resource allocation has been significantly improved. The digital economy promotes the integration and innovation of digital technologies, application settings, and business models, giving rise to many new business sectors and new models while strengthening the sharing of knowledge and technology elements among industries, enhancing total factor productivity through technological development, and driving the digital transformation of traditional industries worldwide.

The digital economy helps upgrade the industrial structure and develop an innovative economy. According to the WIPO, digitalization is changing the world and is transforming today's industries by changing the objects, types, and processes of innovation. By 2020, digital innovations have quadrupled in 20 years, growing at an annual rate of 13 percent and accounting for 12 percent of all patent applications in 2020. patents for digital-related innovations grew 172 percent faster than all other patents from 2016 to 2020. In East Asia, Japanese innovators hold 25 percent of the world's ICT-related patents, followed by Rep. of Korea (18 percent) and China (14 percent).[3]

(3) Digital trade has become a new hotspot

The booming development and wide application of the digital economy have given rise to digital trade, with data as the key production factor, digital services as the core, and digital ordering and delivery as the main feature.

Global digital services trade is thriving. Since 2016, digital services exports have accounted for more than 50 percent of global services exports and have shown a steady increase. According to WTO predictions, the global transaction scale of B2C (merchant to consumer level) cross-border e-commerce is expected to increase from US$780 billion in 2019 to US$4.8 trillion in 2026, with a compound annual growth rate of up to 27 percent.

The global cross-border e-commerce market is growing. According to McKinsey, the global cross-border e-commerce transaction value in 2021 was US$1.25 trillion. Another international data and statistics agency, Statista, estimated that global retail e-commerce sales exceeded US$5.7 trillion in 2022, a year-on-year increase of 16.3 percent, and are expected to reach record peaks in the coming years. China, the US, Japan, Germany, and the United Kingdom are the world's top five e-commerce sales countries, and Rep. of Korea, India, France, Indonesia, and Canada also rank among the world's top e-commerce sales, with greater potential in e-commerce development.

In recent years, China's digital trade has been developing rapidly, with both scale and quality improving. Data from China's Ministry of Commerce shows that the scale of China's digitally deliverable services trade reached 2.5 trillion yuan in 2022, a 78.6 percent increase over five years ago, and the gap with the US, the top country in digital services trade, has been narrowing. China is the world's largest cross-border e-commerce retail export economy. In 2022, the import and export of cross-border e-commerce reached 2.1 trillion yuan, an increase of 30.2 percent compared to two years ago. In the past five years, the import and export of China's cross-border e-commerce has increased by nearly ten times.

Box 4.2 Relevant terms on digital trade

Drawing on the expression of the *Digital Trade Measurement Manual*, we define digital trade as "trade with data as the key production factor, digital services as the core, and data ordering and delivery as the main characteristics."

Digital trade includes trade in digital ordering and trade in digital delivery. In terms of classification, it can be roughly divided into five categories: digital product trade, digital service trade, digital technology trade, data and information trade, and cross-border e-commerce.

Among them, digital product trade refers to the trade of transmitting and receiving images, text, videos, audio, and other information content in digital format through information communication networks, including digital games, digital anime, digital content publishing, digital advertising, digital music, digital film, and television.

Digital technology trade refers to the trade that is highly related to digital technology and can provide digital empowering technology services for other fields, including computer software services, communication technology services, big data services, cloud computing, blockchain technology services, industrial internet services, etc.

Digital service trade refers to the trade that is carried out through interactive communication through information and communication networks, delivering cross-border services in whole or in part through digital forms, including the digital delivery part of traditional services such as internet platform services, digital finance and insurance, online education, remote healthcare, and management and consulting.

Data and information trade refers to the trade in data and information itself.

Cross-border e-commerce refers to the trade of goods and services through e-commerce platforms for cross-border transactions.

(4) Digital finance contributes to high-quality economic development

In recent years, with the mutual integration and penetration of finance and science and technology, the use of digital technologies such as blockchain, big data, artificial intelligence, and other digital technologies in the financial industry has become more diversified in application scenarios, and new digital financial models and formats have gradually been formed on the basis of traditional finance by integrating new technologies and new modes, and have been continuously expanded. In addition to the digital transformation of traditional financial institutions, it has also given rise to new forms of business, such as digital currency, digital banking, digital insurance, digital payment, and decentralized finance.

The development of digital currency has accelerated. Digital currencies can be categorized into private digital currencies and central bank digital currencies according to the issuing parties. Central bank digital currencies are legal tender, and the research and development of central bank digital currencies in several economies have entered the new development era, with a report from the Bank for International Settlements showing that 86 percent of the world's central banks are researching central bank digital currencies in 2020. Since 2021, China's digital RMB pilot areas have been increasing, and the application scenarios are gradually expanding with a wider range of applications.

The pace of digital payment has accelerated. Digital payment effectively combines the Internet, terminal equipment, and financial institutions to form a new type of payment system. From the perspective of digital payment providers, Chinese companies have leading advantages. According to Juniper Research, an international market research organization, the top five digital payment companies in the world are Alipay, PayPal, WeChat Pay, Google Pay, and UnionPay China. From the proportion of digital payment use, according to Statista statistics, the countries with the highest proportion of digital payment use in 2021 are China, Rep. of Korea, and Vietnam, respectively, 39.5 percent, 29.9 percent, and 29.1 percent, while the proportion of use in the US, Germany, and Italy is relatively low, respectively, 17.7 percent, 14.5 percent, and 8.3 percent.

2. Global Digital Economy Rules Are Being Shaped

The global digital economy is booming, new modes and issues are constantly arising, the digital economy rule system has yet to be formed, and the concepts and practices of digital governance in major economies are still clearly distinct. All parties need to work together to strengthen cooperation, expand the space for coordination and integration of rules, and promote the formation of an open and inclusive system of rules for the global digital economy.

(1) Digital economy rules continue to expand the areas being covered

Digital trade rules are progressing faster. At the beginning of the digital economy, e-commerce was the most active area of the digital economy, with remarkable achievements in technological innovation, scale growth, and economic radiation. Early digital economy rules were mainly focused on e-commerce, covering the legality of e-commerce, tariffs on electronic transmissions, trade facilitation, consumer protection, and other aspects. At the multilateral level, in 1998, the WTO issued a Declaration on Global E-Commerce, announcing that members would maintain the current practice of not imposing tariffs on electronically transmitted transactions. In December 2017, negotiations on e-commerce were incorporated into the WTO's work agenda. In January 2019, the WTO formally launched plurilateral negotiations on e-commerce. At the regional level, e-commerce rules in free trade agreements are developing rapidly, and basically, all bilateral and multilateral FTAs that have been signed or are under negotiation in recent years contain provisions or chapters on e-commerce.

Digital elements and services have become important trading items in international trade, and issues such as digital market access and digital trade liberalization have become essential elements of rulemaking, focusing mainly on reducing restrictions on the cross-border flow of data, lowering barriers to access to digital services, safeguarding the rights and interests of relevant subjects, and maintaining cybersecurity. Regional trade agreements are becoming an important vehicle for digital trade rulemaking, and the US-Mexico-Canada Agreement, reached in 2018, has proposed for the first time a special chapter on "digital trade." Most of the free trade agreements signed globally now contain specific provisions or chapters on e-commerce (digital trade) related to digital trade.[4]

Digital economy agreements are popping up. With the rapid development of the digital economy and its penetration into all areas of economic operation, the relevant rules cover an increasingly wide range of topics, including digital taxation, financial technology, digital currency, artificial intelligence, digital inclusiveness, and place greater emphasis on the issues of international mutual recognition, coordination, and inclusiveness among countries in terms of digital technology, standards related to the digital economy, and domestic digital governance and regulatory frameworks. In recent years, several specialized digital economy agreements have already taken effect, such as the Digital Economy Partnership Agreement jointly signed by Singapore, New Zealand, and Chile, the Singapore-Australia Digital Economy Agreement, the Korea-Singapore Digital Partnership Agreement, and the United Kingdom-Singapore Digital Economy Agreement.

(2) Coordination of rules for cross-border data flowing continues to advance

Reducing barriers to data flow is an urgent need for the development of the digital economy, and the difficulty lies in the balance between cross-border data flow, individual privacy protection,

and national security guarantees. At present, the data governance concepts of major digital economy countries are obviously in disagreement, and cross-border data flow has not yet formed international unified rules, but the coordination of rules based on common ground continues to advance.

The US advocates the free flow of cross-border data. The US advocates the free flow of data across borders and promotes the construction of a system of rules for the liberalization of digital trade based on its strong technological advantage in the digital economy. The US has adopted a model of industry self-regulation, supplemented by government regulation, for the protection of the cross-border flow of personal data. In recent years, it has focused on promoting the formulation of rules and standards for the free flow of cross-border data through free trade agreements. 2012 US-Korea Free Trade Agreement included cross-border data flow provisions in a bilateral agreement for the first time. The US-Mexico-Canada Agreement states that "the Parties consider the Asia-Pacific Economic Cooperation (APEC) system of cross-border privacy rules to be an effective mechanism for facilitating the transfer of information across borders and for the protection of personal information." At the same time, the US continues to exercise strict control over important data related to national defense and security, such as adopting restrictive measures on the cross-border flow of data in key areas through foreign investment security reviews and export controls. The US government has also enacted the Clarifying Lawful Use of Data Outside the Border Act to ensure the legality of government access to data stored on extra-territorial servers by service providers within its borders and to strengthen its control over global data.

The EU stresses privacy protection. With the goal of "fundamental rights protection plus the construction of the internal market," the EU has constructed a set of high-standard data protection mechanisms, the most representative of which is the General Data Protection Regulation, which strictly controls the transfer of personal data from the EU to the outside of the EU, and cross-border transfers of personal data are realized through three main mechanisms. First, a mechanism based on a determination of adequacy (also known as a whitelist); second, a mechanism for the adoption of appropriate safeguards, including the signing of standard contracts, the adoption of binding corporate rules, certification mechanisms, codes of conduct, etc.; and third, as necessary for gaining the permission of the data subject, fulfilling the contract, etc. The EU also approved the Regulation on the Free Movement of Non-Personal Data in 2018, which regulates the flow of data that does not involve the identification of individuals and aims to supplement the GDPR to build a complete system for the flow of data. To meet security and law enforcement demands, the EU has clarified the requirements for extra-territorial authority of data, and foreign companies (digital platforms) entering the single market must do so on the premise of complying with EU rules.

China is committed to building balanced rules and striving to build the rules on cross-border data flow so as to balance development and security. It promotes the openness and development of the digital economy while also focusing on data regulation and security.

China actively participates in the construction of rules on the cross-border flow of data, and its commitment to the cross-border flow of data in signed FTAs is mainly reflected in the relevant provisions of the RCEP Agreement.[5] The Comprehensive and Progressive Trans-Pacific Partnership Agreement and the Digital Economy Partnership Agreement, both of which China is actively promoting accession to, contain high-standard rules on the cross-border flow of data. China is actively carrying out pilot projects on the management of the cross-border flow of data in the Pilot Free Trade Zones in Beijing and Shanghai and the Free Trade Port in Hainan; accelerating the improvement of the relevant domestic supporting legislation, and has successively introduced the Cybersecurity Law, the Data Security Law, the Personal Information Protection Law, and the Regulations on the Security and Protection of Critical Information Infrastructure to form the core legal system in the field of the digital economy; and, based on the above, introducing in 2022 the "Data Outbound Security Assessment Measures, which provides important supporting implementation rules for cross-border data flow; the Measures on Standard Contracts for Personal Information Outbound, which will be issued in 2023; and the promotion of international cooperation in the field of data security, and the proposal of the Global Data Security Initiative, which has been widely valued by the international community.

Progress has been made in the coordination of international rules on cross-border data flow. In the early days, the positions of major economies on the free flow of cross-border data diverged greatly, and policies and regulations were obviously divided, but the rules have evolved and developed, and the common points of all parties have gradually become clearer, which is mainly shown in the recognition of the "reasonable" flow of data, which provides the possibility of coordinating the rules of global data flow. The rule framework of "free flow of cross-border data with public policy exceptions or security exceptions" has gradually gained support from all parties when negotiating and formulating cross-border data flow rules based on bilateral and multilateral economic and trade agreements. It has become the direction of rules negotiation to consider and agree on exceptions based on the existing common ground.

Box 4.3 Adoption of adequacy decision for the EU-US data privacy framework

On 10 July 2023, the European Commission adopted an Adequacy decision for the EU-US Data Privacy Framework for the security of personal data of EU citizens exported to the US. The agreement imposes new restrictions on electronic surveillance by US intelligence agencies and provides Europeans with new ways to file complaints if they consider that their personal information has been used unlawfully by US intelligence agencies.

The European Commission believes that the US ensures a level of protection under the framework comparable to that in the EU for personal data transferred from the EU to US companies, so personal data can flow securely from the EU to US companies participating in the framework without the need for additional data protection measures.

Box 4.4 International and regional organizations promote consensus on cross-border data flows

The OECD revised its Guidelines on Privacy Shield and Transborder Transfers of Personal Information (the Guidelines) in 2013 while clarifying that member countries have the right to national rule making on privacy shielding and other matters beyond the Guidelines' minimum standards, to promote consensus more effectively.

In 2011, APEC established the Cross-Border Privacy Rules (CBPR) based on the APEC Privacy Framework adopted in 2005, which allows companies to demonstrate their compliance with internationally recognized standards of data privacy protection by joining the CBPR. The Group of Twenty (G20) proposed the "free flow of trusted data" in the 2019 Osaka Declaration on the Digital Economy. The Group of Seven (G7) re-emphasized the "free flow of trusted data" in the 2022 Digital Ministers' Meeting Declaration and proposed a Program to Promote the Free Flow of Trusted Data.

(3) The Rules on digital intellectual property become more balanced and inclusive

The protection of digital intellectual property rights has become an important part of the ETA negotiations, mainly including topics such as copyright protection of digital content, non-compulsory localization of source code, protection of trade secrets in computers, the electronic trademark system, and the liability of Internet Service Providers. At present, under the basic consensus on the protection of digital intellectual property rights, there are still differences on specific topics.

Both the US and the EU emphasize the protection of digital IPRs but with different degrees and emphases. In terms of digital intellectual property rules, the US and EU mainly advocate safeguarding the right of non-compulsory transfer of key technologies in emerging industries (products) such as cloud computing and artificial intelligence and protecting the copyright of digital media products.

The US implements strict protections on digital intellectual property rights, especially in "source code or algorithm protection," with a prominent aspiration. For example, the USMCA's rules on digital intellectual property are based on the TPP and CPTPP.[6] For a higher level of commitment, the public infrastructure clauses of TPP and CPTPP have been removed, "key protection" has been introduced, and the liability of ISPs for IPR infringement and the obligations of IPR protection have been strengthened.

The EU emphasizes the protection of copyright in digital content, protecting the rights of copyright holders and balancing the interests of users and content creators.

In 2019, the EU launched the Directive on Copyright in Digital Single Market, an overhaul of EU copyright law that includes new provisions on the "special liability of online content-sharing platforms" and the "link tax," which will legally constrain tech giants such as Google from profiting from unregulated use of free media content.

China has stepped up its efforts to improve its digital intellectual property rights system. Emphasis has been placed on giving full consideration to data security, public interest, and individual privacy, understanding the unique attributes of data and the objective law of the property rights system, respecting the creative work and relevant inputs of data processors, and giving full play to the role of data in supporting the digitization of industries and high-quality development. The Outline for the Construction of a Strong Intellectual Property Country (2021–2035) and the 14th Five-Year Plan for the Protection and Application of National Intellectual Property Rights both propose the implementation of data intellectual property rights protection projects and in-depth research on related theories and practices. Pilot projects on data intellectual property protection have been carried out in Zhejiang province, Shanghai, and Shenzhen, promoting replicable and extendable experiences and practices in local legislation, certification, and registration. Zhejiang province and Beijing have incorporated data intellectual property rights into local regulations, and Shenzhen has promoted the registration process of data intellectual property rights.

There is an opportunity to reach a consensus on international rules on digital intellectual property rights. To safeguard the competitiveness of digital products and the rights and interests of their holders, economies share a common demand for a favorable digital intellectual property environment, and the rules on digital intellectual property can build on this to reach some agreements. For example, in non-compulsory localization of source code and other digital technologies, some current ETAs have already taken the approach of retaining exceptions, and further harmonization of the coverage of the exceptions may facilitate the formation of a consensus on the rules. Regarding the liability of Internet service providers, there is a convergence between the US and Europe on the "notice-and-takedown" obligation, i.e., if ISPs fulfill their IPR protection obligations such as "notice-and-takedown," they are not liable for IPR infringement by third parties (platform users).

(4) New breakthroughs in tax rules under the digital economy

Under the context of the digital economy, the traditional tax system has been challenged and shaken. Digital economy tax rules mainly include two aspects: electronic transmission tariff and domestic digital tax. Formulating new tax rules in accordance with the characteristics of the digital economy has become the focus of major economies, and major international organizations have made efforts to seek global solutions and have made positive progress.

The issues of electronic transmission tariffs and domestic digital taxes are in disagreement. Different economies have various levels of development of the digital economy and have different interests in electronic transmission tariffs and digital service taxes,[7] with three kinds of advocates have been formed: first, advocating the exemption of electronic transmission tariffs and digital service tax, represented by the US; second, advocating the exemption of electronic transmission tariffs but excluding the tax of digital services; and third, advocating the exemption

of electronic transmission tariffs and digital service tax, represented by India, Brazil, South Africa, and Indonesia.

China improves digital tax governance. It is in favor of drawing on international experience in digital economy taxation, adhering to the principle of statutory taxation, providing greater support for taxation, improving the tax collection and management system, and strengthening the collaborative and common governance of digital taxation, so as to better promote the high-quality development of the digital economy.

There has been progress in international consensus. Under the active coordination of all parties, international rules on tariff-free electronic transmission and domestic digital tax have achieved a certain degree of consensus. Multi-bilateral rules still maintain the "tariff-free electronic transmission" proposed in the 1998 WTO Declaration on Global Electronic Commerce, which is accepted in the FTAs signed by major digital economies; the G20/OECD Inclusive Framework on Base Erosion and Profit Shifting issued a statement which calls for a "two-pillar" program[8] to address the tax challenges of digitizing the economy, reaching a certain consensus on addressing the tax challenges of digitization of the economy.

3. Future Trends in the Global Digital Economy and Opening-Up Rules

The global digital economy is developing strongly, and digital industrialization, industrial digitization, data value exploitation, digital technology development, and digital infrastructure continue to evolve. At the same time, the global digital economy rules are fragmented and under-supplied, and there is an urgent need to alleviate the global digital divides, regulate cross-border data flows, improve the protection of digital intellectual property rights, and refine the rules of digital taxation.

(1) Strong development of the digital economy, opportunities and challenges co-exist

The integration of digital industrialization and industrial digitization has become a trend. Digital industrialization provides the underlying technology for the digital economy and is the core driving force for the development of the digital economy. Industrial digitization is booming; digital information technology and traditional manufacturing technology will be deeply integrated, and digital technology and data resources will help the industrial transformation and upgrade; industrial digitization in the digital economy will be an increasingly high share. Digital industrialization and industrial digitization will promote each other and push "manufacturing" towards "intelligent manufacturing." In the future, more "digital production services plus digital business models plus digital financial services" will emerge from modernized industrial clusters. Accompanied by technological innovations in artificial intelligence, quantum communications,

the Internet of Things, and other fields, future digital technology is likely to achieve systematic breakthroughs, promoting the further development of the digital economy.

The global data market has huge room for development. The development of the digital economy requires the activation of data elements and the establishment of a perfect, fair, and credible data market. The future data market is expected to go beyond the "data exchange" model and produce a scenario-based data trading model for governments and industries. After the establishment of the data market, its massive data resources will enter the market in various forms to feed and promote the development of the digital economy. At the same time, it should also be noted that the related problems of data market development, such as monopoly operation, irregular operation, and information leakage, for which governments should strengthen regulatory cooperation and promote standardized development.

The problem of the digital development divide has been highlighted. There is an imbalance in the development of digital technology among different regions and countries. A small number of advanced countries have mastered key global digital technologies but are reluctant to share their technological achievements with other countries for a variety of reasons, including technological protection and the concept of generalized security, thus deepening the global digital technology divide. Most developing countries are lagging in terms of digital infrastructure and technology and are facing deep digital divides and capacity deficits. According to the International Telecommunication Union, about 5.3 billion people globally use the Internet in 2022, accounting for 66 percent of the world's population. In Europe and North America, more than 80 percent of the population uses the Internet, while in Africa, the proportion is only 40 percent, much lower than the global average. In the future, digital industrialization, industrial digitization, data value exploitation, digital technology development, and digital infrastructure will continue to be iteratively upgraded and developed, and at the same time, it is also necessary for countries to work closely together and take practical measures to solve the problem of the global digital development divide.

China's digital economy will reach a new level. China will endeavor to promote the high-quality development of the digital economy, will speed up the promotion of the deep integration of the digital economy and the real economy, and will create internationally competitive digital industry clusters. It will fully unleash the potential of digital elements, accelerate the construction of the digital government, and speed up the transformation of the economic development mode. The digital economy's innovative development in various regions has led to the emergence of typical practices of digital transformation.

Box 4.5 Making Shanghai an international digital capital

Shanghai is promoting comprehensive digital transformation in all areas of economy, life, and governance and accelerating the creation of an international digital capital with world influence.

Accelerating the digitization of its economy, vigorously developing the digital economy, and promoting the digital transformation of its industries. With digital empowerment, Shanghai's aviation, aerospace, shipping, automotive, and other industries are constantly upgrading, and more parks focusing on industrial digitization have come into being. In 2022, the added value of Shanghai's core industries in the digital economy reached RMB 537 billion, accounting for 12.3 percent of the GDP.

Accelerating the digitization of life and leading the world in digital life services, Shanghai is actively guiding the participation of market players to promote the digital transformation and construction of key areas such as medical care, traveling, schooling, tourism, sports, and pension. Many indicators, including digital administrative services, public services, and digital life services, have stepped into the national and global leading ranks.

Accelerating the digital transformation of governance and shifting from reactive to proactive services, Shanghai uses intelligent means such as big data and AI to provide diversified, personalized, attentive, and high-quality services for market players and the public.

(2) Global digital governance has a long way to go

The market calls on governments to strengthen cooperation in rule-making for the digital economy. There is a need to strengthen collaboration among major economies, including sharing countries' experiences in digital governance and exploring issues such as mutual recognition, harmonization, and inclusiveness of regulatory frameworks. Countries should work together to combat all kinds of illegal and infringing behaviors in the development of the digital economy, protect the legitimate rights and interests of market players, create a fair and transparent international environment, jointly address regulatory issues in the ordering, production, delivery and after-sale segments of the digital trade, and jointly plug loopholes in regulatory rules on cross-border data flows, digital intellectual property rights protection, and user privacy protection. In formulating domestic digital economy rules and in external negotiations, countries should consider both their own interests and the overall global interests, consider both digital economy development and data security, endeavor to balance local and global interests, and actively coordinate the relationship between digital development and digital security. All parties should strengthen international cooperation on digital governance under the framework of the United Nations, WTO, and G20, take into full consideration the demands of all parties on the basis of the existing common ground, and endeavor to reach a consensus on the rules of the global digital economy.

China actively participates in global digital economic governance. For one thing, it has endeavored to build a digital economy institutional system that is in line with internationally accepted rules and eliminate domestic institutional obstacles that hinder the development of the digital economy. Digital economic and trade rules are actively implemented on the basis of elevation standards with active promotion of the accession to CPTPP and DEPA for enhancing

the level of institutional openness. On the other hand, China is participating in global digital economy governance, such as implementing the Ministerial Decision on the E-commerce Work Plan of MC12, promoting the better role of the WTO in the digital era, and improving related rules and increasing the supply of global digital economy.

NOTES

1. There is no common and authoritative international standard of measurement and statistical criteria for the digital economy, but it has reached an international consensus that the growth of the digital economy is faster than the growth of the total economy.
2. Digital infrastructure is an infrastructure system driven by data innovation, based on communication networks, and with data arithmetic facilities at its core, mainly involving new-generation information and communication technologies such as 5G, data centers, cloud computing, artificial intelligence, the Internet of Things, blockchain, and other types of digital platforms.
3. World Intellectual Property Organization, *World Intellectual Property Report* (April 2022).
4. According to the TAPED (Trade Agreements Provisions on Electronic Commerce and Data) database, by June 2021, a total of 188 signed Preferential Trade Agreements (PTA) around the world contain specific provisions on digital trade, of which 113 contain specific e-commerce provisions, and 83 contain e-commerce (digital trade) chapters.
5. Article 14(2) of Chapter 12 of the RCEP provides that a Party shall not make the conduct of business in the territory of that Party conditional on requiring covered persons to use computing facilities in the territory of that Party or to place facilities within the territory of that Party.
6. Both the TPP and CPTPP require "non-compulsory localization of source code" but at the same time state that the software to which "non-compulsory localization of source code" applies is limited to "mass market software or products containing such software, excluding software used in critical infrastructures."
7. Broadly speaking, domestic digital taxes also include consumption taxes, value-added taxes, and other indirect taxes, which are not discussed here.
8. Pillar I breaks through the physical constraints of the current international tax rules and redistributes the profits and taxing rights of large multinational enterprises (MNEs) to the market countries to ensure that they are more equitably liable for global tax payments in the context of the digital economy. Pillar II combats tax evasion of multinational enterprises through the establishment of a global minimum tax regime and establishes a bottom line for competition in corporate income tax rates.