



NSE COPPER
DERIVATIVES
Performance Review
2023-24

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Performance Review of Commodity Derivatives - FY 2023-24

Copper Futures, Copper Options (On Goods) & Copper Options on Futures

1. Background

a. Brief about the commodity such as sample picture, lifecycle and various varieties/grade of the commodity found in India

Copper is usually found in nature in association with sulfur. Copper has been in use at least 10,000 years, but more than 95% of all copper ever mined and smelted has been extracted since 1900. As with many natural resources, the total amount of copper on Earth is vast (around 1014 tons just in the top kilometre of Earth's crust, or about 5 million years' worth at the current rate of extraction). However, only a tiny fraction of these reserves is economically viable, given present-day prices and technologies. Various estimates of existing copper reserves available for mining vary from 25 years to 60 years, depending on core assumptions such as the growth rate. Recycling is a major source of copper in the modern world. Due to the rising economies of China and India, the demand for copper is growing rapidly. These booming economies require enormous quantities of copper in order to continue their development, which will drive up the prices. The remaining copper deposits are limited and current calculations determine they will be depleted between fifty and sixty years.

b. Commodity fundamentals and balance sheet as per the following format (to be prepared based on publicly available information on best effort basis):

Table – Fundamentals & Balance Sheet (Thousand metric tons)

Global Scenario	2022	2023
Primary Refined Copper Production	21,145	22,057
Secondary Refined Copper Production	4,153	4,489
Total Supply (Primary & Secondary)	25,298	26,546
World Refined Copper Usage	25,832	26,549
World Refined Copper Stocks End of Period	1,258	1,191

Source: ICSG (International Copper Study Group)

Table - Indian Balance Sheet (In Tonnes)

Indian Scenario	2022-23	2023-24
Copper Cathode Production	5,55,000	5,09,000
Copper Ores & Conc. Export	26,336	23,188
Copper Ores & Conc. Import	11,78,920	10,16,300

Source: Ministry of Mines, Government of India (mines.gov.in), Ministry of Commerce and Industry

Top 10 major producing countries (Thousand Metric Tons)

Countries	2022	2023
Chile	5330	5000
Peru	2450	2600
Congo	2350	2500
China	1940	1700
United States	1230	1100
Russia	936	910
Indonesia	941	840
Australia	819	810
Zambia	797	760
Mexico	750	750

Source: MCS USGS 2024

Top 10 major consuming countries (Thousand metric tons)

Country wise consumption data is not available in public domain.

Top 10 major exporting countries (in US \$ million)

Name of Country	2022	2023
Chile	21659.87	19717.83
Germany	16230.86	15024.81
Japan	12476.02	12459.96
USA	10050.04	10949.33
China	10679.72	10046.32
Zambia	8092.01	6726.12
Italy	5887.29	5622.49
Poland	5503.61	5427.14
Canada	4443.01	4361.30
Australia	3934.44	4133.91

Source: UN Comtrade Database, HS Code: 74

Top 10 major importing countries (in US \$ million)

Countries	2022	2023
China	68705.24	62744.26
USA	15562.37	14533.04
Germany	15396.60	12146.93
Italy	10826.69	9993.96
India	7541.66	9073.57

Türkiye	5510.36	5651.90
France	4972.90	4852.62
Belgium	4900.86	4842.48
Mexico	3750.33	4833.78
Malaysia	4332.46	4128.93

Source: UN Comtrade Database, HS Code: 74

Top producing states in India

As per the latest available data, the production of copper concentrate at 114.42 thousand tonnes in 2021-22 increased by about 5.25% as compared to the previous year. Madhya Pradesh contributed 56.83% and Rajasthan 43.17% in total output.

c. Major changes in the policies governing trade in the spot markets of the commodity

India's copper import and trade sectors experienced significant policy changes in the fiscal year 2023-24. The government introduced new measures to streamline the process, responding to growing demand for copper, particularly in sectors like renewable energy, electric vehicles, and infrastructure development. The surge in copper imports was reported at 30% in FY23 and 180% in the first half of FY24, reflecting a robust post-pandemic economic recovery. To address the challenges of low availability and meet the burgeoning demand, the government identified copper as one of the 30 critical minerals and prioritized its import and trade. The New Foreign Trade Policy 2023, which came into effect on April 1, 2023, aimed to boost exports and improve trade performance by overcoming the trade deficit and penetrating new export markets. The policy is built on four pillars: incentive to remission, export promotion through collaboration, ease of doing business, and focus on emerging areas such as e-commerce and developing districts as export hubs. The anticipated growth in domestic refined copper demand is projected to remain around 11% in FY24 and FY25, outpacing the global growth rate of copper demand. This growth is attributed to increased consumption of copper in infrastructure and construction, as well as significant shares in the automobile and consumer durable sectors. The Adani Group's new copper smelter, with a capacity of 0.5 million MT, is expected to reduce the deficit situation once operational. These policy changes reflect India's commitment to fostering economic growth and self-reliance in critical mineral resources.

d. Geopolitical issues in the commodity and its impact on Indian scenario

The period between April 2023 and March 2024 was marked by significant geopolitical events that had a profound impact on India's copper import and trade. The ongoing Russia-Ukraine conflict continued to disrupt global supply chains, leading to volatility in commodity prices, including copper. India, as a major importer of copper, faced challenges due to these price fluctuations. The government's expenditure on copper imports rose to Rs 27,131 crore in FY23, up from Rs 21,985 crore in the previous year. This increase reflects India's growing demand for copper, particularly in sectors such as infrastructure, construction, telecom, electrical, renewable energy, and electric vehicles. India's position as the G20 Chair and its role in the UN Security Council allowed it to navigate these challenges while contributing to global conversations on trade and security.

The country's diplomatic engagements, especially in the context of the Russia-Ukraine war and China's assertiveness, were crucial in maintaining its trade interests. Despite the global

economic downturn and the shadow of Covid-19, India managed to reduce its trade deficit in FY24, partly due to a decrease in net imports of oil, chemicals, ores, and minerals. The government's introduction of a new mineral concession, namely, the exploration license, through the Mines and Minerals (Development and Regulation) Amendment Act, 2023, aimed to boost domestic exploration and reduce dependency on imports. This policy, along with allowing private agencies to carry out exploration without a prospecting license, signalled India's commitment to enhancing its self-reliance in critical minerals like copper.

However, the fragile state of the global economy, high interest rates, surging inflation, and geopolitical tensions pose risks to India's foreign trade. The country's exports dipped marginally in March and by 3.11% in FY24, while imports also declined during the same period. The trade deficit narrowed, but the uptick in crude prices due to conflicts in the Middle East threatened to upset the balance.

2. Trading related parameter

NSE had the following Copper derivatives available for trading on its Commodity Derivatives Segment in FY 2023-24.

- Copper Futures
- Copper Options on Futures
- Copper Options on (Goods)*

* Discontinued on October 13, 2023 (Last Trading day)

a. Monthly and Annual traded volume (quantity in appropriate units)

The traded volume for Copper derivatives in FY 23-24 was NIL.

b. Annual traded volume as proportion of total deliverable supply (quantity in appropriate units)

The traded volume for Copper derivatives in FY 23-24 was NIL.

c. Annual traded volume as proportion of total annual production (quantity in appropriate units)

The traded volume for Copper derivatives in FY 23-24 was NIL.

d. Annual average Open interest as proportion of total production

The traded volume for Copper derivatives in FY 23-24 was NIL.

e. Annual average Open interest as proportion of total deliverable supply

The traded volume for Copper derivatives in FY 23-24 was NIL.

f. Monthly and Annual value of trade (in Rs. Crores)

The traded volume for Copper derivatives in FY 23-24 was NIL.

g. Monthly and Annual quantity of delivery (in appropriate units)

The deliveries for Copper derivatives in FY 23-24 was NIL.

h. Monthly and Annual value of delivery (in Rs. Crores)

The deliveries for Copper derivatives in FY 23-24 was NIL.

i. Monthly and Annual Average Open Interest (OI) (in appropriate units)

The traded volume for Copper derivatives in FY 23-24 was NIL.

j. Annual average volume to open interest ratio

The traded volume for Copper derivatives in FY 23-24 was NIL.

k. Total number of unique members and clients who have traded during the financial year

The traded volume for Copper derivatives in FY 23-24 was NIL.

l. Ratio of open interest by FPOs/farmers/Hedge/VCP positions to total open interest (Annual average as well as maximum daily value)

The traded volume for Copper derivatives in FY 23-24 was NIL.

m. Number of unique FPOs / farmers and VCPs/hedgers who traded in the financial year

The traded volume for Copper derivatives in FY 23-24 was NIL.

n. Algorithmic trading as percentage of total trading

The traded volume for Copper derivatives in FY 23-24 was NIL.

o. Delivery defaults

i. Number of instances

ii. Quantity involved

iii. Value involved

The deliveries for Copper derivatives in FY 23-24 was NIL.

3. Price movements

a. Comparison, correlation and ratio of standard deviation of Exchange futures price vis-à-vis international futures price (wherever relevant comparable are available)

The traded volume for Copper derivatives in FY 23-24 was NIL.

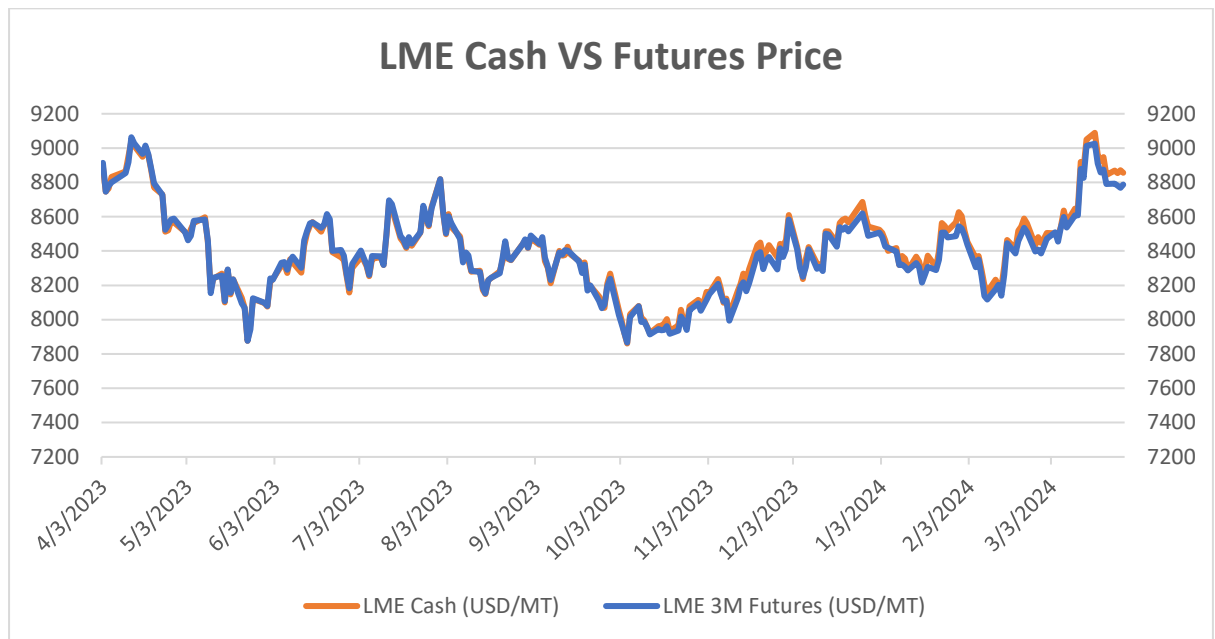
b. Comparison, correlation and ratio of standard deviation of Exchange futures price vis-à-vis international spot price (wherever relevant comparable are available) and domestic spot price (exchange polled price).

The traded volume for Copper derivatives in FY 23-24 was NIL.

c. Correlation between exchange futures & domestic spot prices along with ratio of standard deviation.

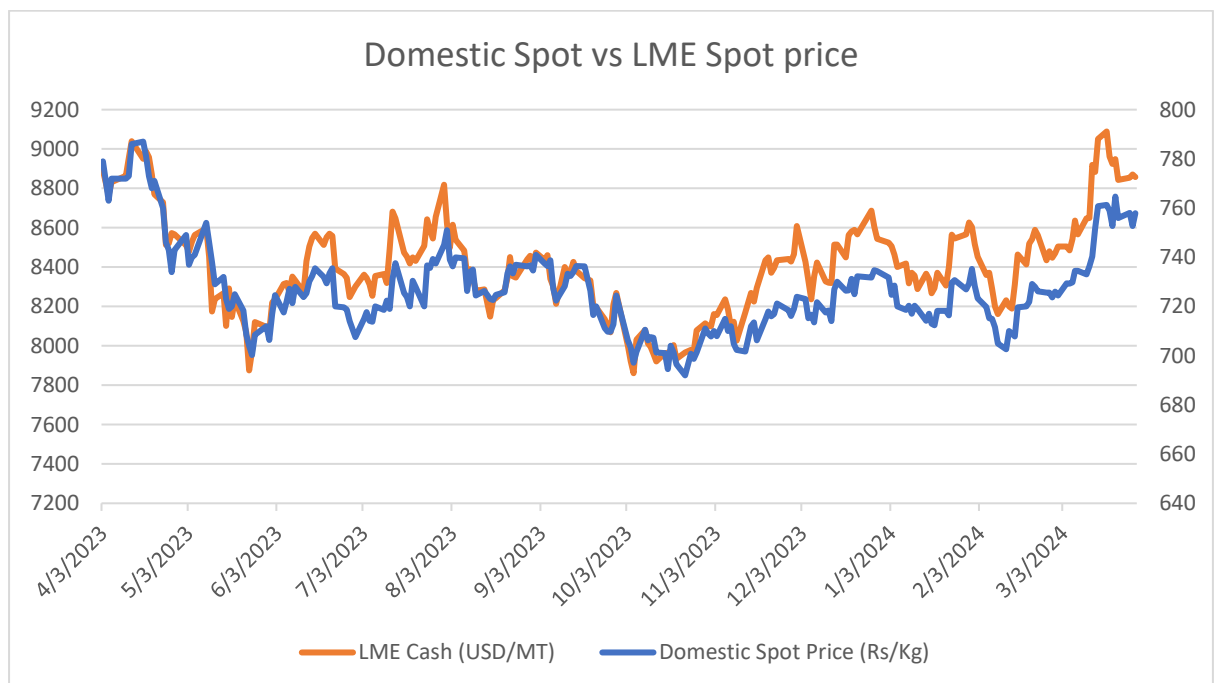
The traded volume for Copper derivatives in FY 23-24 was NIL.

d. Correlation between international futures & international spot prices along with ratio of standard deviation (wherever relevant comparable are available).



Correlation: 99% | Ratio of Std Deviation: 1.00

e. Comparison of Exchange polled price and mandi price (in case of agricultural commodities) / other relevant price (in case non-agricultural commodities) at basis centre.



Correlation: 88% | Ratio of Std Deviation: 1.24

f. Maximum & Minimum value of daily futures price volatility and spot price volatility along with disclosure of methodology adopted for computing the volatility.

The traded volume for Copper derivatives in FY 23-24 was NIL.

Commodity	Max Volatility in Futures Prices (%)	Min Volatility in Futures Prices (%)	Max Volatility in Spot Prices (%)	Min Volatility in Spot Prices (%)
Copper	NA	NA	2.52	0.00

Volatility calculation: $(\text{Day} - \text{Previous day's price}) / \text{Previous day's price}$

g. Number of times the futures contract was in backwardation/contango by more than 4% for the near month contract in the period under review.

The traded volume for Copper derivatives in FY 23-24 was NIL.

Sources for this section: Tradingview & NSE

4. Other parameters

a. Qualitative and quantitative measure for Hedge effectiveness ratio and basis Risk (Volatility of Basis) along with disclosure of methodology adopted for such calculations.

The traded volume for Copper derivatives in FY 23-24 was NIL.

b. Details about major physical markets of the commodity vis-à-vis market reach in terms of availability of delivery centers (information to be provided state-wise and UT-wise).

With regards to imported copper cathodes, Mumbai Nhava Sheva port is one of the major entry points and accordingly physical market movement from Mumbai port to the Exchange warehouse location at Bhiwandi is quite convenient due to its proximity.

With respect to transport from domestic refineries, Hindalco's Dahej Harbor and Infrastructure Limited (DHIL) operates an all-weather jetty in the Gulf of Khambhat on the west coast of India to different port cities in west coast as well as east coast. Apart from that it is linked with a six-lane road with NH-8, and broad-gauge rail connection at Bharuch with good rake loading facilities. Good availability of trucks makes it well connected with the hinterland. Though quite an ideal place for customers from Maharashtra, Punjab, Madhya Pradesh, Gujarat, and Rajasthan, far off states also take deliveries.

c. Details about major physical markets of the commodity and average Open Interest for each month generated from those regions.

Major physical markets data provided in the point 4b. The traded volume for Copper derivatives in FY 23-24 was NIL.

d. Details, such as number and target audience, of stakeholders' awareness programs carried out by the exchange.

For education initiatives, the exchange has conducted 411 awareness campaigns across INDIA covering all the commodities available on the NSE platform. These programs were attended by more than 15,000 stakeholders.

e. Steps taken / to be undertaken to improve hedging effectiveness of the contracts as well as to improve the performance of illiquid contracts

NSE is constantly striving to encourage hedgers to participate in the Copper contracts. We have value chain participants and associations such as Bombay Metal Exchange, Hindalco Ltd, Vedanta, Rashtriya Metal industries, etc. as part of our Base Metals PAC, who guide us on how to get more participation from physical market participants.

5. Any other information to be disclosed as deemed important by the exchange or as suggested by the PAC.