

# The Impact of Competition and Regional Synergy in The Yangtze River Delta on Manufacturing Firms' Production Efficiency: A Perspective Based on Transportation Logistics.

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**Abstract:** Regional coordinated development is a process based on regional comparative advantages, achieved through orderly division of labor and collaboration, aiming for relative balance, dynamic coordination, and full development between regions. Its core essence lies in narrowing regional disparities and seeking coordination and dynamic equilibrium among different areas. This article discusses the impact of regional competition and synergy on manufacturing enterprises in the Yangtze River Delta from the perspective of logistics and transportation. It covers the current status of regional logistics and economic integration, how to further promote the integration of manufacturing and distribution industries, as well as the current utilization rate of manufacturing capacity and existing issues. Taking "competition" and "synergy" as two focal points, the article studies the current economic development trends in the Yangtze River Delta and proposes solutions and recommendations for optimizing manufacturing capacity efficiency based on the emergence of industry clusters under the backdrop of "new logistics." Hopefully, this can serve as a reference and guide for the economic development of the Yangtze River Delta.

**Keywords:** Yangtze River Delta region; industrial clusters; regional logistics and regional economy; manufacturing industry.

## 1. Introduction

During the "14th Five-Year Plan" period, as the main social contradiction in our country undergoes a transformation, the Party Central Committee has decided to construct a new development pattern of "dual circulation," aiming for a higher level and higher quality market environment. As the main representation of our country's comprehensive strength and competitiveness, the manufacturing industry undoubtedly receives significant attention in the new round of national economic development layout. Leveraging its geographical advantages, the Yangtze River Delta region has already achieved integrated resource coordination along the industrial chain, becoming a benchmark for regional economic development in our country. However, with rapid technological advancements, the acceleration of supply chain standardization, digitalization, and decarbonization, how to further deepen regional collaboration remains an important issue for the economic development of the Yangtze River Delta.

## 2. The Status Quo of Regional Logistics and Regional Economic Development in the Yangtze River Delta

The Yangtze River Delta, the Greater Bay Area, and the Beijing-Tianjin-Hebei region, as platforms connecting to the global economy, have grown into leading engines of economic development and are unquestionably China's three major world-class city clusters. As one of the most active economic regions in China, the Yangtze River Delta has rapidly developed and has essentially formed a three-tiered industrial structure of "three, two, one," with the service

sector having the highest proportion. Since 2003, the logistics infrastructure in the three provinces and one municipality of the Yangtze River Delta has continuously improved, and by 2018, a comprehensive transportation system supported by highways, railways, aviation, waterways, and pipelines had been established.[1] Despite facing significant development pressure in the past five years due to the scattered outbreaks of the pandemic and the downturn in the global economy, the logistics industry has continued to rebound under the support of policies, regional integration strategies, and technological advancements. According to statistics from the Yangtze River Delta and Yangtze River Economic Belt Research Center, as of the end of 2023, the proportion of port cargo throughput and container throughput in the Yangtze River Delta region accounted for 41% and 38% of the national total, respectively, with Shanghai Port's container throughput ranking first globally for multiple consecutive years. Meanwhile, various regions actively strengthen the construction of modern logistics parks, establish logistics information platforms, and optimize supply chain management, providing a favorable development environment for logistics enterprises.

## 3. The Impact of Regional Collaboration and Regional Competition on High-quality Development in The Area.

The development of regional integration is a global trend for major city clusters, and it is gradually becoming a national strategy in our country. It mainly involves radiating urban economic clusters from city centers, leveraging the complementary advantages of various urban resources and collaborative division of labor within industrial chains to achieve coordinated development across the entire region.

### **3.1. The current development status of industrial clusters in the Yangtze River Delta region**

Currently, the Yangtze River Delta has 12 trillion-level industrial clusters, scattered across various city economic belts. These include Anhui's new energy vehicle industry cluster, Zhejiang's smart IoT industry cluster, and Jiangsu's electronic information industry. By 2023, Anhui's automobile production is expected to reach 2.491 million vehicles, a year-on-year increase of 48.3%, with new energy vehicle production reaching 868,000 vehicles, a year-on-year increase of 60.5%. Zhejiang Province's smart IoT industry achieved a revenue of 597.12 billion yuan in the first half of 2023, a year-on-year increase of 10.3%. Jiangsu Province's electronic information industry is leading nationwide, particularly in the integrated circuit and IoT sub-sectors, with a 14.4% year-on-year increase in value added in the computer, communication, and other electronic equipment manufacturing industry in the first three quarters of 2023.

### **3.2. Strengthen regional competition policies to stimulate industrial vitality**

Strengthening the implementation of competition policy is a necessary guarantee for the high-quality development of regional integration in the Yangtze River Delta. [2] However, this does not mean the implementation of regional competition policies, but rather the delegation of power to the government to a certain extent, and the removal of restrictions on market access within the region by cleaning up regional protective measures, which is fundamentally based on the establishment of the decisive role of the market in the allocation of resources through intergovernmental competition. Regional competitiveness is the ability of a region to obtain factor resources and optimize their allocation, which is an important topic and mission of the government, which makes the government a direct planner to enhance regional competitiveness. Strengthening intergovernmental competition has prompted all localities to pay more attention to the rational allocation and efficient use of resources, and to guide the flow of resources to advantageous industries and key links in a targeted manner by improving the review mechanism and breaking down administrative barriers, so as to improve the efficiency of resource utilization and promote the development of industrial clusters at the macro level

### **3.3. Strengthen regional coordination and help the integration of the industrial chain**

Regional coordination helps to break down administrative barriers and market segmentation, and realize cross-regional integration and sharing of resources. Regional economic synergy is directly manifested in the synergy of different sectors of the regional economy, with a focus on the coordinated development between industries. [3] In terms of the electronic information industry, Suzhou, Wuxi and other places have a deep industrial foundation in semiconductor manufacturing, packaging and testing, etc., laying a solid foundation for the application and promotion of electronic information products in Hangzhou and Ningbo. Nanjing, Yangzhou and other places have advantages in auto parts manufacturing, providing supporting services for the production of automobile vehicles in Shanghai and Anhui. Shanghai is in a leading position in the innovative R&D and clinical trials of biomedicine, Suzhou Industrial Park in

Jiangsu has achieved remarkable results in the industrialization of biomedicine, and some cities in Zhejiang have certain advantages in the cultivation of Chinese medicinal materials and the processing of Chinese herbal medicines. The logistics industry is integrated into the process of manufacturing procurement, warehousing, distribution, distribution, etc., which not only expands the demand of the logistics industry by participating in the economic production process, but also reduces the transfer cost of products and realizes the coordinated development of the "two industries".

## **4. The Current Situation and Existing Problems of Capacity Utilization Rate of Enterprises in The Yangtze River Delta Region**

With the proposal of the new pattern of "dual circulation" development, it is of great significance to control the overcapacity of enterprises and improve the capacity utilization rate. In recent years, China's manufacturing exports have grown rapidly, especially in the fields of solar modules, lithium batteries, electric vehicles, etc., but under the dual pressure of economic downturn and insufficient effective social demand, overcapacity of enterprises has become a real problem that needs to be solved urgently.

At present, the manufacturing industry in the Yangtze River Delta as a whole is in a state of "expansionary overcapacity" of "capacity utilization to be improved + investment resilience", especially the capacity utilization rate of high-tech manufacturing industry is still declining, such as the capacity interest rate of electrical machinery and automobile manufacturing industry in Q1 in 2024 will fall by 3.1 and 7.1 percentage points year-on-year respectively, and some emerging industries are still in a state of capacity expansion.

### **4.1. The "differentiation" of capacity utilization rate in traditional industries**

Judging from the industrial data in 2023, the capacity utilization rate of some industries has declined, and the capacity utilization rate of ferrous metals, non-metallic minerals, steel and other industries has declined in the year-on-year reading, which shows that the lack of demand strength is still the core crux of these industries. On the other hand, the capacity utilization rate of some industries has increased, mainly due to positive changes on the demand side, such as textile, communication electronics, nonferrous metals and other industries, which is speculated to be related to the pull of the global manufacturing cycle. Therefore, on the demand side, the divergence between heavy industry and light industry is an important clue on the current demand side, and it is expected that the influencing factors of the two will have a certain degree of sustainability, and it may be difficult for internal and external demand to form a resonance.

### **4.2. The "iteration" of the industrial chain of emerging industries**

There are often relatively rapid technology iterations within the new economy, which means that production lines also need to be quickly converted and upgraded. In the context of industry competition, the process of technology iteration and production line substitution will continue, the new production line will expand after a small profit, and the

old production line will gradually lose money and be eliminated one after another, and finally form a relative equilibrium. Therefore, in the future, the capacity utilization rate may be at a low water level until the industry gradually enters a mature period.

In the short term, the root cause of the current poor capacity utilization performance is the differentiation between the new economy and the old economy. "The old economy is weak in demand, and the new economy is strong in supply", the two form a certain hedge in the total amount, but there is a co-directional impact on the capacity utilization rate, and the mismatch between demand and supply drags down the overall capacity utilization rate. In the process of technology iteration, if the speed of new production capacity is faster than the speed of obsolescence of old production lines, it will lead to a decline in capacity utilization. This capacity problem is more structural, the old production line is biased towards redundancy, while the utilization rate of the new production line is reasonable, and the technology iteration has caused a more detailed internal structural capacity problem, which has also dragged down the industry's comprehensive capacity utilization rate reading.

However, in the long run, the production capacity problems in most industries are benign, which belongs to the intermediate process of industrial upgrading, and the core difference between industries lies in the substitutability of products and the speed of production line change. Under the modern industrial system, technology iteration is relatively faster, and if the new product is "cheap and good", it will directly replace the old product, and the old production line will show a tendency to self-elimination. Therefore, although there may be a period of capacity problems, during which the production capacity is in a low equilibrium state, when the industry matures, the excess capacity will eventually be self-depleted, rather than relying on mandatory administrative restrictions.

#### **4.3. The convergence of some industrial structures is obvious, and it is difficult to carry out in-depth industrial cooperation and division of labor**

Although the Yangtze River Delta region has made remarkable achievements in economic development, there is still a large gap between the economic growth momentum and the level of economic development in various parts of the region, with different interests and demands, and the convergence of some industrial structures is obvious, making it difficult to carry out in-depth industrial cooperation and division of labor. In order to emphasize the differentiated division of labor and realize industrial transfer and coordination with the help of logistics network, it is necessary to comprehensively consider the development status of the four chains of "factor chain, industrial chain, supply chain and value chain" according to the geographical location and infrastructure construction of different urban agglomerations, and select suitable areas as a breakthrough point for participating in logistics integration and cooperation. Among them, how to identify and screen the co-construction subjects, how to identify the core characteristics of each subject, and how to give it a scientific positioning in the group according to the competition and cooperation relationship in the group, has become an urgent problem for many regions to clarify in the pursuit of regional logistics integration and cooperation.

#### **4.4. The institutional mechanism for coordinated development is incomplete, and there are institutional obstacles**

The integrated development of the Yangtze River Delta faces many institutional obstacles, including administrative barriers, planning and construction, regional functions, market access, and lack of synergy in industry standards. These obstacles limit the effective allocation of resources and the integration process of the market, and it is necessary to break through a series of institutional and institutional obstacles, change the regional coordinated governance model, and adjust the scope of public services.

### **5. Research on Countermeasures for De-Capacity of Manufacturing Industry from The Perspective of Distribution Industry**

#### **5.1. Strengthen supply chain management and help the iteration of the industrial chain**

Enterprises can monitor the operation of each link of the supply chain in real time, detect the current production capacity of the enterprise, and adjust production in combination with market intelligence, so as to reduce unnecessary inventory backlog and alleviate overcapacity. For the traditional manufacturing industry, enterprises also need to use the advantages of logistics and transportation to actively explore the international market and find new growth points. With the support of regional policies, we will actively participate in the global industrial division of labor and cooperation, expand overseas markets, and transform excess capacity into international market share through the "going out" strategy to alleviate the pressure of competition in the domestic market. For emerging industries, supply chain management should also be continuously strengthened, the supply chain should be transparent and visualized, and the iterative process of the new and old industrial chains should be accelerated.

#### **5.2. Optimize the layout of the logistics network and actively strengthen the inter-regional industrial interaction**

The Yangtze River Delta region is full of stamina for scientific research and innovation, but it needs to be improved in terms of industrial agglomeration and urban coordination, which requires multi-faceted efforts and collaboration. According to the distribution of manufacturing capacity and market demand, the government can reasonably plan the logistics network, reduce logistics nodes, shorten transportation distances, and reduce logistics costs. Each region needs to clarify the functional positioning of each city, encourage the development of regional characteristic industries, avoid homogeneous competition, identify and make full use of core advantages to continuously promote the development of manufacturing industry in the direction of digitalization, informatization, intelligence and ecology, strengthen industrial clusters, and promote the agglomeration of upstream and downstream enterprises, so as to form a more complete and efficient industrial chain. At the same time, the manufacturing industry should also provide more advanced and intelligent production equipment for the development of

the logistics industry, improve the efficiency of logistics production and the quality of services, and realize the two-way promotion between industries.

### **5.3. Make full use of the driving role of the airport economy and the low-altitude economy in the Yangtze River Delta regional economy**

Airport economy is a regional economic form formed by relying on aviation hubs and modern comprehensive transportation systems, gathering and developing air transport industry, high-end manufacturing industry and modern service industry. Different from other economic parks, in the airport economic zone, the biggest foundation for its development is the airport, and the maximum utilization of this resource is an effective way to succeed, therefore, many demonstration zones focus on the investment and construction of air logistics, because the industry and the airport are highly related, and it has naturally become the inevitable choice of each demonstration zone.[4]The development of the airport economy has promoted the extension and upgrading of the industrial chain, formed an industrial cluster with the airport as the core, and improved the industrial competitiveness of the entire region. On the one hand, the establishment and improvement of the airport economic zone provides more convenient logistics and supply chain management services for local industrial clusters. On the other hand, the airport economic zone facilitates the development of the international market. The Yangtze River Delta region should strengthen its central position as a shipping hub, rely on the comprehensive advantages of large-scale hub airports, promote the strategic layout of the aviation logistics network, and use the regional radiation capacity of the airport to drive the development of the manufacturing economy in the surrounding areas.

Low-altitude economy refers to a comprehensive economic form that takes various low-altitude flight activities as the traction and radiates the integrated development of related fields, and its related products mainly include unmanned aerial vehicles, eVTOL (electric vertical take-off and landing aircraft), helicopters, traditional fixed-wing aircraft, etc., involving two major scenarios: residential consumption and industrial applications. Compared with the airport economy, the low-altitude economy focuses on multi-scenario applications in the low-altitude field, which has strong innovation and flexibility, and can quickly respond to market demand. As an innovative model of deep integration of "low-altitude economy" and logistics industry, low-altitude logistics is reshaping the logistics and transportation pattern through advanced technologies such as drones, showing significant advantages in improving regional intralogistics efficiency, reducing costs, and optimizing service quality.

On the whole, the low-altitude economy and the airport economy in the Yangtze River Delta region complement each other, showing close ties and coordinated development trends in policy support, industrial layout, technological innovation, infrastructure construction, etc., providing strong support for the further prosperity of the Yangtze River Delta economy. The Yangtze River Delta should grasp its geographical advantages, work together to promote infrastructure interconnection, build a hub, functional and networked infrastructure system in an all-round way, accelerate the construction of intercity rail transit network, promote the

coordinated development of regional ports and shipping, and work together to build a world-class airport cluster in the Yangtze River Delta.

### **5.4. Emphasizing the government's position in the process of enhancing regional competitiveness**

The Yangtze River Delta involves 16 cities in three provinces and one city, and the coordination of different administrative regions is of great significance. Regional competitiveness is the ability of a region to obtain factor resources and optimize the allocation, and the burden of improving regional competitiveness falls on the government, which makes the government a direct planner to enhance regional competitiveness. [5]At present, the Yangtze River Delta region has formed a framework structure of government coordination mechanism characterized by "three-level operation and combination of unified and decentralized", and local governments will continue to optimize the business environment in order to attract investment and promote the development of enterprises, including simplifying the approval process and improving the efficiency of government services, so as to reduce the operating costs of enterprises and guide the industry to carry out a more reasonable strategic layout. This kind of competition between governments can avoid homogeneous competition in the industry and promote the formation of a level playing field in the region, so as to achieve a "win-win" effect for the government and enterprises. Local governments should deepen government functions, adapt measures to local conditions, improve the policies and systems for the development of digital logistics in various regions, and promote the healthy development of digital logistics.[6]In addition, the increase in government revenue can also allow the government to better allocate resources, which is conducive to the urbanization development of the Yangtze River Delta region.

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