

Analysis of the Impact of Digital Trade Barriers on Global Value Chains

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Abstract. Digital trade, born in the context of digitisation, is an emerging model based on digital technology and realised through the digitisation of trade methods and trade objects. While solving the limitations of time and space, digital trade barriers have also emerged, which have become a major obstacle in the process of economic globalisation. This paper focuses on the relationship between digital trade barriers and global value chains, discusses the development trend of China's digital trade under the background of "anti-globalisation", and puts forward corresponding countermeasures to address these problems: establishing an early warning system for multinational enterprises on digital trade barriers; establishing and improving the bill or draft of digital tariffs; and promoting the organic integration of digital technology and traditional industries. organic integration of digital technology and traditional industries; strengthening cooperation with neighbouring countries to increase economic resilience; enhancing China's voice in international trade rule-making and fighting for more benefits for developing countries; and continuing to increase opening up and increase the number of digital trade pilot regions.

Keywords: digital trade barriers, digital trade rules, global value chain length, global value chain division of labour.

1. Introduction

The virtual nature of digital trade naturally makes it more difficult to regulate, and the barriers to digital trade on behalf of restricting cross-border data flows, protecting the privacy of personal information and preventing intellectual property rights from being infringed upon are even higher and higher, cascading down the mountain. Compared to traditional tariff barriers, digital trade tariff barriers are more complex and non-trivial, and whether or not they are intentionally discriminatory, they are a serious impediment to the flow of digital products. To a certain extent, the existence of digital trade barriers hinders the flow and diffusion of data and information in the division of labour in production, and also prevents the corresponding technological factors from being put into the production chain, especially the "sticky" data and information technology, which to a certain extent also raises production costs.

The surging tide of anti-globalisation is also one of the situations triggered by the weak recovery of the world economy, and the collision of economic interests, such as the "Brexit" of the United Kingdom or the continuous and even more acute economic and trade friction between China and the United States, has impeded the process of the development of the world economy. Even before the financial crisis in 2008, the length of the value chain was extended by as much as 14%; however, after the financial crisis led to great market turmoil, the extension trend slowed down or even stagnated, and the division of labour in the global value chain had to follow suit, with many countries in a wait-and-see mode; after the outbreak of the global epidemic in 2019, in order to protect themselves, various countries have implemented policies of blocking the flow of traffic in cities, prohibiting the entry of people into the country or even blocking the whole country, which has triggered the suspension or even closure of enterprises, and the closure of trade. This has led to a series of knock-on consequences, such as the suspension or even closure of enterprises, trade disruption, economic stagnation or even regression, and the self-sufficiency of countries and the reduction of cross-border trade transactions have had a long-term impact on the division of labour in the global value chain.

2. Literature Review

2.1 Research on the Current Status of Development of Digital Trade and Barriers to Digital Trade

2.1.1 Research on the Development Status of Digital Trade

Digital trade expands the range of imported and exported commodities, and at the same time changes the way commodities are traded and goods are produced, resulting in a substantial reduction in transaction costs and expenses, low-cost commodities jumping into the public's view to participate in international trade, the volume of trade continues to increase, and the digitisation of the production and trade of products breaks down the country-specific limitations and thrives.

González and Jouanjean (2017) stand in the perspective of information asymmetry, indicating that the cross-border flow of data facilitates the search for information between the two sides of the trade and reduces the cost of import and export transactions, and that the relative symmetry of information allows for a more efficient allocation of resources, achieving a better match between supply and demand in trade[1]. Digital trade also plays a big role in reducing transport costs, not only can effectively reduce transport costs, shorten delivery time, but also through the construction of logistics centres and online logistics systems, greatly enhancing trade efficiency and increasing trade opportunities.

2.1.2 Research on the impact effect of digital trade barriers

However, along with this, there are some unfavourable factors, which are the barriers to digital trade. Digital trade barriers are a kind of restrictions and limitations on digital trade behaviour, which may exist in the form of tariffs or in the form of non-tariffs such as origin, technology, security and transparency (Wang, 2019)[2].

In terms of the role of digital barriers to trade, Ahmed (2015) points out that the existence of networks increases "friction", both in terms of specialisation and in terms of transactions, which leads to a greater disparity of interest in the division of labour, transactions, payments, distribution, etc., between various market players[3]. It is important to note that Wilson (2016), through a theoretical model, examines the results and mechanisms of the impact of prevailing trade barriers of localisation preferences, trade costs and information frictions on cross-border trade and related welfare levels, and finds that information friction barriers are the most important, and that they tend to have a greater marginal effect on reducing cross-border trade, a phenomenon that suggests that even minor information frictions may become a powerful barrier to trade. have the potential to become a powerful barrier to trade[4].

In terms of addressing barriers to digital trade, Meltzer (2015) notes that the rules for addressing barriers to digital trade are, on the one hand, to re-emphasise and clarify the relevant provisions and commitments in the existing multilateral trade rules and reduce the interaction of agreements, and, on the other hand, to develop rules provisions and commitments that are both in line with the need for, and consistent with, the materialisation of digital trade in the current negotiations of bilateral and regionally free trade agreements[5].

2.2 Studies related to the length of global value chains and the status of the division of labour

2.2.1 The impact of digital trade on the length of global value chains

Han et al. (2018) conducted an econometric study of network digital technology in 57 OECD countries, and the results show that the digital economy has promoted a more detailed international division of labour in terms of network articulation and information aggregation, and different countries have more opportunities to participate in the global value chain, while shortening the distance from production to services, which has a non-negligible impact on the improvement of the status of the division of labour in the global value chain[6]. In 2017, Du and Du suggested that the structural changes brought about by the Fourth Industrial Revolution have had a profound impact on GVCs, and that the rise of the digital economy is improving the quality and efficiency of the

manufacturing industry, while enhancing the efficiency of the supply chain and expanding the coverage of the service chain[7].

Lund et al. (2016) argued that the proliferation of digital technology has changed the trend of globalisation in all its forms, whether in terms of goods, services or currencies[8]; the digital economy promotes the digitisation of the global production and service systems, promotes the innovation of industrial products, and renews the world's trade system, forming a digital trade model (Meltzer, 2019)[9].

The spatial and temporal limitations of international trade have been released because of the emergence of digital trade, and the digitisation of trade objects and modes has also changed the way of participation in the global value chain, and digital products and services have deepened the specialisation of the division of labour and reshaped the pattern of the global value chain.

2.2.2 Research on the measurement of the status of global value chain division of labour

With digital trade as a new mode of international trade, the actual trade status of each country has its own characteristics, and the resulting real trade situation is also different, and different accounting methods will lead to different conclusions: Hummels (2001) measures the differences in the status of the international division of labour through the Vertical Specialisation Index[10]; Hausmann (2005) proposes to measure the status of the international division of labour at the three levels of countries, industries and products through the Export Complexity Index; and Hausmann (2005) proposes to measure the status of the international division of labour at the three levels of countries, industries and products. levels through an export complexity index to measure its position in the global value chain[11]; Koopman (2010) builds a global value chain index through a trade value added index, including its participation index and status index[12]; and Qiu et al. (2012) measure the position of 24 Chinese manufacturing industries in the value chain from 2001-2008 in terms of their export technological complexity[13]; and in 2015, on the basis of the two dimensions of "embedding value chain" and "value-added capability", Wang proposed two important ways to enhance China's position in the global value chain: upgrading the structure of production factors and cultivating core technology advantages[14].

3. Analysis of digital trade barriers and the length of the value chain and the development of the division of labour

When the global economy was affected by the epidemic and became unstable, most countries, in order to protect local enterprises from the impact of foreign enterprises, adopted a series of measures to constrain and restrict international trade transactions, not only for the emerging digital trade, but also for the traditional trade has been further restricted.

The U.S., which occupies a leading position in the customisation of digital trade rules, impedes the flow of digital trade in terms of data, intellectual property rights, and personal information privacy, while traditional trade restrictions are more in terms of market access and investment in terms of taxation, localisation, ownership, and related legal regulations.

The OECD, on the other hand, from the commonality of trade barriers among countries, has made a more detailed division at the levels of infrastructure, logic, application, content, economic and social environment, and governance, etc., so as to ensure that the basic interests of all countries are not infringed upon while rationally planning the height of barriers, preventing unhealthy competition, and promoting the inclusive development of digital trade and narrowing the digital divide among countries.

3.1 Analysis of the impact of digital trade barriers and the length of global value chains

The length of the value chain is the average number of production stages in the value chain division of labour from the initial input to the completion of the final production, which is the "footprint" of the gradual increase of the industrial value in the whole industrial chain, and also an important

indicator reflecting the complexity of the industrial division of labour and the degree of specialisation, and also an important indicator for measuring whether a country's industrial division of labour has a competitive advantage, whether it has a competitive advantage, whether it has a competitive advantage, and whether it has a competitive advantage and other factors are important references. With the deepening of the worldwide division of labour in production, the chain of production from the initial R&D and design to the delivery of the final product to the hands of the consumer grows gradually, the production stage gradually involves more countries, the division of labour in production becomes more and more refined, and the product arises more from the regional chain or value chain. And the emergence of digital trade barriers, but hinder the division of labour in the process of production of data, information, services and other elements of the input, especially with a high degree of "sticky" data, information and other technologies, thus limiting its application in the process of division of labour in production.

3.1.1 Digital trade barriers reduce the input of relevant factors in the production chain.

The rapid development of digital technology has brought new opportunities to various industries and induced new business forms, the demand for different data factor inputs is increasing, and the trend of product digitisation and trade mode digitisation is strengthening day by day. In terms of the barrier of localisation of digital service trade, infrastructure connectivity is the key to realising the digitisation of service activities. However, the constraints of "localisation of facilities" and "localisation of services" have restricted the free flow of digital service elements across borders, thus restricting the production of the industry. However, the constraints of "localisation of facilities" and "localisation of services" limit the free flow of digital service factors across borders, thus restricting access to high-quality factors in the industry's division of labour. In addition, in the original production chain, the local data elements that match foreign data will also be compressed. When the input of service factors in the whole production chain declines, certain production stages that are mainly based on the production of service intermediates will inevitably face the problem of unsustainability, and the length of the industry value chain will become shorter.

3.1.2 Digital trade barriers raise the cost of intermediate goods trade in the value chain division of labour.

Digital trade barriers as a "trade costs" of a kind, it profoundly affects the division of labour in the global value chain, which in turn affects the development of the global economy, high transaction costs will inevitably lead to a decline in the willingness to cooperate in the production of different transaction subjects, which in turn leads to the enterprise on the division of intermediate products and outsourcing of the mode of division of labour and outsourcing of the behaviour of the reconsideration, so that Some of the production links "flow back" to the country, leading to fewer links in the international production division of labour, which in turn leads to the shortening of the industrial value chain.

3.2 Analysis of digital trade barriers and the development of global value chains

Different countries' scientific research capacity, development speed, and position in the international market are not the same, dominant multinational corporations, in order to achieve the optimal allocation of resources, in order to find the most advantageous location in the global scope, associated with the product value chain for the production of the layout, which makes the original product as the boundary of the international division of specialisation, gradually evolved into the same kind of product in a link or a process of specialisation. A process of specialised division of labour. This new form of international division of labour is called global value chain (GVC) division of labour.

R&D and marketing are both high value-added areas; the former is technology and capital intensive, requiring highly qualified professional human capital and high-cost research inputs; the latter is an information and innovation creative field, requiring the support of art, culture, creativity and other elements; and manufacturing as a low-value-added area is dominated by the labour-

intensive manufacturing industry, which is an area for the employment of blue-collar workers, and if each country is regarded as a worker in the production chain, it will be a very difficult task for them. countries as workers in the production chain, developing countries are mostly blue-collar workers.

As a result of economic globalisation, there have been a number of joint ventures, with developed countries providing technology or branding and service support, and developing countries providing raw materials, labour, and the land they need, so two modes of production have evolved, OEM and ODM. Original Equipment Manufacturer (OEM) purchases the R&D process of the other party, for example, on behalf of the production, no need to design, just according to the requirements of the other party to produce, the production process of the manufacturer's revenue from the manufacturing process. Typically, developed countries due to the lack of raw materials for domestic production or high production costs, will choose to locate their enterprises in developing markets, OEM mode of production, from which to obtain the profits of the R & D process. Original Design Manufacturer (ODM) is a manufacturer who accepts the design and manufacturing business after being favoured by a certain enterprise to produce according to the brand name of the other party, and the other party mainly obtains the profit brought by the brand and service. When the country's digital trade barriers increase, R & D and brand and service links in developed and developing countries in the circulation will also be hindered, in this obstacle in the more damaged is the developing countries, due to the technology and information flow is blocked, on the one hand, is not conducive to the development of the country's manufacturing industry, on the other hand, is not conducive to the country's related scientific and technological research and development.

4. conclusions and recommendations

4.1 Conclusion

This paper focuses on the analysis of digital trade barriers and global value chains in the existing research and data, and obtains the following conclusions: digital trade barriers impede the flow of data and the dissemination of information in the division of labour in production, and it is difficult for other relevant factors in the production chain to be invested. As a result, developing countries, which are mainly engaged in the production of service intermediates, are unable to better integrate into the global value chain, which leads to the imbalance of economic development among countries; from a macro perspective, when the higher the level of servitization of the production factors of the manufacturing industry, the more important its position in the global value chain, and the blocking effect of the digital trade barriers on the division of labour in the global value chain of the industry is also stronger.

4.2 Recommendations

4.2.1 Establishing an early warning system for digital trade barriers

According to an estimate by the International Monetary Fund (IMF), in 2020, \$700 billion could be lost due to trade issues such as the U.S.-China standoff; and in 2018, the U.S. sanctioned ZTE for violating the government's ban, and it is estimated that the shutdown brought \$20 billion in direct economic losses to ZTE. Small and medium-sized foreign trade enterprises are facing an increasingly severe existential crisis, and the space for development is becoming narrower and narrower.

In contrast, the United States is the establishment of a digital trade business sector, the digital trade protection measures of various countries to collect and analyse relevant information, and these analyses of the information synthesized together to provide early warning information and the latest developments in the international trade situation in a timely manner to the export enterprises, and at the same time, but also put forward a number of targeted, constructive measures proposed for the export enterprises to adjust their export Market strategies and development plans to make sufficient time; at the same time, in the location of foreign-funded enterprises in the digital trade staff, and digital trade-related laws, policies and other aspects of the problem quickly; in addition, the U.S.

government can also be in this way, in advance to understand what digital technologies, products and services will be a threat to national security, so as to quickly analyse and develop a more targeted countermeasures.

Referring to the experience of the United States, for the weak foreign trade exporters and industries, as well as for the foreign trade sector, the establishment of a comprehensive early warning system is very important, because this system in China is not perfect, and the information lag is very large, is not conducive to China's international trade in a more smooth manner, so we can actively adjust the relevant internal construction and the layout of the international foreign trade personnel, speed up to grasp the latest situation in the international market and the importing countries in the laws or policies. Therefore, we can actively adjust the relevant internal construction and international foreign trade personnel layout, accelerate to grasp the latest situation of the international market and the importing country in the law or policy changes, and timely convey to the professional departments and put forward relevant countermeasures to help foreign enterprises efficiently cope with the changes in the international trade market as well as avoid some of the pitfalls of international trade disputes.

4.2.2 Bill or draft bill to establish and improve digital tariffs

In China's tax system, there is practically not yet a specific digital tax. The tax attributes of digital products have not been clearly defined in the existing tax laws, and in particular, online digital products have not yet been included in any kind of tax law; for traditional intangible assets like copyrights, the tax rate for withholding income in cross-border transactions is only 20 per cent.

Many countries have introduced digital taxes on specific digital products and services. In Brazil, for example, there are 300 taxes on digital products. The United States, while strongly resisting digital taxes, has a digital economy that generates a lot of tax revenue, with Apple's headquarters alone having a supply chain of 1,049 suppliers in 45 countries and generating about 60 per cent of its revenue from overseas. The French tax authority has made a demand for more than 100 million euros (including penalties) from Facebook's French branches. India has extended digital taxation to a wider range of e-commerce activities and, from April 2020, will charge a 2 per cent tax on earnings made by non-resident e-commerce operators in India. However, China does not yet have a tax law or draft on digital goods and services.

4.2.3 Promoting the integration of digital technology with traditional industries

According to estimates, China's total output could reach 48.6 ZB by 2025, equivalent to about 27.8 per cent of the world. The construction of a data infrastructure system is related to the development and security of a country, and accelerating its construction is a strategic choice to make full use of the advantages of data elements and give full play to their proper functions. It is a strategic choice to make full use of the advantages of data elements and give full play to their proper functions. It provides a new development idea for the construction of "Digital China" and the development of "Digital Economy" for the country. Improving the construction of the data infrastructure system focuses on integrating development and security, facilitating the integration of digital infrastructure into the development ecosystem at a higher coverage rate, creating an open, fair and just digital governance system, and enabling data elements to play a better role in enhancing people's well-being.

Actively implementing the national digitisation strategy, integrating data resources from various industries and links, and constructing a data chain that can cover the entire product production chain, thereby enhancing the connectivity of the division of labour network and the adhesion between enterprises. At the same time, it is also possible to increase investment in knowledge-based factors of production and promote digital technology research and development and innovation, so as to raise the level of digitisation in the industry, and inject core impetus into the participation of various industries, especially traditional industries, in the production of high-end links in the value chain, and their deep integration into the global production network.

4.2.4 Strengthening negotiations and cooperation

The existing rules are not highly centralised, and the fragmentation of global digital trade rules makes it difficult to form a broad consensus. From the "American template" to the "European template" to the "Chinese template" to various agreements, some countries have signed a number of agreements involving digital trade in order to obtain corresponding trade benefits. However, these agreements differ in terms of the level of commitment, implementation mechanism and dispute settlement mechanism, and are used interchangeably, making the application of these agreements more difficult. Against the backdrop of the changing international situation, strengthening close cooperation with other countries is fundamental to ensuring the development of emerging markets. Mutual cooperation can only create a win-win situation, and increased openness and inclusiveness is also conducive to enhancing economic resilience.

4.2.5 Improve China's right to speak in international trade rule-making

At present, the lack of clarity in international trade rules hinders digital technological innovation, is not conducive to the development of digital trade, and inhibits the rise of the digital economy. Therefore, it is an urgent problem to build a digital trade rule system as soon as possible, to make a reasonable attribution of the digital trade barriers of various countries, to promote trade between countries, to refine the division of labour in the global value chain, so that more countries can participate in the process of global economization, thus promoting the development of the global economy.

Developed countries such as the United States and the European Union realised the potential business opportunities of digital trade a long time ago, and have made exports and profit distribution worldwide, and made layouts for it. In accordance with the national policy of "going out", we should focus on the world and take a strategic view of digital trade, coordinate and coordinate the departments of cybercredit, commercial cooperation, foreign affairs, public administration, and industrial and commercial administration, and set up a special working group on digital trade to scientifically evaluate the development status of digital trade and identify trade barriers in due course. Coordinate the relationship between digital trade and the protection of personal information, intellectual property rights and national economic security. Conduct in-depth analysis of current problems, improve Chinese-style digital trade rule propositions, conduct a comprehensive analysis of the interests and demands of various countries and the world economic situation, accurately grasp the interests and concerns and policy requirements of various parties, and promote the establishment of new international rules on digital trade that are fair and inclusive.

4.2.6 Continuously promote the expansion of opening-up and increase the number of pilot regions for digital trade.

In the process of promoting the digital economy to better empower the modern industrial system, the governance of the digital economy and the construction of the rule of law will become a top priority. In recent years, worldwide spending on digital transformation has been increasing, and will continue to grow steadily at a double-digit rate in the years to come, with the Internet Data Centre (IDC) projecting that the average annual growth rate of digital transformation spending will reach 16.6% in 2022-2026. The change from efficiency to value, and the extension of the value chain from within the enterprise to the industrial chain, are none of the characteristics of the global digital transformation. With e-commerce, industrial internet, smart manufacturing, artificial intelligence and other fields as the core, industrial parks are explored, and their economic effects are brought into play to bring more projects into the parks and build a new highland of industrial agglomeration, so as to gain the division of labour in global value chains. advantage.

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