# Problems and Opportunities for Metal Industry after the COVID-19 Pandemic

Zhiyu Yang[1, *, †], Zonghan Yang[2, †]

[1]New York University Abu Dhabi, Abu Dhabi, UAE

[2]Malvern College, Qingdao, China

*Corresponding author: zy2309@nyu.edu

†These authors contributed equally.

**Abstract.** The COVID-19 pandemic has severely damaged the global economy system. In China, the metal industry is playing a key role in the reconstruction of the economy. This paper is using SWOT analysis to analyze the current situation faced by the metal industry in China after the pandemic and give corresponding advice for institutions. Strength part mainly focuses on analyzing the strong supply system in China enabling metal factories to recover the production in a short time period and also the natural advantages accrued from the huge population of China and abundant reserves of metal ores. Weakness part mainly discusses some long-lasting problems for Chinese factories, including the heavy pollution problem and the lack of competitiveness in the global market due to insufficient production technology. Opportunity part discussed two opportunities for the Chinese metal industry during the post-pandemic time. One is the high demand for metal products for reconstruction of the economy, the other one is the rise in the price level of metal products as a result of the breakthrough of the Russia-Ukraine War. Finally, the threats part mainly discusses the effect of pandemic on the metal industry. The suspension in the global supply chain restricts metal businesses from receiving raw materials and selling products. The intense competition in the metal market after the pandemic also raises the risk for metal businesses. To evidence the statement, this paper introduced data from China's National Bureau of statistics and cited tables and graphs from the annual report from China's National Bureau of statistics.

**Keywords:** COVID-19, China Market, Metal industry, SWOT.

## 1. Introduction

In late 2019, the breakout of COVID-19 virus quickly dispersed to all the countries on the earth, becoming a global plague. At the early stage of the pandemic, due to the lack of medical resources and facilities, this highly infectious virus infected a huge amount of the population. To stop the plague, many countries choose to lockdown the country and close their boundaries, isolating the country from potential virus carriers from other countries. As a result, the world entered an era of suspension. Three years later, in 2022, with the prevalence of vaccinations for COVID-19, the majority of countries can successfully control the plague and some of them start to end the lockdown and go back to the life before the plague. Still, during the pandemic, millions of people were dead, and years of lockdown severely damaged the global economic system while accelerating the economic recession. Under this scenario, how to recover the economy becomes the most urgent for people surviving from this disaster.

The reconstruction work in China is not promising. Compared to other countries, China is bearing more adverse effects from the pandemic. China, as the first country where COVID-19 breakout, has the longest lockdown, and its dense population reinforced the damage from the plague onto the whole society. Moreover, regional breakout of COVID-19 and lockdown are still happening in China at present. All of these add up to the difficulty in reconstructing the economy in China. At the beginning of 2022, many industries in China have shown a negative growth rate, while the price level kept going up. Everything seems to be signaling a recession in the economy. To rebuild the economy and also people's confidence, it's of even more significance for China to achieve some success in the whole reconstruction process. Metal industry may be able to achieve this goal.

Metal industry, including smelting of metal ores, manufacturing of metal materials and recycling, has been the major contributor for China's GDP for a long time. The whole industry can generate enormous job vacancies for lower unemployment and produce tons of products for both domestic consumption and exports. These are strong forces that can accelerate the reconstruction of the economy. During and after the pandemic, the metal industry has shown its strength as well as weakness. Meanwhile, opportunities and risks for the metal industry also emerge from the chaotic world during the post-pandemic time.

## 2. SWOT analysis of metal industry in China

### 2.1 Strength

#### 2.1.1 Industrial independence

To start with, the metal industry has shown its strength before and during the disaster of COVID-19. Firstly, the independent and complete supply chain in China makes the metal industry more self-sufficient. The metal industry showed a stable positive growth in production. Steel industry is a good example of such an advantage. According to the data from China's National Bureau of statistics, In2020, the steel industry in China had a positive growth rate in production of 1.2% in the first quarter, 1.7% in the second quarter and 10.3% in the third quarter [1]. In comparison, the majority of industries in China showed a positive but slow or a negative growth rate simultaneously. The complete and independent industrial system in China contributes to its ability to recover fast in a short time. As an effect of the lockdown in some countries onto the global supply chain, some of foreign metal companies have to postpone production due to lack of raw materials. In contrast, Chinese factories can order ores and other resources from other parts of China, recover the production quickly and sell their products back to the domestic market. This is a unique advantage of China's metal industry over other global competitors.

#### 2.1.2 Demographical and natural Advantages

Secondly, the metal industry in China can benefit from its large population and natural resources reserves. As known to all, China has the biggest population on the planet. At the end of 2021, its population reached 1.4 billion, and people aged between 16 to 59 years old took up 63.4% of the total population [2]. The huge population provides sufficient labor force to the metal industry which is labor-intensive. And also, because the huge population raises the competition in the labor market, businesses in the metal industry can enjoy a lower labor cost. As for natural resources, China has a huge reserve in many mineral resources like iron, copper and so on. By the end of 2019, the output of iron ore reached 0.84billion tons and the output of ten types of nonferrous metals reached 58.416 million tons [3]. As the Chinese government increases input into mineral prospecting in 2020, more reserves were discovered. The abundance of mineral resources also gives the metal industry strength. Instead of importing ores from overseas, metal producers in China can purchase from domestic suppliers, and that also leads to a lower cost of production.

### 2.2 Weakness

#### 2.2.1 Long-lasting environmental dilemma

Yet, the metal industry in China also has some long-lasting problems. First of all, the heavy pollution from the metal industry is costing an enormous amount of money to solve and pushing some factories to close down. Take the recycled copper industry as an example. It acquires copper through smelting wasted metal products. The solid remains from the smelting process, the wasted gas which consists of SO2, PM (particulate matter), Dioxins and other toxic matters [4] and the wasted water that contain metal compounds are exposing people and other species to the risk of diseases, like cancers and different types of nerve diseases. To prevent hazards from industrial waste, businesses need to invest a huge amount of money to deal with it. Jiangxi Copper Corporation Limited is a top

company producing copper and other precious metals in China. By 2013, it invested about 2billion Chinese Yuan in total for energy conservation and emissions reduction and finally reached its target. For small metal businesses, however, the environmental problem is harder to solve. Firstly, there is an issue for these factory owners to raise the funding to use environmentally-friendly technology during the production. Some of them may even choose to pay the fine instead of cleaning the pollution as paying the fine is actually cheaper than investing in environmentally-friendly technology. Moreover, unlike those large businesses which are located in centralized industrial zones, many small-sized metal workshops scatter in towns and rural areas where they are intensively populated, these factories are hard to administrate and cause more damage to nearby residents once there is a leakage of waste. As a result, these small factories usually end up being forced by the local government to close down.

### 2.2.2 Insufficient production techonology

Another significant disadvantage of China's metal industry can be attributed to limitations in technology and lack of innovative talents. To be more specific, China's metal industry is constrained in the production of high-end products. Take the copper processing industry as an example. China has been the top copper material producer in the world for 16 years, but its major products are copper rod, copper pipe and other low-end products. Nevertheless, as 5G, AI and electrical vehicles rise, the market switches to high-end products, such as high frequency and high speed electrolytic copper foil. The majority of copper producers in China are not capable of producing these high-end products, and the domestic consumption for these commodities heavily relies on importing from Japan or Europe. Such circumstances result in two major problems. One is the low profitability for copper manufacturers. The output of copper products keeps rising every year. Yet, the domestic demand for them is not rising proportionally. Because of the surplus, the only way for manufacturers to sell their products is to lower the price. Some manufacturers even illegally dump their products into the market. Such vicious competition in the industry makes everyone worse off. According to the data from China's National Bureau of statistics, in the first half of 2020, the output of copper processing materials grew by 6.1%, but the profit decreased by 37.4% [5]. Another problem is the lack of competitiveness in the global market, especially in the market for high-end products. High-end products from China are limited in quantity and quality, which can hardly compete with the same products from Japan, Europe and other places. In the near future, it's not promising for Chinese copper producers to become part of the global supply chain. Literature References

## 2.3 Opportunity

The conflict between Russia and Ukraine has become the focus of global attention, and the ongoing conflict has also brought a huge impact on global commodity supply. Russia has long been a major global exporter of oil, gas and metals, and the conflict has been accompanied by local unrest and a surge in commodity prices.

Affected by the international situation, the epidemic and other aspects, since this year, the domestic prices of aluminum, nickel, copper, stainless steel, glass and other raw materials have risen to varying degrees. For example, nickel, an important raw material of stainless steel, reached an all-time high of $55,000 / ton on March 7, up more than 90%. Driven by strong nickel prices, stainless steel prices also rose sharply [6].

In addition, the prices of chemicals, plastics, steel, coal, cement, building materials and other raw materials are also rising. The price of iron ore has hit a record, the price of steel has exceeded the all-time high since 2008, the price of copper has hit a new 16-year high, and the price of coal has hit a record high [7].

The Russia-Ukraine situation over the next 6-12 months is likely to lead to adjustments in future global nickel trade flows, and it is believed that nickel prices will be high amid tight global supplies. The impact brought by the short-term situation cannot be ignored: the nickel quantity in Europe and the United States is more tense than that in China, but the problem of issuing USD L/C in the process

of importing pure nickel in China has affected the import of nickel raw materials denominated in USD under the background of large import loss. Although it has not reached the level of tension in Europe and the United States for the time being, the level of tension may exceed that in Europe and the United States after the domestic inventory is gradually depleted over the next week or even two months.

To sum up, in the post-epidemic era, economic recovery will create a demand of large number of metal products, and countries will soon generate a large number of orders [8]. The Russo-Ukraine war will soon lead to a significant increase in the price of metal products, and the non-ferrous metal processing industry will soon face a great opportunity.

### 2.4 Threats

Due to the impact of the global pandemic, the transportation of various commodities is restricted. It deeply affects the input of raw materials and output of products of small metal processing enterprises. Compared with the rebound of previous epidemics, the impact scope of the current epidemic on the transportation industry has been significantly expanded, mainly reflected in three aspects: First, it has expanded from consumer services represented by passenger transport to producer services represented by freight transport, which is the first time since the rebound of previous epidemics. Since entering the normal epidemic prevention and control, any past outbreaks rebound mainly larger impact on passenger transport, and the impact on the freight is relatively small, but the current outbreak is has obvious influence on the freight, freight volume in the whole society in March fell 2.2% year on year, for the first negative growth since normalized epidemic prevention and control [9, 10] , April decline further. Second, express delivery services were largely unaffected by the rebound of previous epidemics, but it is the first time that they have been significantly affected by the current epidemic. Since the outbreak, express delivery business only there is an obvious decline in January 2020 [11], but that year in February that achieved positive growth, particularly since the outbreak of public spending habits to further shopping online consumption pattern change, such as contactless transportation continued strong demand delivery, express delivery business contrarian rapid growth, in 2020 and 2021 growth at around 30%, In the first two months of this year, the growth rate was close to 20%, but in March, it fell 3.1%, also the first negative growth since the outbreak began. Third, the impact of private car travel on the rebound of previous epidemics was relatively small, but this epidemic has also been significantly impacted. Since the outbreak of the epidemic, the public's travel habits have been greatly adjusted, and the trend of personalized travel, such as private cars, is obvious. Under the background of the continuous and substantial decline in business passenger traffic in the past two years, the number of private car trips on expressways achieved double-digit growth in 2020, and continued to maintain growth in 2021. However, under the impact of the current epidemic, private car travel has also been significantly impacted. In March this year, the number of private car trips on expressways decreased by 30.4% year on year [12, 13].

## 3. Conclusion

I To conclude，mining companies are experiencing a big opportunity and a big risk. Here are some things that companies should look for and change during this period.

First, companies should face the crisis ahead. The pandemic made a test of the ability of accommodating. Enterprises should make appropriate adjustments to their old business plans and goals, try their best to decrease their costs, raise more funding, make their staffs into a consensus. If possible, working at home or remotely should be considered in order to minimize the impact of the pandemic.

Secondly, give full play to the advantages of the Internet platform, and promote business development through internet, online negotiation, video website, online signing and other ways. Companies should do their best to accelerate their operational transformation and better use Internet promotion to increase their customer sources, so as to reduce the high cost of the original customer

acquisition method and integrate resources. For example, we can use various search engines such as Google, as well as social software like tiktok and WeChat, as a new operating model for acquiring customers. In this way, the company not only solves the problem of the development of online enterprises, but also reduces the possibility of employees of offline enterprises losing their jobs. This new way of marketing has created new ideas for companies to sell products during this special period.

Thirdly, we should care about the crisis and try our best to find for business opportunities in the bad situation. One outcome that the pandemic could lead to is that countries will ease their monetary policy. Companies should immediately organize employees to try to figure out what the company should do under such a policy. Unmanned, digital, and online industries are rapidly emerging, and they have a sharp increase in demand, which is promoting economic development and helping the world quickly restore its original economic level.

Finally, the enterprise should save itself in the reflection. Because it's impossible to predict what will happen in the future, businesses can only keep changing themselves [14]. If an enterprise takes profit as the biggest goal, then under the impact of the epidemic, the enterprise can continuously adapt to the various changes caused by the epidemic by upgrading its organizational structure as the core, so as to win opportunities and make more efficient decisions. It can also be seen that it is precisely this uncertainty that drives the real growth of enterprises.

In the face of fierce competition, non-ferrous metal industry companies need to improve the quality and quantity of their products through new sophisticated technologies and talents [15] . Large machinery can be used to increase the efficiency of output. After this, the international demand for non-ferrous metals will be well satisfied. At the same time, on the basis of ensuring the main business, we can develop sideline related to non-ferrous metal smelting. Based on the COVID-19 situation, finding reliable logistics companies will be a big problem as well. In general, the non-ferrous metal smelting industry is a promising industry, but it needs the continuous attention of enterprises and always follow the political and epidemic situation to make changes in the industrial chain.

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