

Analysis on Pricing Mechanism of Global Copper

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Abstract. Mastery of the pricing mechanism of global copper will raise the voice of copper resources. During the period from 1960 to 2002, the copper price experienced several rises and falls but within a small range. Since 2003, the copper price soared and only declined during the financial crisis. The paper has analyzed the pricing mechanism of the copper from its industrial property and financial property. The global economic trend, supply-demand relationship and cost are fundamental factors affecting the copper price in the long run. But speculation, the dollar index and inflation expectations will intensify the change of copper price in the short run.

1. Introduction

We can see that during the period from 1960 to 2002, the copper price experienced several rises and falls but within a small range. After the 1960s, the economic rise in Japan and Germany brought the first round of copper price rising. Since 2003, the copper price soared and only declined during the financial crisis (Table 1). As a kind of industrial raw material, the copper price is affected by the supply-demand in terms of its industrial property; also, the copper has certain financial property as the international bulk raw commodity, whose price is linked to USD trend and inflation expectation to some degree. Therefore, this paper will analyze the pricing mechanism of the copper from its industrial property and financial property.

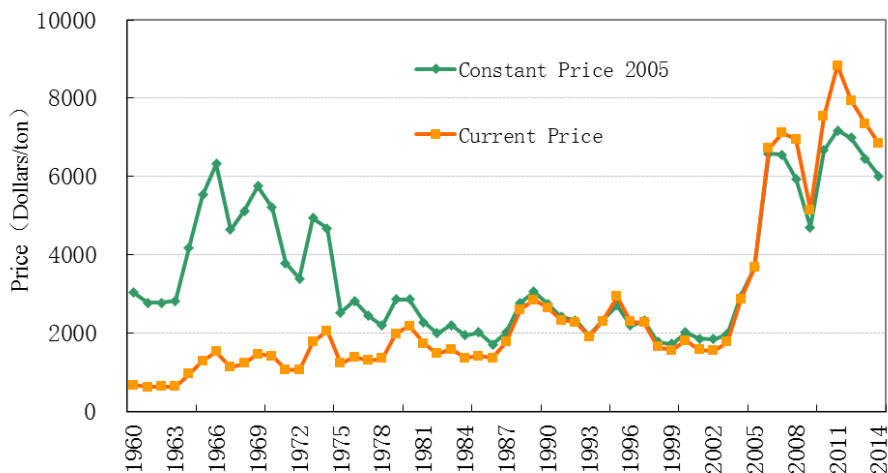


Table 1 Copper Price from 1960 to 2013(Data Source: The World Bank)

2. Industrial Property Analysis

2.1 Supply and Demand

According to the macroeconomic theory, the price of any goods is ultimately determined by supply and demand.

When supply exceeds demand, the copper price is liable to fall, and on the contrary, when demand exceeds supply, the copper price should rise. But since 2005, the copper price still set several highs

when supply of the copper mine exceeds its demand and only dropped for the financial crisis (Table 2), obviously, dramatic rises in copper price after 2003 cannot be explained by supply-demand.

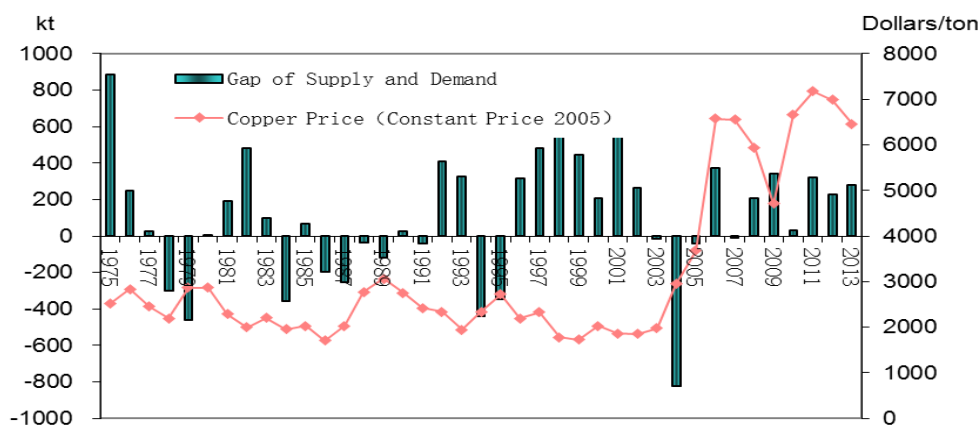


Table 2 Copper Price changes and Supply-Demand of the Refined Copper
Data Sources: World Metal Statistics yearbook, The World Bank

2.2 The Oligopoly Pattern in International Copper Industry

The distribution of copper reserves is highly intensive, mainly in Chile, Peru, Australia, Mexico and United States, whose total copper reserves account for 64% of global copper reserves. The uneven distribution of copper resources results in the unbalanced production of these resources, which means that the production mainly happens in countries rich in copper resources. Thus, copper mines are chiefly produced by those countries such as Chile, Peru, China, the US, Indonesia and Australia, etc. The copper output of Chile represents one third of that of the whole globe, and the total copper output of former five countries occupies 61% of the global copper output. Such is the case with the production of refined copper, the refined copper output of China, Chile, Japan, the US, Russia in all accounts for 58% of that of the globe.

Since the 1970s, companies producing copper mines have become more and more intensive, gradually leading to an oligopoly pattern in copper production. In 1975, the copper mines output of the top five companies took up 30.68% of that of the world, while in 2008, the percentage rose to 40.63%. Companies producing refined copper have been also highly concentrated, the refined copper output of the top five companies represented 24.97% of the world output, and the figure increased to 31.36% by 2008.

Copper resources, copper production and the company are all highly concentrated. The high-quality copper resources around the world have been controlled by international financial capital, forming an oligopoly pattern in copper supply. Therefore, they can obtain excessive profits by determining the monopoly price in the long run.

2.3 The Global Economic Trend

Copper is mainly demanded in such industries as electricity, household appliances, telecommunications, transportation, machinery manufacturing, and construction industries. And most of these industries are closely linked to the macro-economy. If the global economic situation is good, then these industries will also increase their demand for the copper. And when demand exceeds supply of the copper, the international copper price will rise. For example, during the first oil crisis from 1973 to 1974 and the second oil crisis from 1979 to 1980, the slow global economy resulted in the price dropping in copper. What's more, when global economy was in overall downturn due to such major events as financial crisis in Asia in 1997 and the subprime crisis in 2008, a sluggish global economy caused the declining demand for copper and the international copper price fell.

2.4 Cost

This paper will discuss the cost factor from the perspective of the mining cost and the production cost respectively. Owing to the excessive mining of copper resources all over the globe, the grade of

crude ores has been greatly reduced. According to statistics, the grade of copper ores has dropped by over seventy percent with the buried depth for mining gradually deepened and the labor cost risen over the past 30 years. Thus, producers of copper took tax policies in succession by raising the resource tax and levying windfall tax. And all these factors led to the rise in mining cost of copper mine. In order to reduce the mining cost of copper mine, producers must continue to increase the prospecting investment to find mineral deposits of high grade or rely on advanced technology to make the exploitation of mineral deposits of low grade profitable.

In terms of the production cost, at present, the average cost of copper pyrometallurgy is from 2000 to 2200 dollars per ton and the average cost of copper hydrometallurgy is from 1100 to 1300 dollars per ton. On the whole, the average production cost of global copper is not more than 2000 dollars per ton now, only accounting for one third of the copper price. And the small fluctuation in production cost in recent years is not enough to soar up the price of copper since 2003.

2.5 China Factor

The rapid development of economy will drive the demand for copper, and the active demand will stimulate the copper price in turn. Since 2003, the booming economy in China has led to its strong demand for mineral resources. Even the “easy” or “prudent” monetary policy taken by China will have a great effect on the international copper price. But to what extent does “China factor” influence the fluctuation of the international copper price on earth?

On the analysis of the relationship between consumption of refined copper and the change in copper price (Table 3), it can be seen that they are in positive correlation. From 2003 to 2013, the consumption of global refined copper increased from 15.32 million tons in 2003 to 21.0392 tons in 2013, rising by 37.3%. The consumption of refined copper in China increased from 3.07 million tons in 2003 to 9.83 million tons in 2013, growing by 220%. And in 2013, the consumption of refined copper in China represented 46.7% of that of the global refined copper, which showed China’s contribution to the consumption of global refined copper. And over that period, the copper price increased from 1779 dollars per ton in 2003 to 6841 dollars per ton in 2013, rising by about 284.54%. Obviously, the demand for the refined copper is one of important factors resulting in the soaring copper price. Moreover, China has also imported a large amount of high-end copper, and China plays a more and more significant role in global economic stage. Thinking highly of China’s economic growth enhances confidence in investment in copper.

Therefore, China’s demand for copper resources leads to the rise in copper price, but the “China factor” is exaggerated. The high copper price results from many factors.

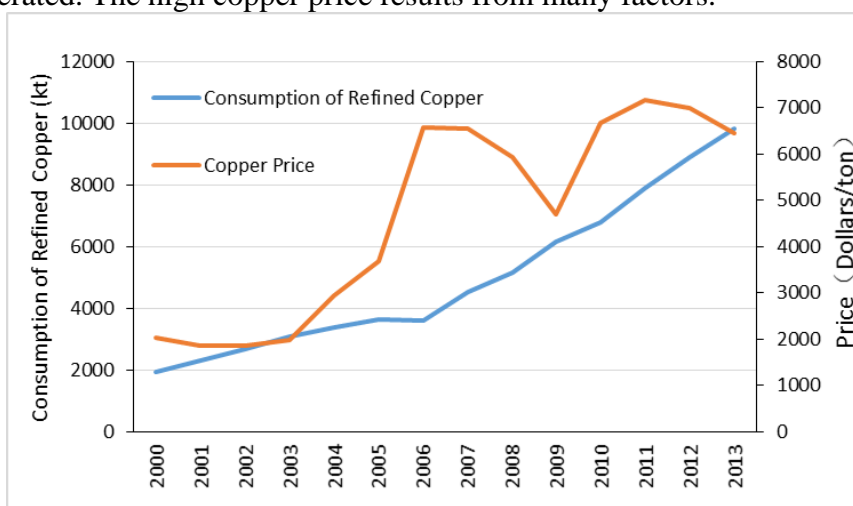


Table 3 The Consumption of China’s Refined Copper and the Change in Copper Price
Data Sources: LME, China Nonferrous Metals Industry Association

3. Financial Property

3.1 Speculative Element

Because nonferrous metals are increasingly closed to macro-economy and financial market in recent years, as one of important metal futures, the copper has become an investment target for many hedge funds.

The price of copper futures is the result of game involving lots of participants in futures market. The leading gamers are producers and speculative funds. Especially since 2009, speculative funds have had much effect on the price of copper futures. On December 10th, 2010, The Financial Services Authority, the U.K. market regulator, approved that copper ETF products could be traded on markets, further strengthening the financial property of copper.

Furthermore, copper ETPs launched by British ETF Securities in December, 2010, and ETPs respectively launched by JP Morgan and iShares Copper Trust both provided powerful logic support for bullish people. According to estimates from Deutsche Bank, three ETPs will absorb 0.3 million to 0.4 million tons of copper supply, representing 2.2% of global demand for refined copper. Therefore, the introduction of copper ETPs will aggravate the tight supply of copper, contributing to the rising copper prices.

3.2 The Dollar Index

Because the bulk commodity in the international trade is priced in dollars, the change of the dollar index will have a great effect on the copper price. From the comparison diagram of historical trend between the dollar index and copper futures prices, it can be seen that the dollar index and copper futures prices show a negative correlation (Table 4).

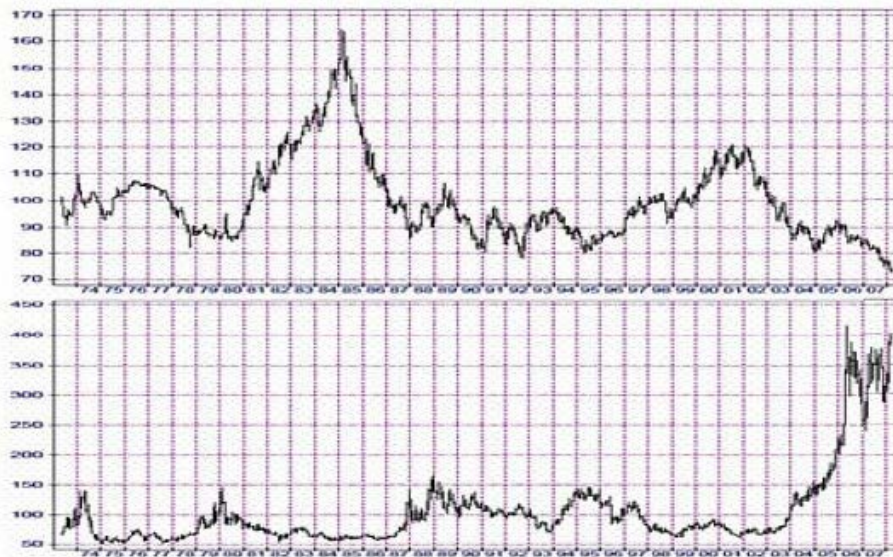


Table 4 the Comparison Diagram Between the Dollar and Copper price

3.3 Inflation Expectation

On September, 13th, 2012, the Federal Reserve announced the QE3 to support economic recovery and labor market in US. The continuous launch of the QE3 and QE4 in the short term will make sure that the global environment of low interest rates and ample liquidity last for a long time, which may bring pressure from inflation and asset price on emerging economies. So the price of copper futures will rise under the influence of inflation.

4. Conclusion

On the analysis of industrial property and financial property, we can see that the global economic trend, supply-demand relationship and cost are fundamental factors affecting the change of copper price in the long run. But speculation, the dollar index and inflation expectations also foster the

change of copper price in the short run, though they are not essential factors determining the copper price, they can make the copper price deviate from the reasonable price seriously in the short term.

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