



NSE SILVER
DERIVATIVES

Performance Review

2022-23

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Performance Review of Commodity Products for FY 2022-23

Silver Futures & Options (On Goods)

1. Background

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

Silver's history as an asset class can be traced back thousands of years, to the first recorded mining activity in 3,000 BC. As its popularity increased, mining operations spread across the world and silver's uses and value multiplied. India is not a major silver exporter in pure form, although it exports silver jewellery. In terms of mine production, India is ranked 14th and is ranked third in terms of demand and imports. India imports Silver (unwrought or semi-manufactured) from countries such as China, United Kingdom, Russian Federation, Germany and Rep of Korea, while it exports silver jewellery to countries such as US, Hong Kong, UAE. For silver, India is a very special place as no other country has tried to explore the versatility of silver for day to day use as much as India. The silver price is also influenced by global economics. In periods of economic strength, silver prices can rise as people consume more electronics, jewellery, and buy more cars that have silver components. However, periods of economic and political crisis can also see the price of silver rise, as it is used as a 'cheaper' safe haven alternative. Silver can be traded in a variety of ways, from purchasing the metal as a physical asset, through to futures and options in the commodities market, to exchange-traded funds (ETFs). Where permitted, traders can also use CFD trading and spread betting to speculate on whether the value of silver will go up or down. Silver products specially in India are available in the form of bars, coins, silverware, jewellery, fancy items etc. Bars and coins are available in 99.9% purity as fine silver. Silverware along with coins and bars are also available in the form of pure silver i.e. with purity levels of 99% and 97%. Jewellery and fancy items are available with purity levels ranging between 80% to 92.5%

Applications Of Silver

In the past silver was used as currency, but more recently it has been used to make coins. For instance, sterling, silver is an alloy having 92.5% silver, while the rest is some other metals. Silver is also used to make jewellery, silverware, and other decorative items to enhance their aesthetic appeal. Silver has applications in making high-capacity batteries, where it is used with zinc or cadmium. Since it has the best properties to reflect light, it is used to make mirrors, though it can tarnish over time. Silver has other numerous applications which include silver paints where it is used to make printed circuits, electrical contacts, dental alloys, solder and brazing alloys among others. In the history of photography, silver bromide and silver iodide were used because they sensitive to light. With the coming of the digital photography, silver still plays an important role, where silver salts are used to produce high-quality images and protect it from illegal copying.

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

Global Silver supply (Million Ounces)

Supply	2021	2022
Mine Production	827.6	822.4
Recycling	175.3	180.6
Net Hedging Supply	-	-
Net Official Sector Sales	1.5	1.7
Total Supply	1,004.5	1,004.7

Source: World Silver Survey 2023

Global Silver demand (Million Ounces)

Demand	2021	2022
Industrial	528.2	556.5
Photography	27.7	27.5
Jewelry	181.5	234.1
Silverware	40.7	73.5
Net Physical Investment	274.0	332.9
Net Hedging Demand	3.5	17.9
Total Demand	1,055.6	1,242.4

Source: World Silver Survey 2023

India Silver supply and demand (Million Ounces)

Particulars	2021	2022
Supply		
Net Bullion Import	89.2	306.6
Mine Production	22.2	22.3
Recycling	14.7	15.4
Physical Investment	27.6	79.4
Demand		

Jewelry Fabrication	58.7	111.6
Silverware Fabrication	24.4	53.6
Coins & Medal Fabrication	6.7	16.9
Industrial Demand	34.2	42.6
Electrical and Electronics Demand	14.9	17.2
Brazing Alloys and Solder Demand	2.7	3.0

Source: World Silver Survey 2023

Major producing countries (Million Ounces): Silver mine production

Mine Production	2021	2022
Mexico	196.0	199.2
China	112.9	111.8
Peru	115.5	107.0
Poland	42.0	42.4
Chile	41.2	41.9
Russia	39.0	41.1
Bolivia	41.5	38.7
Australia	42.8	38.5
USA	32.6	32.4
Argentina	27.9	30.9

Source: World Silver Survey 2023

Major consuming countries (Million Ounces): Silver Industrial demand

Industrial Demand	2021	2022
China	120.6	151.6
United States	120.5	127.1
Japan	113.2	98.3
India	34.2	42.6
Germany	35.5	30.9

United Kingdom	24.6	22.2
South Korea	18.7	19.8
France	9.6	10.3
Taiwan	9.5	9.9
Italy	9.2	9.6

Source: World Silver Survey 2023

Major exporting countries (In Billion \$)

Country	2021	2022
Hong Kong	5.39	NA
China	4.28	NA
United Kingdom	2.97	NA
Mexico	2.80	NA
United States	2.63	NA
Japan	2.07	NA
South Korea	2.03	NA
Germany	2.03	NA
Switzerland	2.01	NA
Poland	1.12	NA

Source: OEC World, NA: Not available in public domain

Major importing countries (In Billion \$)

Country	2021	2022
United Kingdom	6.33	NA
USA	6.01	NA
Canada	4.76	NA
Hong Kong	4.05	NA
India	1.99	NA
Japan	1.88	NA
Switzerland	1.80	NA

Germany	1.72	NA
China	1.68	NA

Source: OEC World, NA: Not available in public domain

Top producing states (Kgs)

States	2021-22	2022-23
Rajasthan	6,47,013	NA
Karnataka	127	NA

Source: Ministry of Mines. Government of India, NA: Not available in public domain

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

India raised total taxes on Silver imports 15% and on Silver dore to 14.35% in the fiscal budget announced for FY 2023-24. This was done in an effort to align the duty structure of Silver with Gold.

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

Following a strong recovery in 2021, total silver demand took a major leap last year, with total offtake growing by 18 percent to 1.242 Boz. With the exceptions of slight drops in photographic and brazing alloys demand, all other fabrication sectors achieved new highs. Demand from the industrial segment posted another record in 2022, of 556.5 Moz. Some of these gains reflected green economy applications, particularly the significant growth in photovoltaics (P.V.), which consumed 140.3 Moz of Silver in 2022.

Industrial demand was also supported by electrification within the automotive segment and other power generation and distribution investments. A rise in vehicle output, 5G network investments, and growth in the construction industry also assisted this segment. Similarly, other industrial demand fabrication rose, chiefly due to increased demand for ethylene oxide (E.O.) catalysts. The overall total was also helped by thrifting and substitution (outside of P.V.) remaining modest. Apart from a 6 percent decline in Europe, all regions saw growth. India led with a 24 percent jump, followed by East Asia at 7 percent and North America at 6 percent.

Silver jewelry fabrication soared 29 percent to a record level last year at 234.1 Moz. This was led by India, where pent-up demand, combined with heavy re-stocking by retailers and a move to higher purities, saw volumes double compared to 2021. Exceeding jewelry in percentage terms, silverware demand in 2022 saw astounding growth of 80 percent to 73.5 Moz, a record high. As with jewelry, gains in silverware were almost entirely due to India, where demand more than doubled last year on the back of employment and incomes returning to pre-pandemic levels.

2. Trading related parameter

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

The traded volume for Silver Futures and Options (On Goods) in FY 22-23 was NIL.

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

The traded volume for Silver Futures and Options (On Goods) in FY 22-23 was NIL

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

The traded volume for Silver Futures and Options (On Goods) in FY 22-23 was NIL

d. Annual average Open interest as proportion of total production

The Open Interest for Silver Futures and Options (On Goods) in FY 22-23 was NIL

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

The Open Interest for Silver Futures and Options (On Goods) in FY 22-23 was NIL

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

The traded volume for Silver Futures and Options (On Goods) in FY 22-23 was NIL

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

The deliveries in Silver Futures and Options (On Goods) in FY 22-23 was NIL

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

The deliveries in Silver Futures and Options (On Goods) in FY 22-23 was NIL

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

The traded volume for Silver Futures and Options (On Goods) in FY 22-23 was NIL

j. Annual average volume to open interest ratio

The traded volume for Silver Futures and Options (On Goods) in FY 22-23 was NIL

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

The traded volume for Silver Futures and Options (On Goods) in FY 22-23 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 Silver Futures and Options (On Goods) in FY 22-23 was NIL

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

The traded volume for Silver Futures and Options (On Goods) in FY 22-23 was NIL

n. Algorithmic trading as percentage of total trading

The traded volume for Silver Futures and Options (On Goods) in FY 22-23 was NIL.

o. Delivery defaults

i. Number of instances

ii. Quantity involved

iii. Value involved

The deliveries in Silver Futures and Options (On Goods) in FY 22-23 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 Silver Futures and Options (On Goods) in FY 22-23 was NIL.

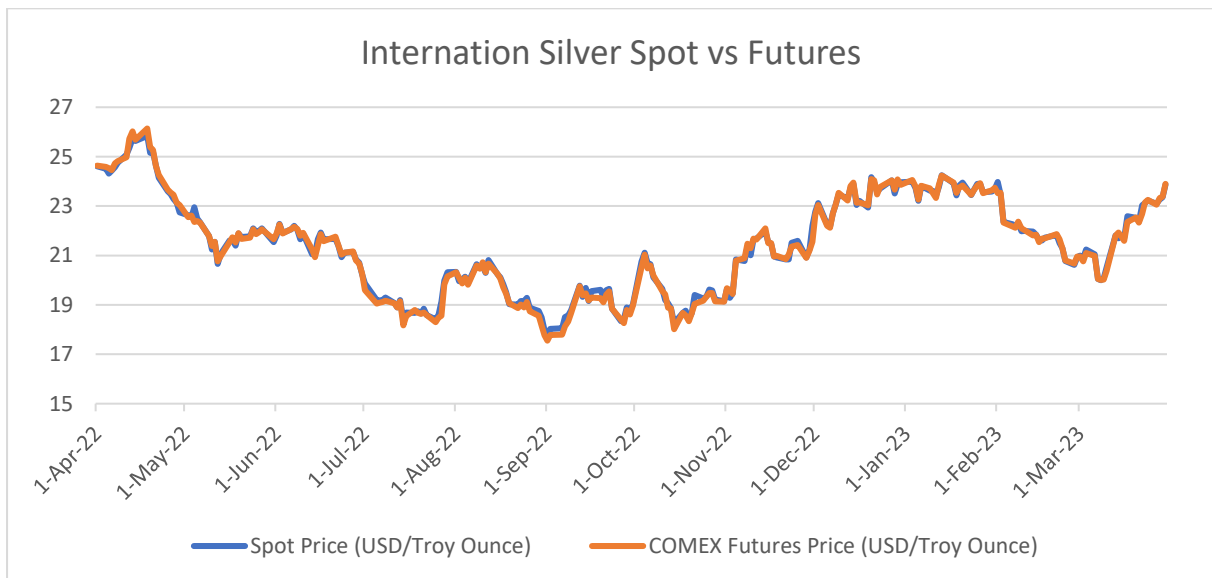
b. Comparison, correlation and ratio of standard deviation of Exchange futures price vis-à-vis international spot price (wherever relevant comparable are available) and domestic spot price (exchange polled price).

The traded volume for Silver Futures and Options (On Goods) in FY 22-23 was NIL

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

The traded volume for Silver Futures and Options (On Goods) in FY 22-23 was NIL

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



Source: Refinitiv & Investing.com

Correlation: 99.77%

Ratio of standard deviation: 1.94

- 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.**

There is no relevant price benchmark available in the Basis center/domestic market.

- 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 Silver Futures and Options (On Goods) in FY 22-23 was NIL.

Commodity	Max Volatility in Futures Prices (%)	Min Volatility in Futures Prices (%)	Max Volatility in Spot Prices (%)	Min Volatility in Spot Prices (%)
Silver	NA	NA	6.47	0.002

Volatility calculation: (Day – Previous day's price)/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 Silver Futures and Options (On Goods) in FY 22-23 was NIL

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 Silver Futures and Options (On Goods) in FY 22-23 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).**

Silver is recovered as a co-product as well as a by-product in the country. Silver was recovered in the past as a co-product in gold refining at KGF Complex and Hutti Gold Mines in Karnataka, as a by-product in smelting and refining of lead, zinc and copper concentrates at Chanderiya and Debari smelters in Rajasthan, Tundoo and Moubandar (Ghatsila) smelters in Jharkhand and at Visakhapatnam smelter in Andhra Pradesh. The present production of silver comes from Chanderiya lead-zinc smelter of HZL and from gold refinery of HGML. In addition, Hindalco extracts silver as a by-product during smelting of imported copper concentrates at Dahej in Gujarat.

The major import and physical trade areas for Silver and NSE's market reach in terms of availability of delivery centers is provided below:

Sr. No.	Major cities based on Silver import and consumption	NSE's delivery centre
1	Chennai	Additional Delivery Center
2	Kandla	No

3	Delhi	Additional Delivery Center
4	Ahmedabad	Primary Delivery Center
5	Mumbai	Additional Delivery Center

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 Silver Futures and Options (On Goods) in FY 22-23 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 583 Investor Awareness campaigns across INDIA covering all the commodities available on the NSE platform from April 2022 till Mar 2023.

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 Silver contracts. We have value chain participants and associations such as IBJA, All India Gem & Jewelry Domestic Council, WGC, Metals Focus, RSBL, etc. as part of our Bullion 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.