



**中信期货有限公司**  
CITIC Futures Company Limited

**Investment consulting business qualification:  
CSRC License [2012] No. 669**

**投资咨询业务资格：证监许可【2012】669号**

# 中国铜期货 China Copper Futures

## 基础介绍 Introduction

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## 1. 定价机制 Pricing Mechanism

## 2. 需求分析 Supply Analysis

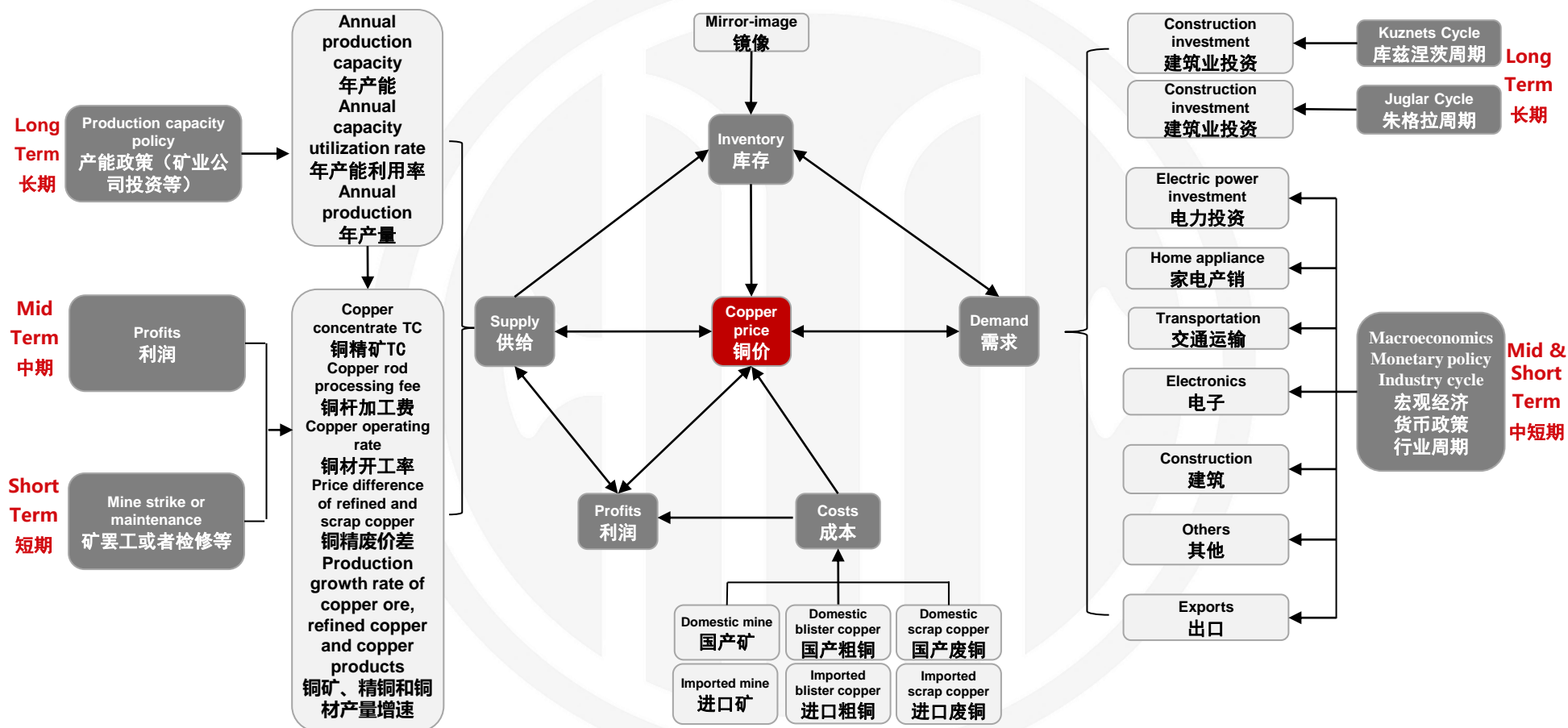
## 3. 供给分析 Supply Analysis

## 4. 库存分析 Inventory Analysis

## 5. 价差分析 Spread Analysis

# Demand, Supply and Prices

## 1.1 需求、供给和价格体系



Sources: Wind, Bloomberg, Mysteel, CITIC Futures

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# China Refined Copper Consumption Structure by Industry

## 2.1 中国精铜分行业消费结构



Unit: % 单位: %	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Electric power 电力	45.1%	47.0%	47.1%	46.6%	45.9%	45.9%	45.9%	45.8%	45.6%	45.6%	45.8%	45.7%	46.0%
Home appliance 家电	15.0%	15.0%	13.5%	14.0%	14.6%	14.8%	14.8%	14.9%	15.1%	15.3%	14.8%	14.9%	14.2%
Transportation 交通运输	11.0%	10.0%	9.9%	10.6%	11.2%	11.3%	11.4%	11.4%	11.6%	11.2%	11.2%	11.5%	12.3%
Construction 建筑	9.4%	10.0%	10.5%	10.0%	9.7%	9.3%	9.2%	9.1%	8.8%	8.8%	8.9%	8.8%	8.2%
Mechatronics 机械电子	8.0%	8.0%	8.0%	8.2%	8.3%	8.6%	8.7%	8.8%	9.0%	8.9%	8.9%	9.0%	8.7%
Others 其他	11.5%	10.0%	11.0%	10.6%	10.3%	10.1%	10.0%	9.9%	10.0%	10.2%	10.3%	10.1%	10.6%

Sources: Wind, Bloomberg, Mysteel, CITIC Futures

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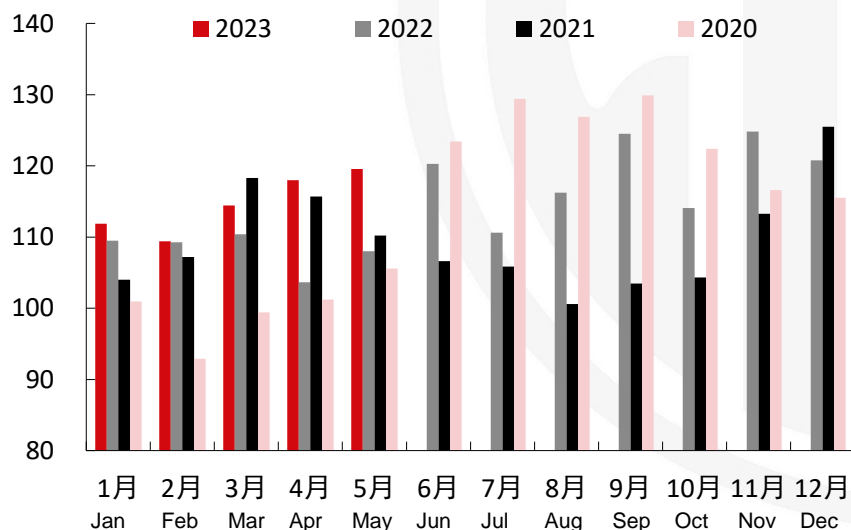
# Demand Analysis from Apparent Consumption

## 2.2 多角度需求分析-表现消费

- Apparent consumption as the foundation of actual consumption can reflect real changes in consumption. 表现消费是实际消费的基础，可以相对较为真实的反应消费变化。
- SHFE+(SMM copper social inventory + Shanghai Bonded Warehouse copper inventory) can well reflect the trend of actual demand. 表现消费+（SMM铜社库+保税库铜库存变化）可以较好的反应实际需求走向。

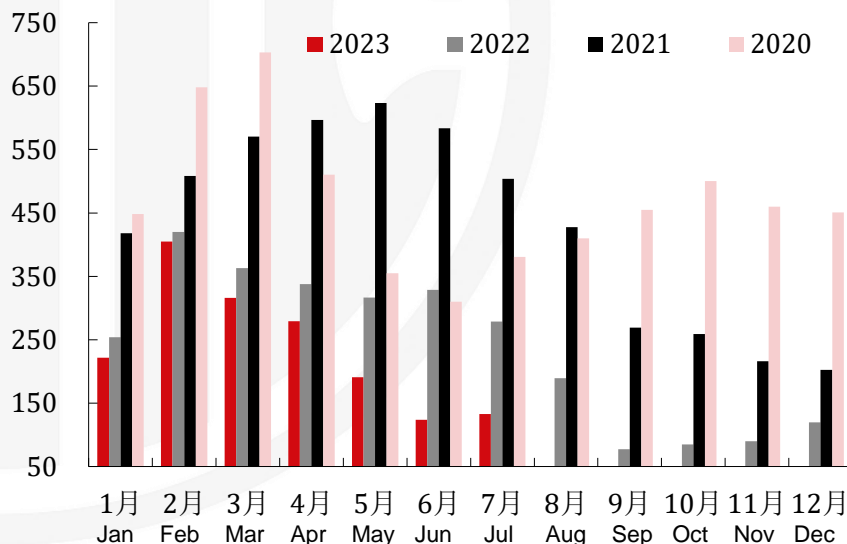
China copper apparent consumption / unit: 10000 tons

中国铜表现消费 单位：万吨



SHFE+Shanghai Bonded Warehouse copper inventory / unit: 100 tons

SHFE+上海保税库铜库存 单位：百吨



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# Demand Analysis from Copper Processing

## 2.3.1 多角度需求分析-铜加工环节

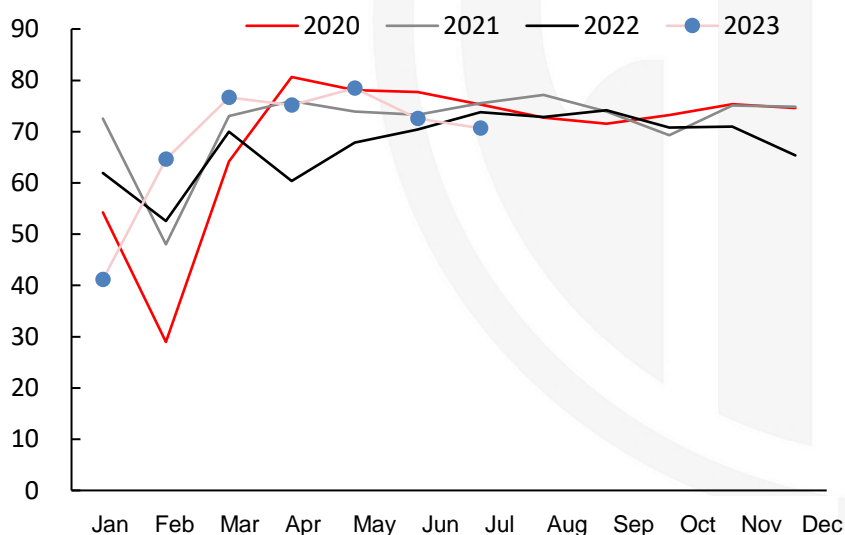
- Copper processing has the weakest profit and the highest risk in the entire copper industry chain.

铜整个产业链条中，铜加工行业利润是最薄弱的，风险最大。

- The operating rate of copper products indirectly reflects the strength of refined copper consumption. Of the copper product production, copper rods account for about 50%, copper plate and strip 20%, copper foil 3%, and copper pipe 19%. 铜材开工率间接反映精铜消费强弱，铜材产品中铜杆占比约50%，铜板带产量占比约为20%，铜箔产量约为3%，铜管产量占比约为19%。

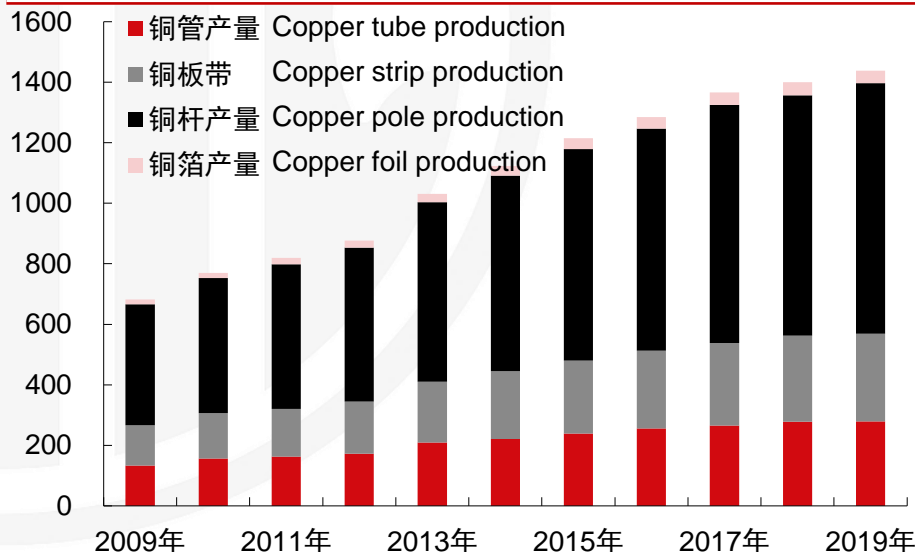
Copper product enterprise operating rate / Unit: %

铜材企业开工率 单位: %



Copper product production structure / Unit: 10000 tons

铜材产量结构 单位: 万吨



Sources: Wind, Bloomberg, Mysteel, CITIC Futures

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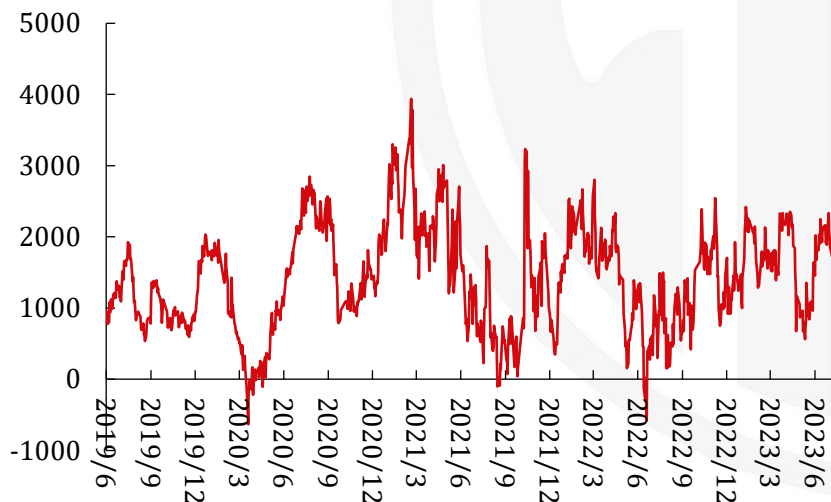
- Recycling enterprises value economic applicability. When the price difference between refined and scrap copper is larger than 1500 yuan, enterprises will actively seek for scrap copper to replace refined copper, which is not conducive to consumption of refined copper, and vice versa.

利废企业会考虑经济性的问题，铜精废价差超过1500元时，企业会积极寻求废铜替代精铜，这不利于精铜消费；而铜精废价差倒挂时，精铜替代废铜消费。

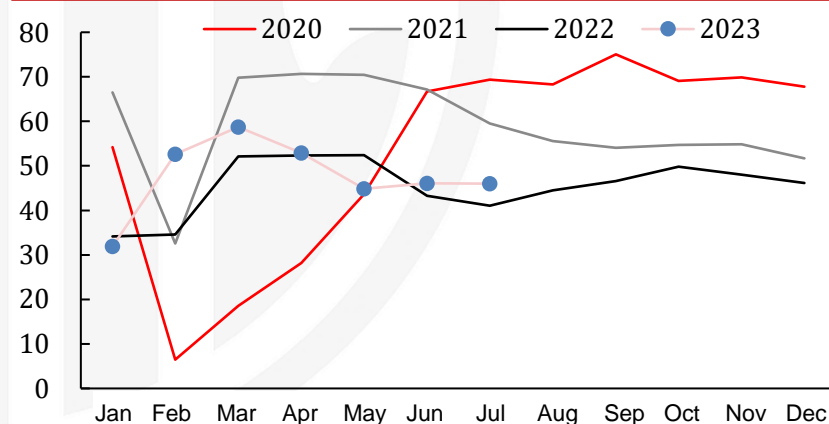
- Scrap copper rod producers' operating rate is influenced by not only orders but also raw materials.

废铜制杆企业开工率除受订单约束，还受原料限制。

Refined copper - scrap copper price difference / unit: yuan  
铜精废价差 单位：元



Scrap copper rod producers' operating rate / unit: %  
废铜制杆企业开工率 单位：%



Sources: Wind, Bloomberg, Mysteel, CITIC Futures

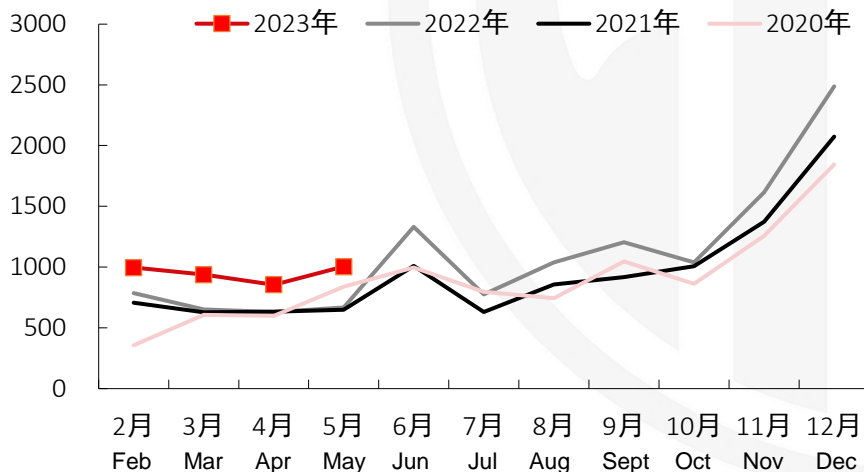
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## 2.4.1 多角度需求分析-下游终端

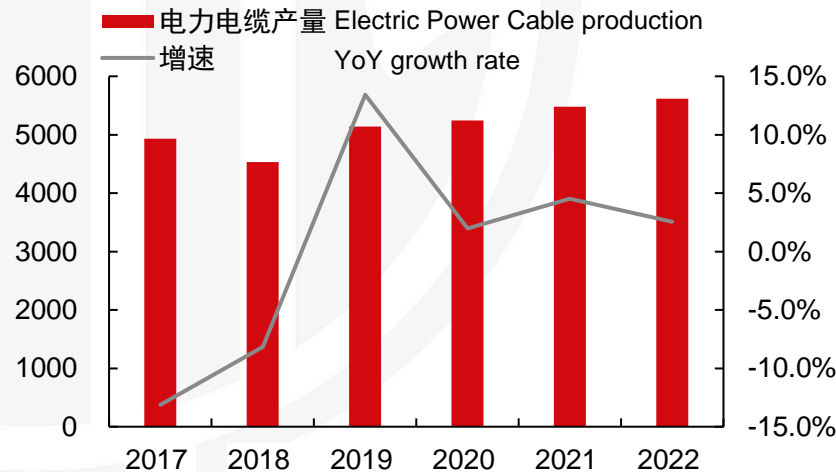
- Among copper terminal products, the quantity of cables is the largest, mainly driven by electricity investment.  
铜终端产品中，线缆的量是最大的，主要受电力投资驱动。
- According to huaon.com and GONYN.com, China's electric power cable production increases in a relatively slow rate in 2020-2023.

据华经产业和共研产业咨询数据，中国电力电缆2020-2023年产量增长较为缓慢。

Electricity investment / unit: 100 million yuan  
电力投资 单位: 亿元



Electric Power Cable production / unit: 10000-kilometer  
电力电缆产量 单位: 万千米



Sources: Wind, Bloomberg, Mysteel, CITIC Futures

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- SMM and CPCA release weekly copper rod processing fees and car sales data, which are very important indicators for tracking downstream consumption.

有色网和乘联会每周会公布铜杆加工费和汽车销售数据，这是跟踪下游消费非常重要的指标。

CPCA weekly car sales in July 2023

2023年7月乘联会周度汽车销售数据

	1st-9th 1-9日	10th-16th 10-16日	17th-23rd 17-23日	24th-31st 24-31日	whole month 全月
21yr	34129	40019	47610	73487	48660
22yr	39797	47081	59234	91298	59121
23yr	36825				
22yr YoY 22年同比	17%	18%	24%	24%	21%
23yr YoY 23年同比	-7%				
MoM of the same period of June 环比6月同期	-2%				

Sources: Wind, Bloomberg, Mysteel, CITIC Futures

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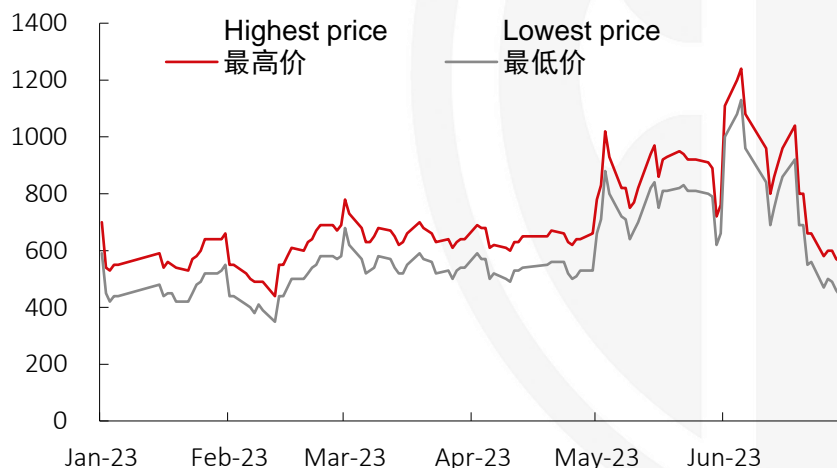
# Demand Analysis from Downstream Terminals

## 2.4.3 多角度需求分析-下游终端

- Copper rod processing fee is an indicator of copper consumption in electricity.  
铜杆加工费的高低可以反映电力板块铜消费。
- Weekly car sales data is a timely indicator of the prosperity of the automotive sector.  
汽车周度销售数据可以及时的反应汽车板块景气情况。

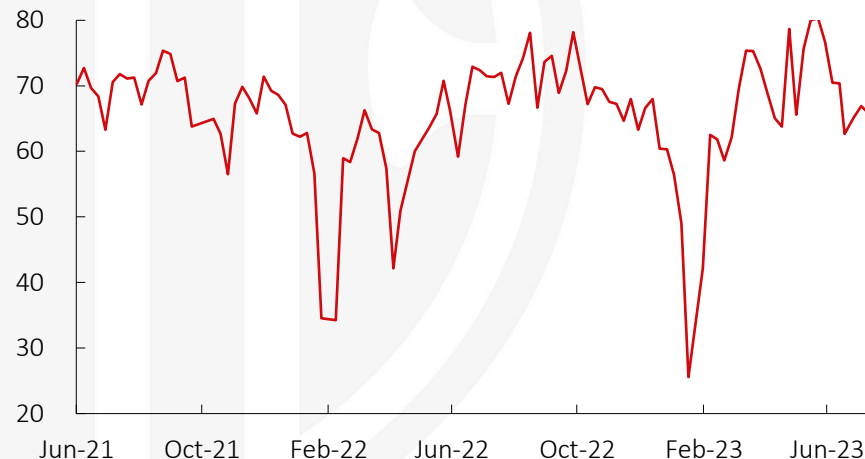
Copper rod weekly processing fee / unit: yuan/ton

铜杆周度加工费 单位：元/吨



China Electrolytic copper rod weekly operating rate / unit: %

铜杆周度开工率 单位：%



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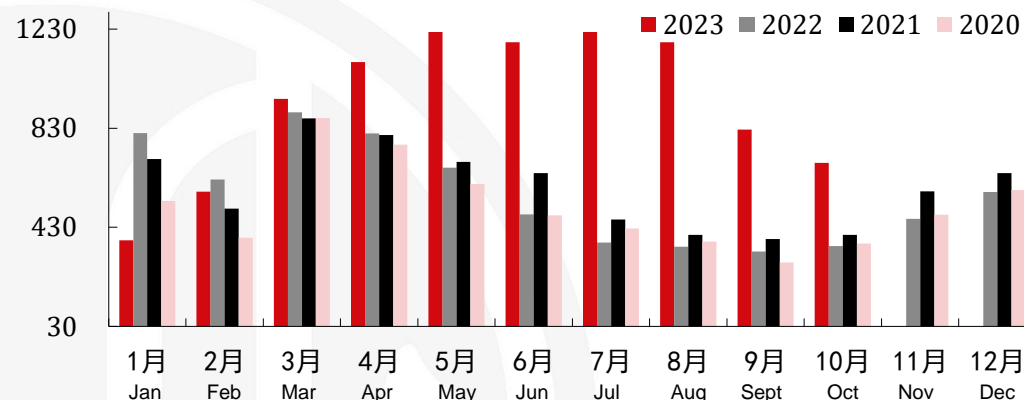
# Demand Analysis from Downstream Terminals

## 2.4.4 多角度需求分析-下游终端

- Key air conditioning enterprises' production scheduling for the next month is usually released by the end of that month. 重点空调企业下月排产数据，一般在当月末就出来了。
- Copper consumption in home appliance enterprises led by air conditioning producers accounts for about 16% of the total copper consumption. 空调为首的家电企业耗铜量占铜总消费量的16%左右。

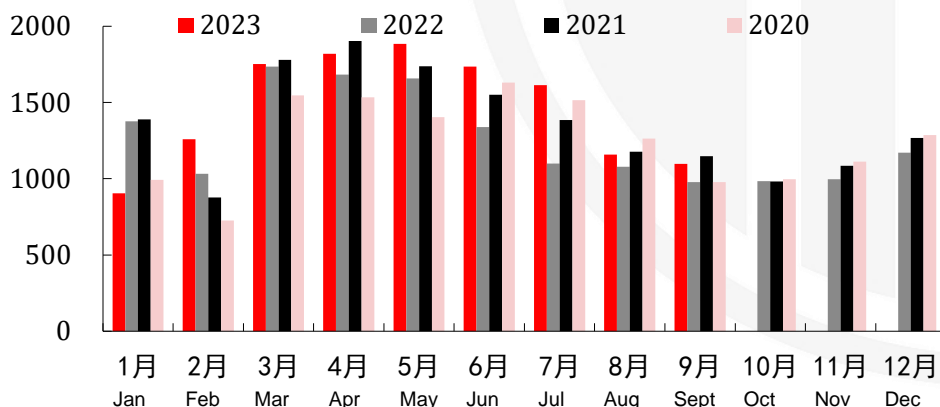
Air conditioning enterprises' production scheduling for domestic use / unit: 10000 units

空调企业内销排产数据 单位：万台



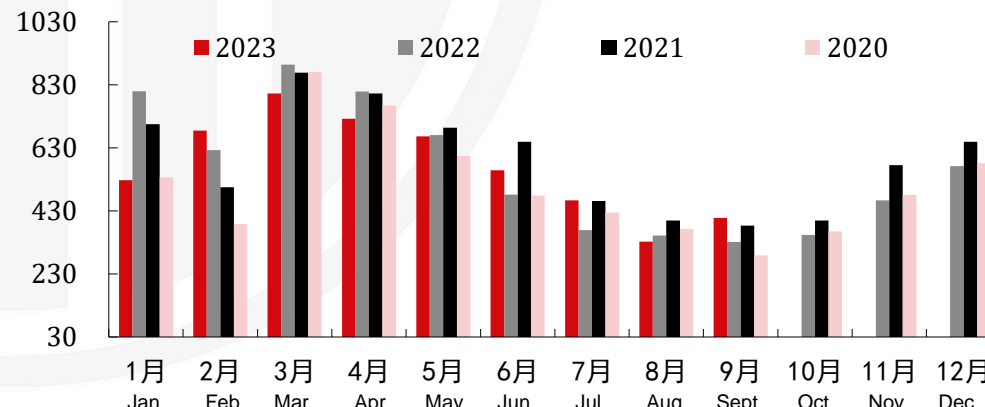
Air conditioning enterprises' production scheduling / unit: 10000 units

空调企业排产数据 单位：万台



Air conditioning enterprises' scheduling for exported production / unit: 10000 units

空调企业出口排产数据 单位：万台



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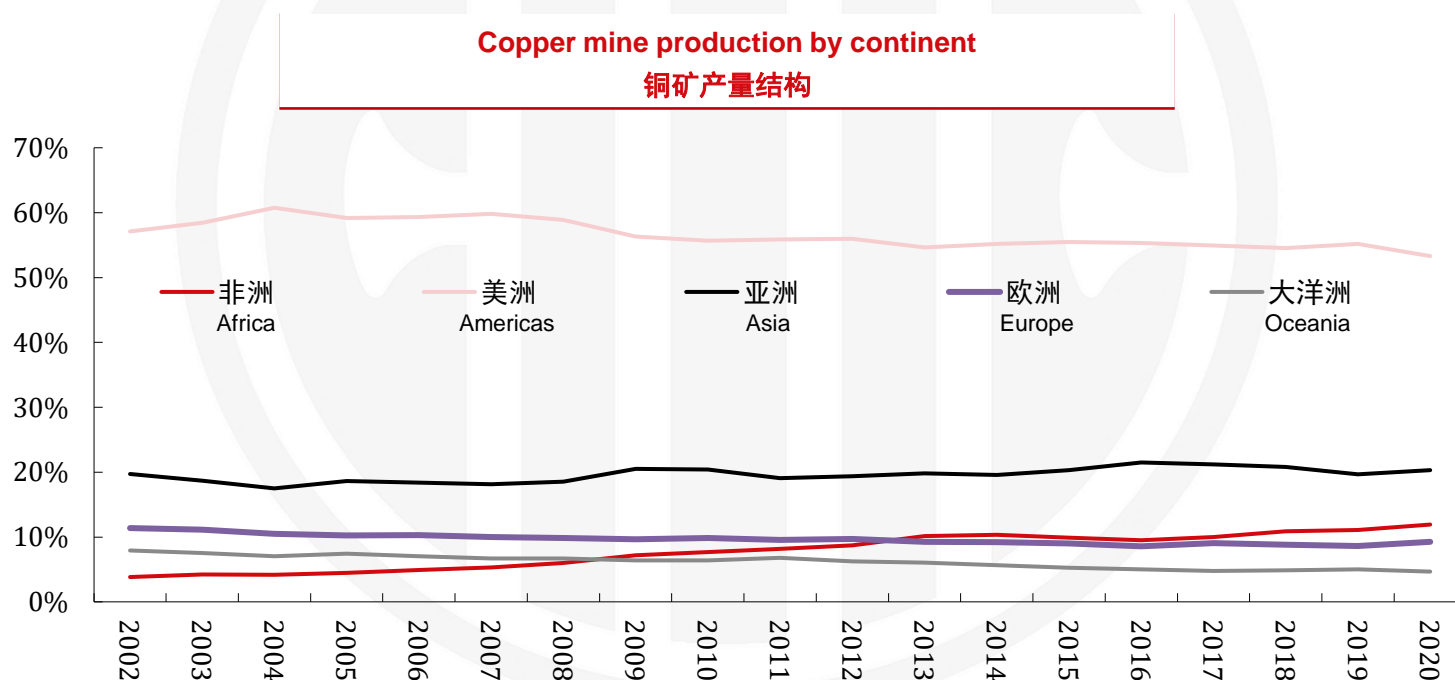
5. 价差分析 Spread Analysis

# Analysis of Supply : Investment Guides Long-term Output

## 3.1.1 供给分析-投资决定长期产出

- The investment of copper mining enterprises actually depends on the expected return in the future, or the expected copper price trend essentially. The relatively rapid increase in copper mine production capacity in 1980s, mid-1990 to 2008, 2012 to 2016 is closely related to the rise in copper prices.

铜矿企业的投资其实要看未来预期的收益率，实际上也是对未来铜价走势的预期。80年代末、90年代中期-2008年及2012-2016年铜矿产能出现较快速度的增长，这跟铜价上涨时密切相关的。



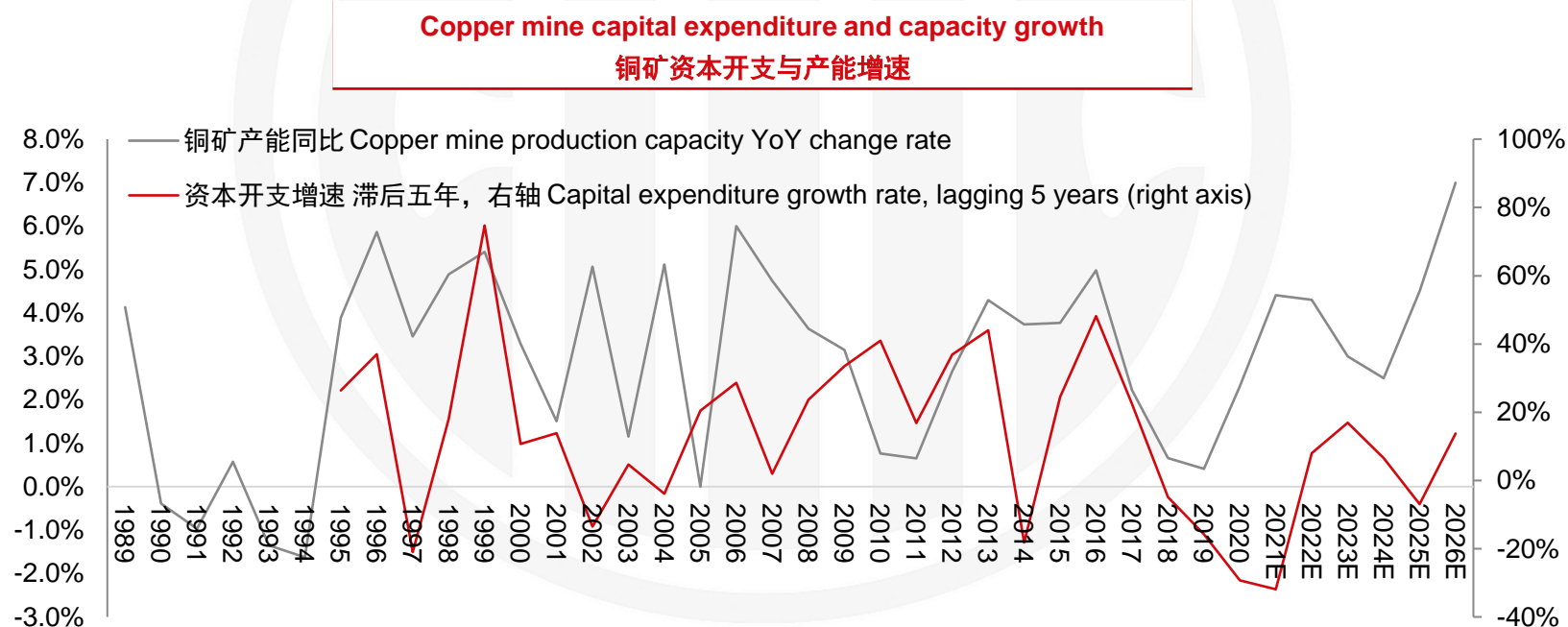
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## 3.1.2 供给分析-投资决定长期产出

- Generally, copper prices lead the expansion of copper production capacity, mainly due to the long cycle of copper mine investment. There is a slowdown in investment by copper mining enterprises in the past two to three years, copper mine production capacity tends to stabilize, and the increase in copper ore is mainly from Africa.

一般铜价领先铜矿产能扩张高点，这主要是由于铜矿投资周期较长。我们看到最近两三年铜矿企业投资放缓，铜矿产能趋于稳定，铜矿的增长主要来自于非洲地区。



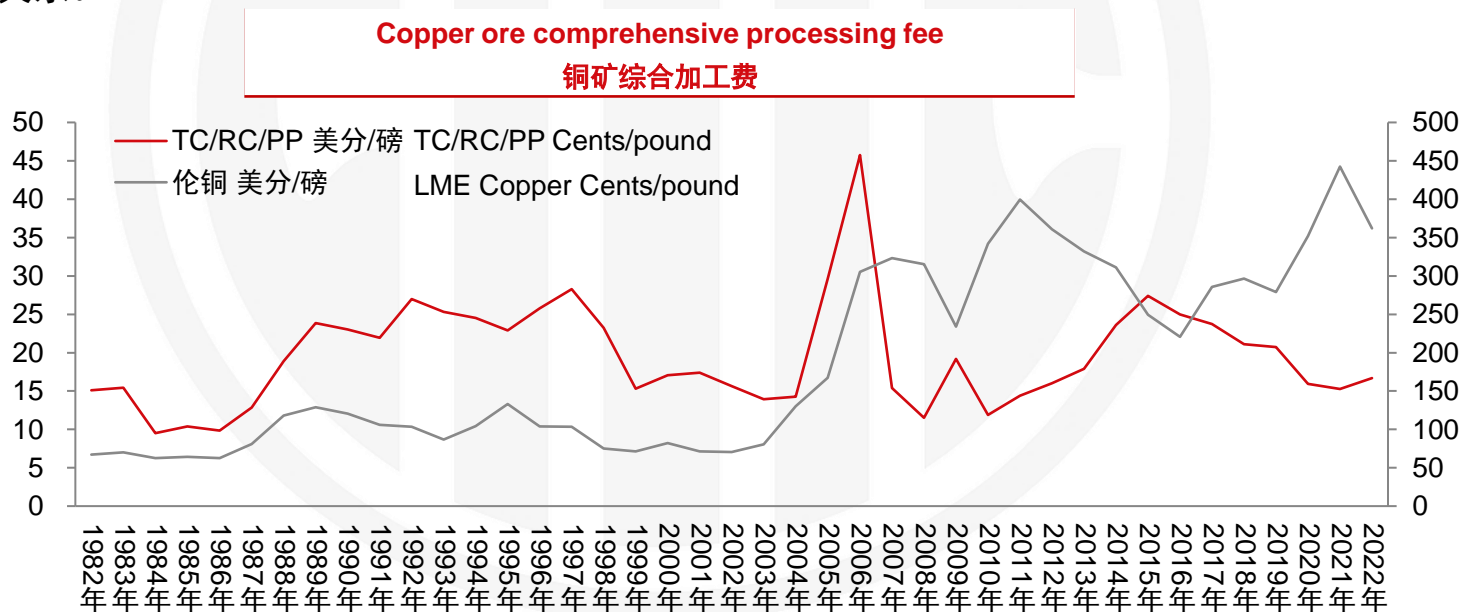
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## 3.2.1 供给分析-冶炼利润决定供应节奏

- In the entire copper industry chain, the bargaining power of copper smelting enterprises is weak. The cancellation of PP Clause since 2007 put smelting companies fully exposed to the risk of processing fee fluctuations. From 1982 to 2006, copper comprehensive processing fee was positively correlated to copper prices. After 2007, the relation between the two has been negative correlated.

铜整个产业链条中，铜冶炼企业议价能力并不强，在2007年取消价格分享条款之后，冶炼企业完全暴露在加工费波动的风险之中。1982-2006年之间，铜综合加工费和铜价呈现正相关的关系，07年之后，铜综合加工费和铜价呈现负相关关系。

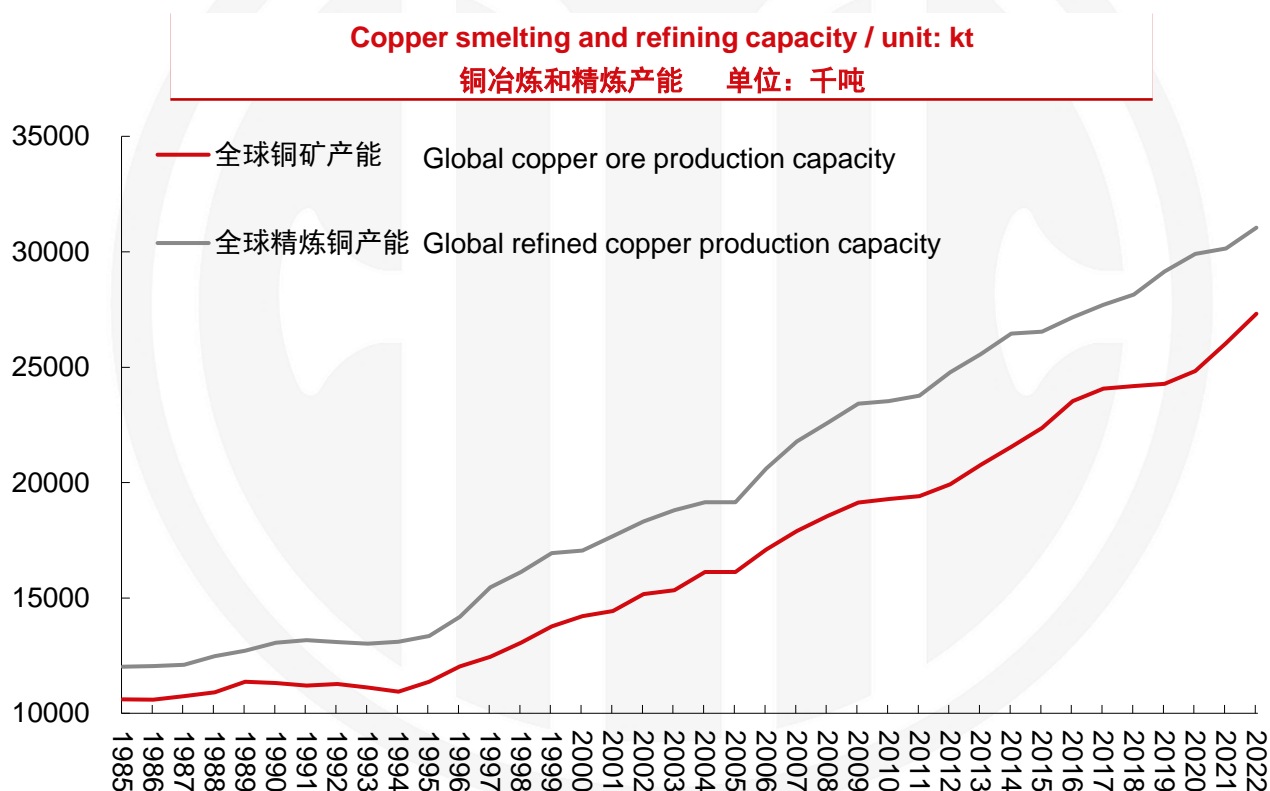


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- Copper concentrate processing fee reflects two aspects, the relationship between copper supply and demand, and the relationship between copper production capacity and the deficit of smelting/refining capacity.

铜精矿加工费反映两方面，一方面是铜供求关系，另外一方面是铜矿产能和冶炼/精炼产能缺口之间的关系。



Sources: Wind, Bloomberg, Mysteel, CITIC Futures

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- 1. As the production of refined copper is increasing, dependence on raw materials is increasing.  
一、精铜产量越来越多，原料依存度加大。
- 2. Imports of refined copper tend to stabilize, roughly at 3-3.5 million tons over the past 10 years.  
二、精铜进口趋于稳定，过去10年大致稳定在300-350万吨。
- 3. Import policy for scrap copper is increasingly stricter, from the Green Fence action in 2013 to the cancellation of the import quota for six scrap categories in 2020.  
三、废铜进口政策不断趋严，从2013年的绿篱行动到2020年取消废六类进口配额。
- 4. Imports of copper element are increasing year by year.  
四、铜元素进口逐年攀升。

# Analysis of Supply : China 's Demand Structure

## 3.3.2 供给分析-中国需求结构

Chinese copper related products / unit: 10000 tons中国历年铜相关产品 单位: 万吨

Unit: 10000 tons 单位: 万吨	Unwrought copper and copper products 未锻造铜与铜材	Refined copper 精炼铜			Copper Concentrate 铜精矿		Scrap copper 废铜		Copper products 铜材			Anode copper 阳极铜	Steel ingot 钢锭	Copper element 铜元素
	Imports 进口量	Production 产量	Imports 进口量	Exports 出口量	Production 产量	Imports 进口量	Domestic supply 国内供应	Imports 进口量	Produ ction 产量	Imports 进口量	Exports 出口量	Imports 进口量	Imports 进口 量	Imports 进口 量
Dec-22	587	1106	369	23	196	2532	200	177	2287	44	68	117	51	1364
Dec-21	553	1049	344	27	183	2343	223	169	2124	57	67	94	50	1276
Dec-20	669	1003	454	21	168	2178	184	96	2045	62	54	103	45	1287
Dec-19	499	945	347	32	163	2202	166	160	2017	50	52	76	22	1176
Dec-18	530	914	375	28	150	1972	167	241	1716	55	51	90	12	1147
Dec-17	469	904	324	34	184	1732	155	356	1862	58	48	80	7	1034
Dec-16	495	839	363	43	185	1705	145	335	2096	56	46	71		1047
Dec-15	481	796	368	21	167	1332	140	366	1914	56	47	53		985
Dec-14	483	782	359	27	200	1186	148	387	1742	60	51	58		960
Dec-13	454	685	321	29	180	1007	132	437	1489	65	49	63		913
Dec-12	465	601	340	27	171	783	117	486	1206	67	49	52		863
Dec-11	407	548	284	16	132	638	116	469	1124	78	50	42		774
Dec-10	429	475	292	4	126	647	92	436	1087	91	51	40		761
Dec-09	429	426	319	7	101	613	80	400	973	82	46	23		710
Dec-08	264	370	146	10	94	519	70	558	781	93	52	20		503
Dec-07	278	340	149	13	80	452		558	678	105	50			490
Dec-06	206	289	83	24	70	363		494	553	109	56			359
Dec-05	253	253	122	14	66	404		482	514	112	46			440

Sources: Wind, Bloomberg, Mysteel, CITIC Futures

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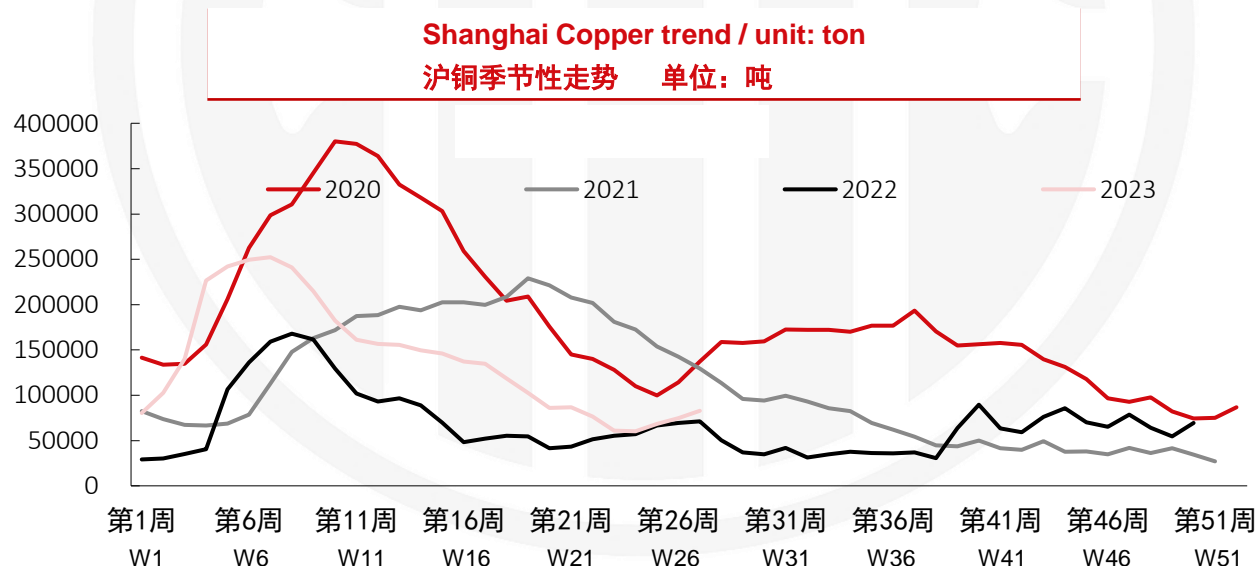
5. 价差分析 Spread Analysis

# Inventory Analysis: Seasonal Fluctuations

## 4.1.1 库存分析-季节性波动

- To estimate the demand trends of terminal industries such as electricity, home appliances, transportation, electronics, construction, and others, we can estimate the growth rate of demand and thus predict future changes in demand; The adjustment of supply lags behind that of profits. Based on the YoY trend of production, and adjusted according to the leading role of profits to production, we can estimate the changes in production.

若要预估电力、家电、交通、电子、建筑及其他等终端行业的需求趋势，可以通过估算需求增速，从而预估未来需求的变化；供给滞后利润调整，通过产量的同比趋势，加上利润对产量的领先作用进行调整，可以预估产量的变化。



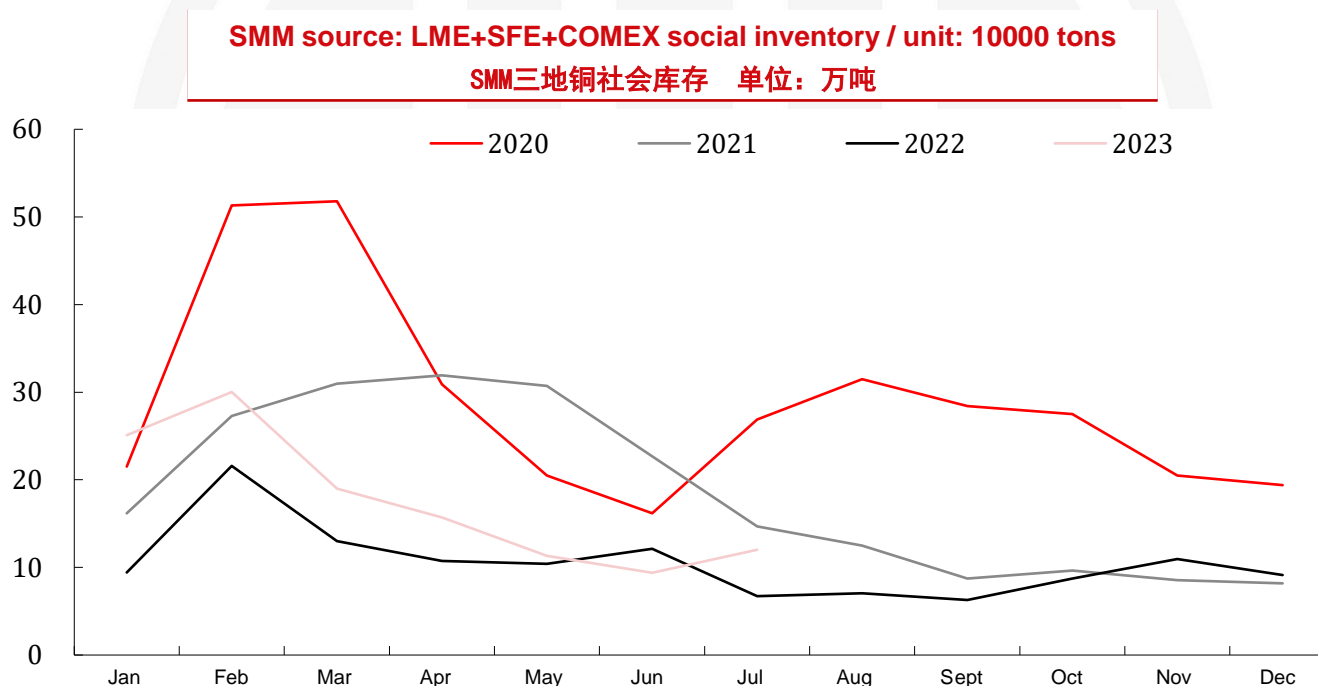
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## 4.1.2 库存分析-季节性波动

- We can estimate inventory changes through changes in demand and supply in the future, but the difficult lies in that there is a great subjectivity in judging the demand in the future, and supply changes along with demand.

通过对未来需求和供给的变化，预估库存变化（难点：对未来需求的判断存在极大的主观性，而供给的变化则是需求的被动项）。

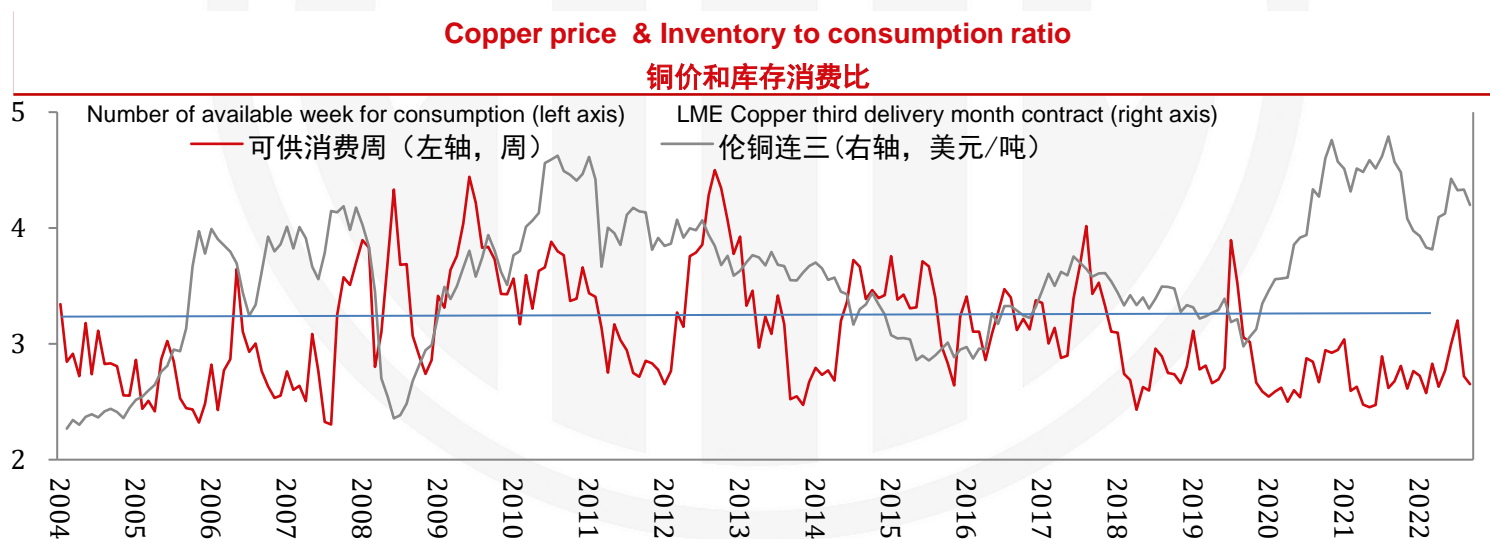


Sources: Wind, Bloomberg, Mysteel, CITIC Futures

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## 4.2 库存分析-库存消费比与价格的关系

- Inventory to consumption ratio and historical copper price have shown a negative correlation for most of the time. During the period of continuous decline in inventory to consumption ratio, copper prices mostly continue to rise, and vice versa. 全球铜库存消费比和价格在大多数时间呈现负相关关系。在库存消费比持续下降的阶段，铜价多数时间是持续上涨的；而库存持续增加的阶段，铜价多数时间是持续下跌的。
- Copper prices are influenced by not only supply and demand balance but also macro factors. For example, in 2018 and 2019, the inventory to consumption ratio had been continuously declining, copper prices remained weak because of China-U.S. trade war. 铜价不仅受供需影响，还受宏观影响。所以就算库存消费比下降，铜价未必一定会涨。拿2018年和2019年来看，铜库存消费比阶段性下降，但因中美贸易战影响，铜价持续偏弱。



Sources: Wind, Bloomberg, Mysteel, CITIC Futures

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## 4.3 库存分析-库存结构和波动

- Stronger traders' willingness to hoard leads to higher China domestic copper inventory/smelters' inventory ratio, and increasing copper prices.

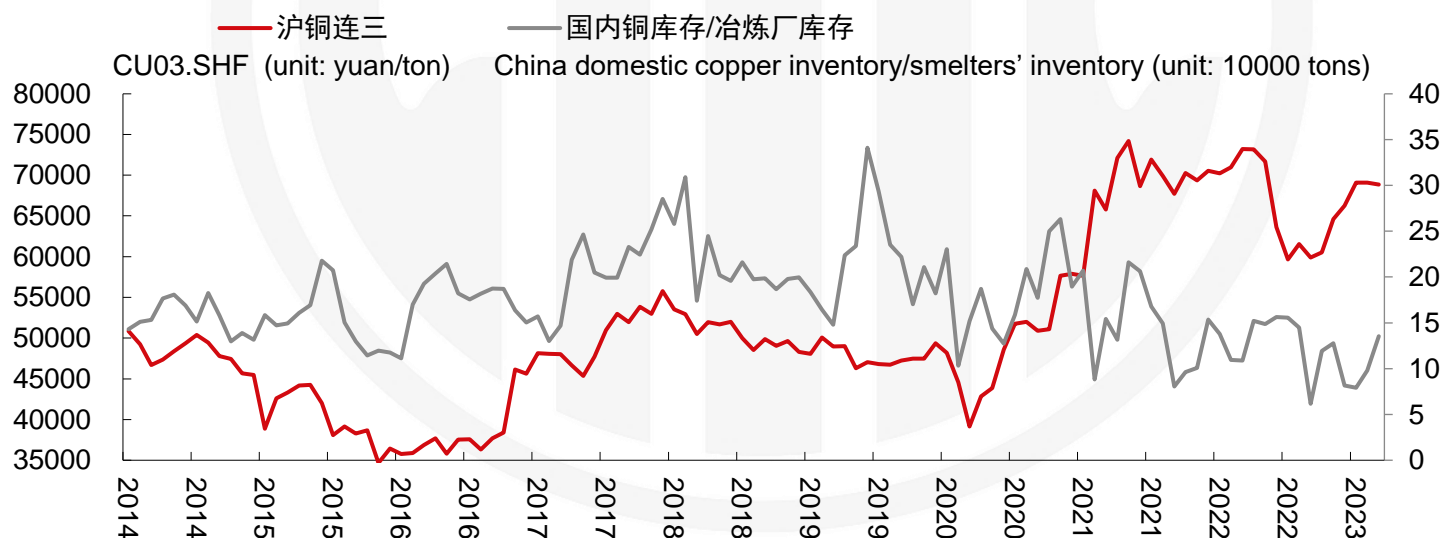
当下游囤货意愿加强时，国内铜库存/冶炼厂比值上升，铜价倾向于上涨；

- Weaker traders' willingness to hoard leads to lower China domestic copper inventory/smelters' inventory ratio, and decreasing copper prices.

当下游囤货意愿减弱时，国内铜库存/冶炼厂比值下降，铜价倾向于下跌。

Traders' willingness to hoard determines short-term price

贸易商囤货意愿决定短期价格节奏



Sources: Wind, Bloomberg, Mysteel, CITIC Futures

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1. 定价机制 Pricing Mechanism

2. 需求分析 Supply Analysis

3. 供给分析 Supply Analysis

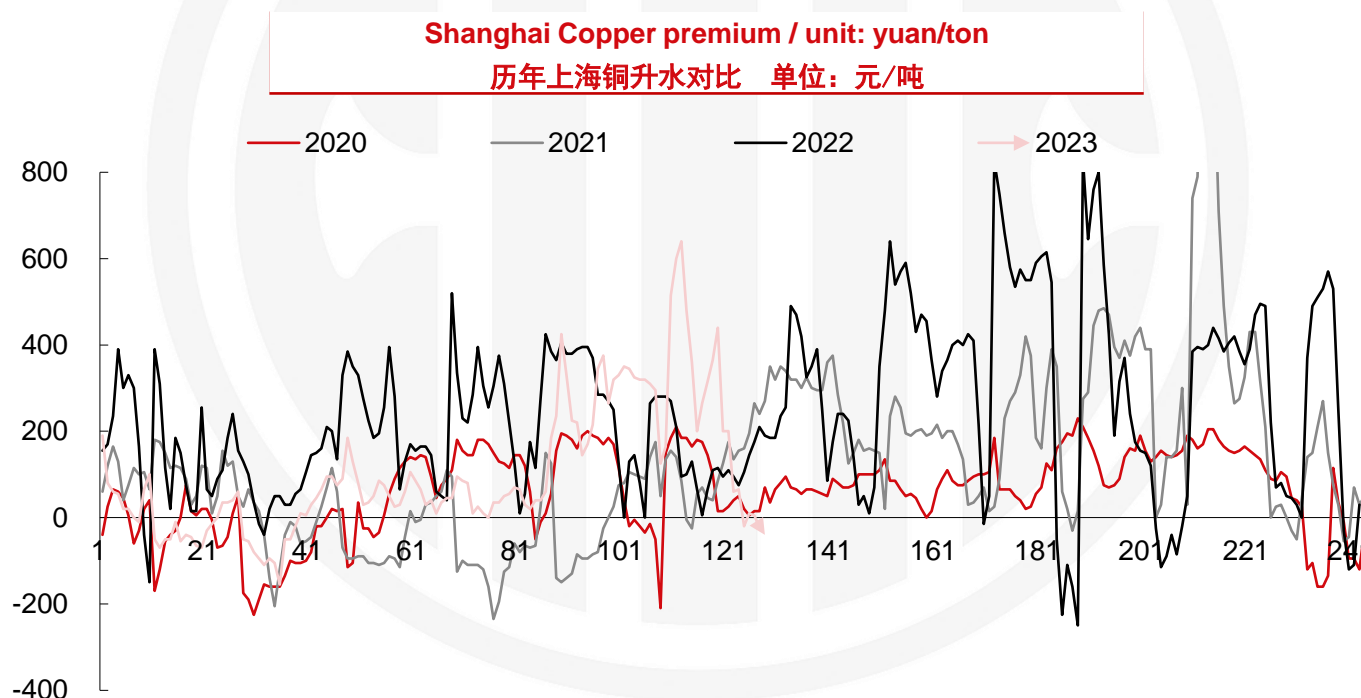
4. 库存分析 Inventory Analysis

5. 基差与价差 Basis and Spread

# Basis and Calendar spread Determine the Margin of Safety

## 5.1.1 基差和月差决定安全边际

- **Basis:** contrary to inventory trend. In a state of tight supply, inventory will decrease and the copper basis will strengthen. Copper inventory and basis can visually and truly detect the current and future supply and demand for a period of time, offering high reference value for short-term market judgment.
- **升贴水:** 跟库存走向相反，在供需偏紧的状态下，库存走低，铜基差将会走强，铜库存和基差是很好的检测当前及未来一段时间的供需的重要指标，非常直观真实，对中短期的行情判断有非常大的参考价值。



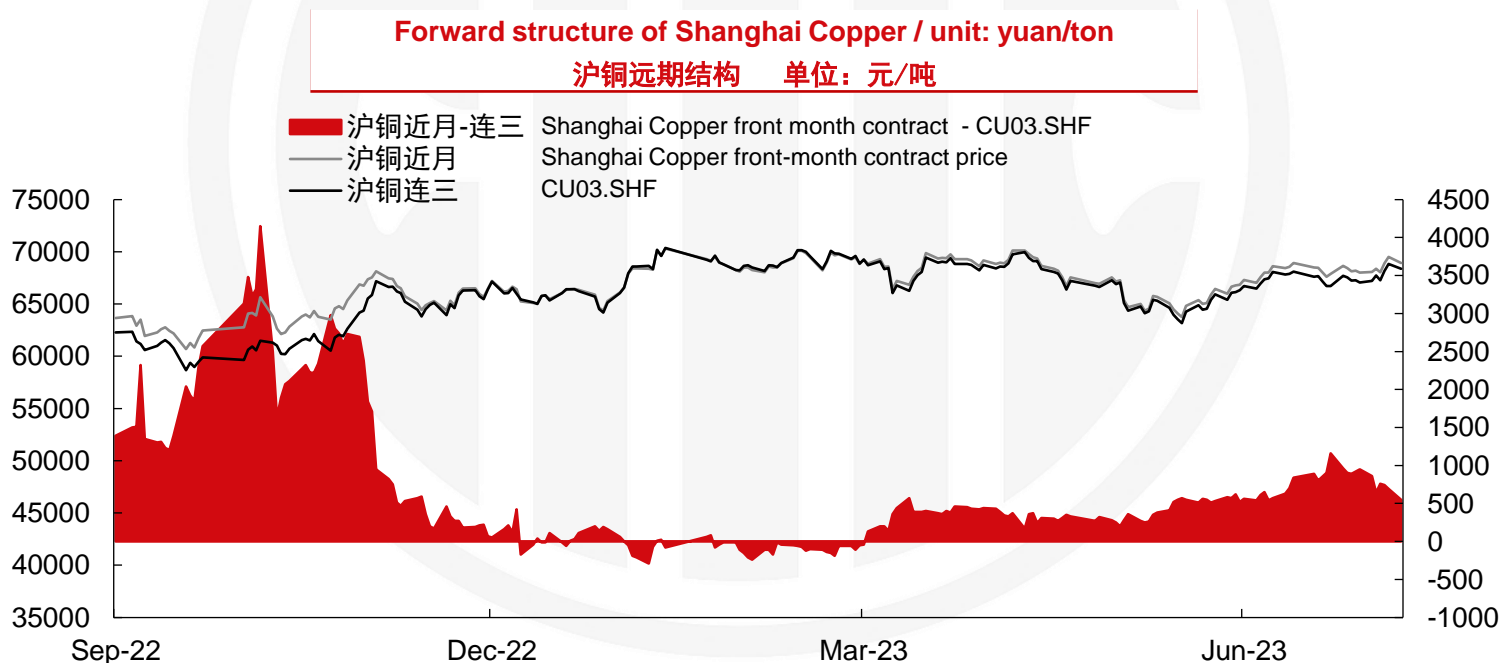
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# Basis and Calendar spread Determine the Margin of Safety

## 5.1.2 基差和月差决定安全边际

- **Calendar spread:** a further extension of Basis. In a state of extremely tight supply, inventory is relatively low or continues to decline, there is copper spot premium, the forward contract of Shanghai Copper shows Back. In this state, long position means higher margin of safety as long position rollover will gain profits; for short position, long-time holding means increasingly higher costs.
- **月差:** 基差进一步的延伸，在供需面非常紧张时，库存比较低或持续走低，铜现货处于升水状态，沪铜远期结构表现为Back状态。在这种状态下，多头有展期盈利，具有较强安全边际；而长期持有空头成本是不断堆高的。



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