

# Safe development strategy of industrial chain in the post-epidemic era

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**Abstract:** *Although the epidemic is still not completely eliminated in the world, and domestic epidemics have also recurred, with the accumulation of epidemic prevention experience and the continuous improvement of vaccination rates, the global economy will gradually enter the post-epidemic era. The impact of the epidemic tells us that improving the safety level of the industrial chain should be the top priority. Improving the security level of the industrial chain is not only to ensure economic security, but also an important measure to ensure national security<sup>[1]</sup>. We should always adhere to the public product nature of the industrial chain, give full play to the advantages and leading role of industrial clusters, improve the talent training mechanism, cultivate compound talents, adhere to enterprises as the main body, build a new development pattern under the "dual circulation", link inside and outside, and resolutely ensure the safety and stability of the industrial chain.*

**Keywords:** *Industry chain security, Novel coronavirus pneumonia, The new development pattern of "dual circulation"*

## 1. Introduction

In recent years, China's manufacturing industry is facing severe double squeeze, we have to compare costs with some developing countries in Southeast Asia at the middle and low end of the industrial chain, and we must compare research and development with developed countries in Europe and the United States at the high end. And with the rise of global trade protectionism, China's industrial chain security problems have gradually emerged <sup>[2]</sup>. At present, many core technologies in China are stuck in the neck, from high-end chips to various underlying core industrial design software, which puts forward higher requirements for industrial chain security. At present, the domestic epidemic is under control, but the number of imported cases has increased from time to time, and epidemic prevention and control has become normal. Therefore, based on the background of the post-epidemic era, this paper discusses the current problems in China's industrial chain security, and provides ideas and references for the safe development of China's industrial chain.

## 2. Changes in the global industrial chain after the impact of the epidemic

### 2.1 Under the impact of the epidemic, the current intra-product specialization system of labor mechanism has been damaged to a certain extent

With the change of the international division of labor from inter-industry, to intra-industry, and then to the division of labor within products, production efficiency has been greatly improved, the connection between major economies has been greatly strengthened, and the dependence between various economies is highly dependent, but with the outbreak of the epidemic, this dependence has also increased the risk<sup>[3]</sup>. Because the degree of epidemic is different around the world, and the prevention and control efforts of various countries are different, it is difficult to allocate resources according to comparative advantages and economies of scale on a global scale, which brings great difficulties to the normal and coordinated operation of the industrial chain. Therefore, in order to make the supply chain safe and controllable, each country will allocate more ample productivity close to its own country to cope with the sudden situation of the epidemic.

## ***2.2 The epidemic has shaken the political and policy foundation of some countries to support economic globalization***

In recent years, with the rapid development of information technology, economic globalization has closely linked various countries, and more and more countries have benefited from economic globalization and shouldered their own responsibilities; On the other hand, we also clearly see that the voice of anti-globalization is also surging undercurrents, which has brought great obstacles to economic globalization<sup>[4]</sup>. Western countries led by the United States continue to pursue unilateralism and "withdrawal from the group", and the impact of the epidemic has made this voice louder and louder, and took the opportunity to divert the contradiction of insufficient domestic epidemic prevention, shake the trust and unity established between countries, and hinder the development of economic globalization. National policies will also change accordingly, which will bring great obstacles to the stability of the global industrial chain.

## **3. The development trend and characteristics of the global industrial chain after the impact of the epidemic**

From the current form, the global industrial chain may appear in the following development direction: First, the key links of the industrial chain tend to be localized. With the outbreak of the epidemic in recent years, countries have transferred key links related to national security industries to resist various uncertainties and risks brought by the epidemic. Only by firmly grasping the key links related to the national economy and people's livelihood can we be in a relatively advantageous position when withstanding external shocks. In this epidemic, we have seen that many countries and regions have lost the shortage of basic materials due to epidemic control, causing social unrest. In the later stage, in order to avoid the recurrence of such incidents, economic cost will no longer be the first criterion for determining the industrial layout, and national security is placed in the first place.

Second, the horizontal division of labor tends to be regionalized<sup>[5]</sup>. With the increase in global economic turmoil and uncertainty caused by the impact of the epidemic, the current global industrial chain division of labor system may be destroyed. Although production in areas with comparative advantages can improve efficiency, it greatly increases the risk of the industrial chain<sup>[6]</sup>. Therefore, the current division of labor system of the global industrial chain may be reorganized and reshuffled. The regional aggregation of horizontal division of labor can not only reduce the risk of the industrial chain, but also appropriately ensure production efficiency, which is likely to be the future development trend.

## **4. Factors restricting the safe development of the industrial chain**

### ***4.1 Differences in epidemic prevention and control policies have led to the breakdown of the industrial chain***

Although domestically, the epidemic prevention and control has achieved remarkable results and people's living needs have gradually recovered, but with the phased recurrence of the epidemic, residents will gradually adjust their consumption levels, and the differentiated epidemic prevention policies in various places have had different impacts on the resumption of production and work, which has brought great uncertainty to the normal development of the industry, resulting in reduced corporate income and increased costs. At the beginning of the epidemic, Wuhan entered a state of lockdown, and Wuhan, as an indispensable part of China's manufacturing industry chain, has large-scale industrial clusters in many fields, such as automobiles, electronics, and pharmaceutical industries. Once Wuhan's production and logistics press the pause button, the entire industrial chain is facing tremendous pressure. The same is true for foreign markets, where China needs to import various goods and raw materials from abroad, along with the uncertainty caused by the epidemic, it has also increased the burden on enterprises, which has gradually affected the consumption expectations of residents. The normal cycle of the industrial chain is blocked, affecting the recovery of the market.

### ***4.2 The safety of the industrial chain is hindered under double extrusion***

With the United States signing a number of bills on the return of manufacturing, such as United States Manufacturing Enhancement Act of 2010, and taking major measures in various policies to encourage manufacturing to return to the United States, in September 2021, France also clearly put

forward the slogan of reindustrialization, allowing a large number of strategic industries related to epidemic prevention to move back to China during the epidemic. Not only that, many automotive and electronics companies are also actively looking for new industrial chains. For example, during the epidemic this year, Shanghai stopped work and production, and the automobile brand Honda proposed to prepare a new industrial chain after seeing the grim situation. At the same time, with the increasing domestic land price and labor costs, environmental protection costs, some low-end labor-intensive industries have shifted to cheaper Southeast Asian countries. Therefore, our country is facing a serious challenge of squeezing both ends. The main reason for the current difficult situation is that China's industrial upgrading is progressing slowly, and with the deterioration of the investment environment, this situation is becoming more and more serious, and we cannot rashly transfer without doing a good job of industrial upgrading. Figure 1 compares the growth rate of industrial added value of China and neighboring countries in recent years (%), it can be seen from the figure 1 that Vietnam's industrial added value growth rate exceeds that of China, mainly because of the hollowing out of manufacturing in China caused by industrial transfer, while the development speed of manufacturing industries such as Vietnam and Bangladesh has accelerated significantly in the same period. Source: World Bank.

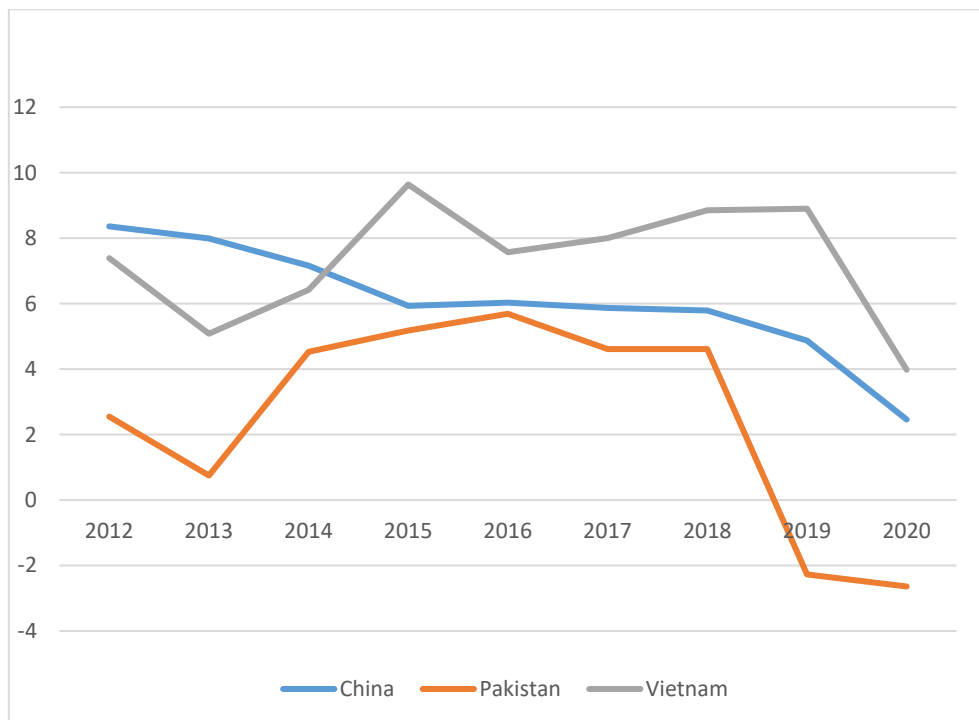
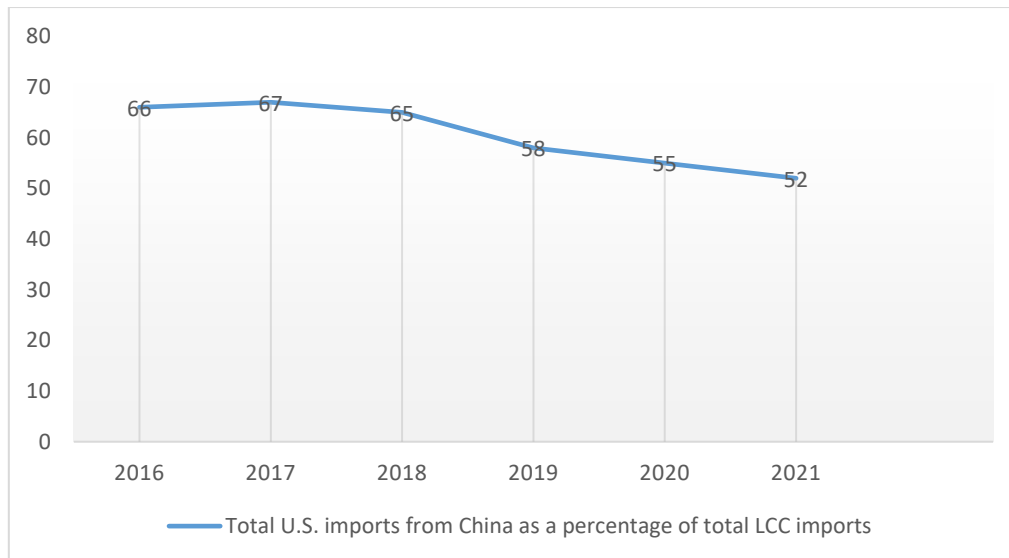


Figure 1: Growth rate of industrial added value in China and neighboring countries in recent years (%)

#### 4.3 The impact of policy adjustment in developed countries on the security of industrial chains

In recent years, in terms of export and investment in important products, some developed countries in Europe and the United States have carried out control and paid close attention. For example, the United States amended its Export Control Regulations in April 2020 to further restrict Chinese companies from purchasing raw materials for electronic information products from the United States. The EU also implemented the EU Foreign Investment Review Framework Act in October 2020, preventing foreign companies receiving government subsidies from acquiring EU companies or participating in EU public tenders. Under the unfavorable factors of various export and investment controls, the opportunities for China's high-tech industries to study and integrate with foreign countries have been greatly affected, and the security problems of the industrial chain have been increased. In order to maintain the high-end position of the global industrial chain for a long time and restore the dominant position of the US real economy, the United States has adopted a series of anti-globalization economic policies, and after Trump took office, he withdrew from many agreements such as the TPP, withdrew from a number of important international organizations, and advocated bilateral trade favorable to himself, which greatly hindered the safe development of the global industrial chain. As can be seen from Figure 2 below, the proportion of manufactured goods imported by the United States from China has decreased from 66% in 2018 to 52% in 2021, gradually reducing its dependence on China.



Source: Kearney.

Figure 2: Total U.S. imports from China as a percentage of total LCC imports

#### 4.4 The foundation of important industries is weak and the training of talents is insufficient

Although China is a manufacturing country and has the most complete industrial categories in the world, on the whole, China's manufacturing industry is at the middle and low-end level in the global industrial chain, and there are serious neck jams in many fields. The industrial basic capacity of key technologies is insufficient, and many important parts and basic materials have technical gaps, and localization cannot be achieved in the short term. From basic industrial design software to lithography machines, a series of important technologies are in the hands of foreign enterprises. Taking artificial blood vessels as an example, almost all of China's artificial blood vessels rely on imports, and there is no domestic alternative brand. China's artificial blood vessel market is completely occupied by foreign brands, in 2020 data, Maquet occupies 70% of the market share, Terumo occupies 20%, and Gore Company and other brands occupy 10%. With just a small artificial blood vessel, China has lagged behind more than 2 generations from materials to design and manufacturing, and other high-tech industries have a long way to go. From the perspective of industrial basic design software EDA, if all sales are stopped, China's industry will lose most of its design capabilities. In terms of hardware, high-end bearings, lithography machines, etc. have a deep dependence on foreign countries. From the perspective of talent training, the current lack of excellent talent training in many industries is mainly caused by two aspects, the first is that the willingness of enterprises to cultivate talents is not strong enough, the training cost is high, the cycle is long, and the domestic training environment is not mature enough. Secondly, it is difficult to introduce talents from abroad. China has a big gap with developed countries in terms of welfare benefits for the introduction of talents.

### 5. Countermeasures and suggestions to promote the safety of China's industrial chain

In order to cope with the current complex international situation and various adverse effects caused by the epidemic, China proposes to accelerate the construction of a new development pattern with domestic circulation as the main body and domestic and international dual circulation promoting each other. This is a major strategic deployment made by China, and the security of the industrial chain should also be matched under the new development pattern, accelerate the construction of a safe, independent and controllable industrial chain, and put forward the following countermeasures and suggestions.

#### 5.1 Always adhere to the public nature of the industrial chain

In order to resolutely resist the politicization of the industrial chain by Western countries, we must always adhere to the public product attribute of the industrial chain<sup>[7]</sup>. In the future, we will participate more actively in international cooperation to maintain the normal development and good operation of the global industrial chain. Strengthen communication and cooperation between countries, promote the

stability of the industrial chain in the region, and also consolidate China's important position in the global industrial chain. Maintaining the resilience and stability of the global industrial chain and supply chain is an important guarantee for promoting the development of the world economy, which is in the common interests of the people of all countries in the world.

### 5.2 Improve the talent training mechanism

We must not only improve our own talent training mechanism, improve the fund management system for scientific research personnel, improve the talent evaluation system, encourage people who truly love innovation and love to study to devote themselves to the cause of scientific and technological innovation, but also introduce more outstanding talents from abroad, complete relevant facilities, so that scientific researchers can devote themselves to the cause without worries. Talent training should also have a forward-looking vision and achieve sufficient talent reserves. It is necessary to cultivate the craftsman spirit and sense of responsibility of talents, and pay attention to the mental health of talents. There is a sculpture on the campus of Northwestern Polytechnical University "Forging a Sword for the Country, Hiding Your Name", which profoundly explains the craftsman spirit of silent dedication to the country, immersion in hard work, and surrendering to the cow. Huawei is at the forefront of the country in terms of talent introduction. Huawei has said that talent, scientific research and innovation spirit are the three major elements on which Huawei depends for survival and development, and Huawei is increasing its attraction to talents, especially top talents, in 2021, Huawei recruited 300 "genius teenagers" as it defines every year, involving R&D, management and other fields. Figure 3 below is the national financial education expenditure and science and technology expenditure data in recent years, from which it can be seen that although science and technology expenditure has increased over the years, the growth rate is slow, and it is difficult to adapt to the fierce research and development competition between countries at present. Source: National Bureau of Statistics.

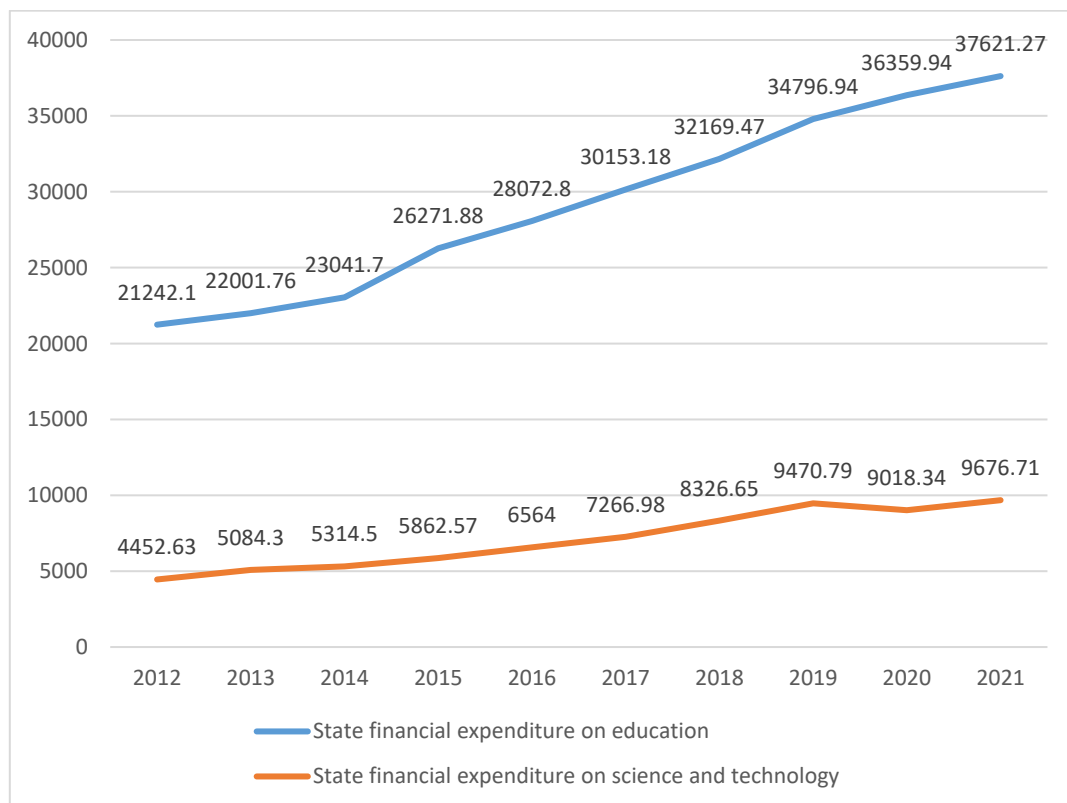


Figure 3: In recent years, the state has spent on education and science and technology (billion)

### 5.3 Always adhere to the enterprise as the main body

The resumption of work and production after the epidemic should start with large enterprises, gradually drive small and medium-sized enterprises, introduce various assistance policies as soon as possible, and give the green light from rent, social security, loans and other aspects. In this process, state-owned enterprises should play a leading role in helping small and medium-sized enterprises tide

over difficulties together. In terms of marketing methods, it is also necessary to diversify, such as online live broadcast with goods, etc., to activate the market atmosphere. Encourage China Development Bank to provide medium- and long-term loans to basic manufacturing industries in weak industries, so that enterprises can develop without worries. To cultivate internationally competitive large enterprises, enterprises should seize the rapid development of the digital economy in the post-epidemic era, enhance their international competitiveness, cultivate overseas markets, and expand and strengthen local brands to become world-class.

#### ***5.4 Vigorously promote industrial clusters to take the lead in innovation and development, and accelerate industrial upgrading***

The industrial clusters in China's coastal areas have gathered a large number of talents, capital and technology. Under the impact of the epidemic, industrial clusters should focus on high value-added core businesses, strengthen China's industrial shortcomings, enhance industrial competitiveness, and develop globally competitive industrial clusters<sup>[8]</sup>. We can no longer simply take exports as the lead, but should rise against the wind under the risks and opportunities brought by the epidemic, and stand on the key links of key industries in the global industrial chain and stand in an irreplaceable position. Firmly embedded in the global industrial chain, develop more efficient industrial clusters, and increase China's core competitiveness in the global industrial chain. When planning industrial clusters, the government should also deeply grasp the advantages of the local area, not rigidly copy the development model of other places, and develop the characteristics of different industrial clusters. Vigorously strengthen the ties between domestic regions and open up the domestic chess game. As the world's second largest economy, China must shift from application-oriented research and development to basic research and development, and seize a new round of scientific and technological revolution and industrial upgrading in order to be in an active position in industrial transformation.

#### ***5.5 Build a new development pattern under the "dual circulation"***

Deepen the level of opening up, improve the competitive environment in the domestic market, and improve the business environment. To cultivate market vitality, it is necessary to further simplify administration and decentralize power and reduce the flow obstacles between factors. It is necessary to respect the development law of the market and give play to the role of the government. To build a dual circulation system, there is great pressure in the domestic market. There are still relatively serious policies between provinces that hinder the flow of commodities, talents and factors, and when attracting investment, the policy tendency is serious, and the enterprises in the province and foreign enterprises are treated separately, which adds invisible barriers to the development of enterprises, hinders or even separates the large cycle of the domestic market, and the domestic market should be internally unified and mutually reinforcing. The business environment should meet the requirements of internationalization and commercialized, vigorously promote investment liberalization and facilitation, and pay attention to both comprehensiveness and coordination in opening up. Only an unimpeded inner circulation can promote the outer circulation.

## **6. Conclusion**

In the long run, the epidemic will eventually dissipate, the general trend of globalization is irreversible, and we must adhere to building a community with a shared future for mankind. A series of problems brought about by the epidemic have made anti-globalization have a growth trend, but this is only a short-term problem. The more difficult the period, the more we must face the difficulties, shoulder responsibility, constantly deepen reform, take the vital interests of the people as our own responsibility, not only stand firm in the international community, but also stand firm, maintain the security and stability of China's industrial chain, and play an important role in the world's economic development and social stability.

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