

Research on China's Export Upgrading Path Under the Reconstruction of Global Value Chains

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Abstract: Against the backdrop of deglobalization, intensifying geopolitical conflicts, the digital technology revolution and the deep advancement of the green transition, the global value chain (GVC) is undergoing profound “re-globalization” restructuring. It is shifting from “efficiency first” toward resilience, sustainability and inclusiveness, with increasingly prominent features of regionalization, digitalization and greening. As the world’s largest trading nation in goods, China’s exports have long been locked in the low-and mid-end segments of GVCs, facing multiple challenges, including core technology bottlenecks, insufficient adaptation to trade rules, and weak industrial and supply chain resilience. This paper systematically analyzes the core characteristics and driving forces of GVC reconstruction, examines the current status, achievements and prominent bottlenecks of China’s export upgrading, and proposes targeted export upgrading paths from five dimensions. It aims to provide theoretical references and practical guidance for China’s exports to break through low-end lock-in, achieve high-quality development, and deeply integrate into GVC restructuring.

Keywords: Reconstruction of global value chains; Export upgrading; Value chains; Digital trade

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1. Introduction

At present, the global economic landscape is undergoing profound adjustment. As the core carrier of the global division of labor, the global value chain is moving away from the traditional “globally decentralized” layout and entering a period of reconstruction characterized by regionalization, nearshoring, supply chain diversification, digitalization and greening ^[1]. The *2025 Global Value Chain Development Report* shows that GVC-related trade still accounts for 46.3% of global trade. Although slightly lower than the 2022 peak, it remains at a high level, indicating that “deglobalization” has not occurred and “re-globalization” is accelerating. The interplay of geopolitical conflicts, climate change constraints, digital technological innovation and other factors is driving the global value chain to shift from being cost-driven to security-driven and value-driven. Trade rules are also upgrading from traditional rules toward institutional opening-up rules, bringing new challenges and opportunities for export development across countries.

In 2025, China’s merchandise exports reached nearly 27 trillion yuan, a year-on-year increase of 6.1%,

maintaining its position as the world's largest trading nation in goods. With a complete industrial system and large-scale supply capacity, China holds an irreplaceable position in the global production network. However, for a long time, China's exports have been concentrated mainly in processing and manufacturing segments of GVCs, dominated by labor-intensive products with low value-added and low technological content, lacking competitiveness in high-end links and falling into a "low-end lock-in" dilemma. As GVC reconstruction intensifies, China's exports face dual pressure from the "high-end return" of developed countries and the "low-end diversion" of developing countries. They also encounter external constraints such as trade protectionism, technical barriers and carbon border adjustment mechanisms, making export upgrading increasingly urgent.

Against this background, an in-depth investigation of the characteristics and trends of GVC reconstruction, an analysis of the current situation and bottlenecks of China's export upgrading, and an exploration of feasible upgrading paths are of great theoretical and practical significance. They help promote China's exports to shift from scale expansion to quality and efficiency, enhance China's position in global value chains, foster new productive forces, and realize high-level opening-up.

2. Core characteristics and driving forces of global value chain reconstruction

2.1. Core characteristics

In terms of spatial layout, global regional agglomeration has become prominent, forming a new structure of "regional hubs plus cross-regional connectivity". Driven by geopolitical conflicts and supply chain security concerns, the global value chain has shifted from global decentralization to regional agglomeration, with a significant rise in intra-regional value-added trade in North America, the European Union, East Asia and other regions^[2]. After four years of implementation, the Regional Comprehensive Economic Partnership (RCEP) has achieved remarkable results. In 2025, the merchandise trade volume between China and other RCEP members reached 1.9 trillion US dollars, accounting for 30% of China's total foreign trade, providing important support for the development of regional value chains. Meanwhile, regional value chains are not closed; they maintain cross-regional connections, forming a diversified and coordinated division of labor.

In terms of governance model, the traditional global value chain was dominated by transnational corporations in terms of division layout and value distribution. Today, GVC governance has become more diversified, with growing participation by governments, industry associations, international organizations and other actors. Trade policies, industrial policies, green regulations, security reviews and other factors are deeply shaping trade flows. In site selection and supply chain planning, enterprises increasingly value policy predictability. Targeted Trade Deals (TTDs) have emerged, with more than 180 such agreements signed between 2021 and 2024 focusing on frontier areas including digital trade and critical minerals.

In terms of factor orientation, GVCs are transforming toward technology-, data- and green factor-intensity, reshaping value creation. The widespread application of digital technology has made data a core production factor, and the share of digitally deliverable services in GVCs continues to rise. The green transition is pushing GVCs toward low-carbon development. Green goods such as electric vehicles, critical minerals and clean energy equipment have become major drivers of trade growth. Green policies including carbon emission trading systems directly influence enterprise location and division of labor arrangements.

In terms of rule system, global trade rules are expanding beyond traditional barriers such as tariffs and quotas to high-end rules including intellectual property protection, digital trade rules, environmental standards and labor standards. Regional trade agreements such as the Comprehensive and Progressive Agreement for

Trans-Pacific Partnership (CPTPP) and the United States-Mexico-Canada Agreement (USMCA) incorporate higher-standard rules, creating new constraints and challenges for national exports while offering upgrading opportunities for countries with strong rule adaptation capabilities.

2.2. Driving forces

On the one hand, external drivers, such as multiple shocks accelerate value chain restructuring are as follows:

- (1) Intensifying geopolitical conflicts, including the Russia-Ukraine conflict and Sino-US trade frictions, have raised the risk of global supply chain disruptions, prompting countries to pursue the localization and regionalization of industrial chains to safeguard supply chain security;
- (2) The rise of deglobalization and trade protectionism has escalated tariff and technical barriers, forcing adjustments to GVC division patterns;
- (3) Stronger climate change constraints and global “dual carbon” goals have accelerated the green transition worldwide, making green rules a key guide for GVC reconstruction;
- (4) The after-effects of the global pandemic have heightened attention to public health security and supply chain resilience, pushing value chains toward security and diversification.

On the other hand, internal drivers, including technological innovation and industrial upgrading lead transformation are as outlined:

- (1) The digital technology revolution, represented by artificial intelligence, big data and the Internet of Things, has reshaped production, circulation and trade links, lowered barriers to GVC participation, and promoted the digital transformation of GVCs;
- (2) Breakthroughs in new energy, new materials, biomedicine and other fields have fostered new industrial growth poles and driven GVCs to upgrade toward high-tech and high-value-added segments;
- (3) Industrial policy adjustments worldwide have supported the development of high-end manufacturing, the digital economy and green industries, guiding value chain layout to favor domestic markets;
- (4) Improved corporate agility enables enterprises to adapt to GVC restructuring by optimizing supply chain arrangements and enhancing technological capabilities, further reshaping the division of labor.

3. Current status and bottlenecks of China’s export upgrading under GVC reconstruction

3.1. Current status

The export scale has grown steadily, and China’s global position has been continuously consolidated. In 2025, China maintained its status as the world’s largest trading nation in goods. Private enterprises have become the mainstay of foreign trade, accounting for 57.3% of total foreign trade, with an increasingly optimized export entity structure and sustained market vitality.

The export structure has continued to improve, and exports of high-tech products have grown rapidly. In 2025, China’s exports of high-tech products reached 5.25 trillion yuan, a year-on-year increase of 13.2%, driving overall export growth by 2.4 percentage points. Exports of equipment manufacturing, machinery manufacturing and other sectors have formed strong competitive advantages. Exports of the “new three types”, new energy vehicles, photovoltaic products and wind power equipment, have performed strongly. In 2025, China accounted for 76.9% of global electric vehicle production, reshaping the global landscape of the traditional automotive industry. The technological content and value-added of export products have been

continuously improved.

GVC status has risen steadily, with China transitioning from a “major manufacturing country” to a “major intelligent manufacturing country”. China is the only country in the world that covers all industrial categories in the UN Industrial Classification. Its manufacturing value-added accounts for approximately 30% of the global total, exceeding the combined share of the United States, Germany, Japan and South Korea. China ranks first in export centrality in 14 manufacturing subsectors including electrical and optical equipment, textiles and leather, and machinery and equipment. Some industries have expanded beyond production and manufacturing into high-end links such as R&D, design and brand marketing.

Digital trade and service trade have developed rapidly, becoming new drivers of exports. In 2025, China’s service trade grew by 7.4%, 3.6 percentage points higher than merchandise trade. Digital trade and service trade have become important pillars of trade innovation. In 2026, China will launch the construction of national digital trade demonstration zones, promote the digital transformation of service outsourcing, cultivate and expand digital trade operators, and continuously innovate business forms and models of export trade^[3].

3.2. Bottlenecks

GVC status remains low, and core technology bottlenecks are severe. China’s exports are still concentrated mainly in processing and manufacturing segments of GVCs, with high import dependence in core chips, high-end components, basic software and other fields. High-end links such as R&D, design, brand marketing and standard-setting are monopolized by developed countries, resulting in low value-added of export products and difficulties in climbing to the high end of GVCs.

The industrial structure is irrational, and the development of high-end manufacturing and producer services is insufficient. Traditional labor-intensive industries still account for a large share, while high-end manufacturing and producer services lag behind, with obvious weaknesses in industrial and supply chains. Although exports of the “new three types” have performed well, overall industrial competitiveness remains weaker than that of developed countries, making it difficult to support the shift of exports toward high-end and high-value-added sectors. Meanwhile, China faces pressure from “low-end diversion” by developing countries.

The external environment is complex and severe, and trade risks are rising. Global trade protectionism and unilateralism are on the rise. China’s imports and exports with the United States dropped significantly in 2025. Non-tariff barriers such as tariff barriers, technical barriers and carbon border adjustment mechanisms have continued to escalate, raising costs and risks for Chinese exporters. Intensifying geopolitical conflicts have increased the risk of global supply chain disruptions, exposing China’s exports to potential threats of “decoupling and chain breaking”. In addition, China lacks sufficient voice in trade rule-making and cannot effectively participate in the formulation of GVC rules.

Factor allocation efficiency is low, and talent and data support are insufficient. For instance:

- (1) There is a shortage of high-end talents, especially interdisciplinary professionals proficient in both international trade and core/digital technologies, restricting technological innovation and GVC climbing by export enterprises;
- (2) Data factor governance is incomplete, with inadequate systems for data collection, storage, sharing and application, uneven data quality, and prominent data security and privacy issues, failing to support digital trade and the digital transformation of value chains;
- (3) Capital investment is unbalanced; small and medium-sized enterprises face strong financial pressure in export upgrading, and the problems of difficult and expensive financing have not been fundamentally resolved.

Rule adaptation capacity is insufficient, and the level of institutional opening-up needs improvement. China still lags behind international high-standard trade rules in digital trade rules, intellectual property protection, environmental standards and other areas, making it difficult to fully adapt to the rule system under GVC reconstruction and exposing exporters to rule barriers in international competition. Meanwhile, China's capacity to participate in GVC rule-making is insufficient, with weak voice in standard-setting and rule negotiation, making it hard to safeguard legitimate rights and interests.

4. Specific paths for China's export upgrading under GVC reconstruction

4.1. Strengthen technological innovation, break through core technology bottlenecks, and enhance the competitiveness of export products

To promote export upgrading under global value chain reconstruction, it is essential to strengthen technological innovation and enhance self-reliance in core technologies. Priority should be given to overcoming key "bottleneck" constraints in areas such as high-end chips, core algorithms, basic software, and advanced components. This requires sustained increases in R&D investment, alongside the establishment of collaborative innovation consortia involving enterprises, universities, and research institutions to facilitate breakthroughs in critical technologies. At the same time, drawing on successful industrial practices, such as the Shanghai Gigafactory model, can help accelerate the commercialization of technological achievements and facilitate industrial upgrading.

Furthermore, enterprises should be encouraged to actively participate in global technological cooperation and exchanges in order to absorb advanced knowledge while strengthening indigenous innovation capabilities. In parallel, efforts must be made to promote industrial technological upgrading and optimize the export product structure. This includes accelerating the digital and green transformation of traditional industries, facilitating the transition from labor-intensive production toward technology- and capital-intensive sectors, and prioritizing the development of strategic emerging industries such as high-end manufacturing, new energy, new materials, and biomedicine.

In addition, policy support should be reinforced for competitive export sectors, particularly the "new three types" industries, while expanding the scale of high-tech product exports. Through these measures, China can effectively promote the transformation of its export structure from "low-end manufacturing" toward "high-end intelligent manufacturing," thereby enhancing the technological content and value-added of its exports and improving its position in global value chains^[4].

4.2. Promote GVC climbing, extend value chain links, and enhance China's position in global value chains

To break through the constraints of low-end lock-in, it is essential to promote both product upgrading and functional upgrading within global value chains. Export-oriented enterprises should be guided to increase investment in R&D, enhance product quality, and improve technological content, thereby facilitating the transition from low-end to high-end products. At the same time, firms should be encouraged to extend their participation along the value chain, moving beyond production and manufacturing into higher value-added segments such as R&D, industrial design, brand marketing, and after-sales services.

In addition, strengthening industrial and supply chains is critical for improving resilience and international competitiveness. Leveraging China's comprehensive industrial system, efforts should focus on promoting

coordinated development among upstream and downstream industries to enhance overall efficiency and stability. Meanwhile, the development of service trade and digital trade should be accelerated as new drivers of value chain upgrading. This includes advancing the construction of national digital trade demonstration zones, establishing and refining digital trade standards, and promoting alignment between domestic and international regulatory frameworks.

Furthermore, fostering the integrated development of service trade and merchandise trade will help generate new growth points and enhance value creation. Through these coordinated measures, China can effectively elevate its position in global value chains and strengthen its competitiveness in an increasingly digital and service-oriented global economy.

4.3. Expand market diversification, deepen regional cooperation, and strengthen the resilience of export trade

To enhance the resilience and sustainability of export trade, it is essential to consolidate traditional markets while actively expanding into emerging markets. On the one hand, China should continue to deepen economic and trade cooperation with established markets such as Europe and the United States by optimizing the export product mix, improving product adaptability, and effectively responding to various trade barriers. On the other hand, greater efforts should be made to explore emerging markets, promote a diversified export market structure, reduce dependence on single markets, and strengthen the overall risk resistance of export trade.

At the same time, China should deepen its participation in regional value chains and foster a coordinated regional development pattern. By leveraging regional trade agreements such as the Regional Comprehensive Economic Partnership (RCEP) and the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP), China can strengthen the division of labor and economic cooperation with regional partners, promote the integrated development of regional value chains, and reinforce its central position within these networks.

In addition, optimizing export trade models is crucial for improving market adaptability. Efforts should focus on fostering new business formats and models, including cross-border e-commerce and market procurement trade. Cross-border e-commerce comprehensive pilot zones should be further utilized to empower industrial clusters, enhance supply chain efficiency, and increase the international visibility and recognition of Chinese export products. Through these measures, China can build a more diversified, flexible, and competitive export system in the context of global value chain restructuring ^[5].

4.4. Advance institutional opening-up, adapt to international rules, and enhance rule-making voice

To enhance its position in global value chains, China must align with high-standard international trade rules and strengthen its capacity for rule adaptation. This requires accelerating institutional opening-up and proactively aligning domestic regulations with advanced international trade frameworks. At the same time, China should actively participate in the formulation of global value chain (GVC) rules to enhance its international voice and influence. In particular, greater engagement is needed in international organizations such as the World Trade Organization (WTO), as well as in rule-making processes in emerging fields including digital trade and green trade, in order to promote a fair, inclusive, and balanced global trade governance system.

Meanwhile, improving the domestic institutional environment is essential for facilitating export upgrading. Efforts should focus on continuously optimizing the business environment by deepening reforms aimed at streamlining administration, delegating authority, strengthening regulatory oversight, and improving

public services. Reducing institutional transaction costs for exporters and enhancing policy transparency and predictability will help stimulate the vitality of export-oriented enterprises. Through these coordinated measures, China can better adapt to evolving global trade rules while fostering a more competitive and dynamic export sector.

4.5. Strengthen factor support, optimize factor allocation, and consolidate the foundation for export upgrading

To support export upgrading, it is essential to strengthen factor support and optimize resource allocation across multiple dimensions. On the one hand, efforts should focus on enhancing talent development and improving the structure of human capital. A diversified talent cultivation system integrating university education, corporate training, and market-oriented recruitment should be established. At the same time, the layout of academic disciplines and professional programs should be optimized to foster interdisciplinary, high-skilled professionals with expertise in both international trade and advanced technologies, particularly digital technologies.

On the other hand, greater emphasis should be placed on improving the governance of data as a key production factor and strengthening data support systems. This includes establishing and refining mechanisms for data collection, storage, sharing, and application; standardizing data management practices; and enhancing overall data quality. Promoting the open sharing of government data, encouraging data interconnectivity among enterprises, and developing high-quality industry datasets are also crucial. In parallel, it is necessary to strengthen data security and privacy protection, improve relevant legal and regulatory frameworks, and standardize data circulation and utilization. These measures will facilitate the market-oriented allocation of data resources, improve data utilization efficiency, and support the digital transformation of trade and global value chains.

Furthermore, fiscal, taxation, and financial support should be expanded to provide a solid foundation for export upgrading. The establishment of dedicated funds for export upgrading can support enterprises in technological innovation, brand development, and market expansion. Financial institutions should be encouraged to innovate products and services, such as export credit and export credit insurance, to better serve exporting enterprises. These efforts will help alleviate financing constraints, particularly for small and medium-sized enterprises, guide greater participation of social capital, foster a diversified investment mechanism, and ultimately promote the balanced and sustainable development of export-oriented firms.

5. Conclusion

In sum, amid accelerating global value chain reconstruction, China's export sector stands at a critical turning point. While notable progress has been made in scale expansion, structural optimization and technological advancement, persistent challenges, particularly low-end lock-in, core technology constraints and weak rule adaptation, continue to hinder further upgrading. To achieve high-quality development and enhance its position in global value chains, China must prioritize innovation-driven growth, deepen regional and global integration, strengthen institutional alignment with international rules, and improve factor support systems. Through these coordinated efforts, China can transition from a manufacturing hub to a leader in high-value, technology- and knowledge-intensive segments of global trade.

Disclosure statement

The author declares no conflict of interest.

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