MCX
METAL & ENERGY
Trade with Trust



BULLION

PERFORMANCE REVIEW

2022-2023

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1. BACKGROUND

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

i) Introduction

Gold (Au) is primarily a monetary asset and partly a commodity. It is the world's oldest international currency and an important element of global monetary reserve.

Gold has diverse applications being one of the most malleable and ductile metals with high melting point and easy recyclability. It is useful in medicine and dentistry and, lately, has emerged as a key nanomaterial. Global gold demand hinges on four main categories: jewellery, investment, central bank reserves, and technology.

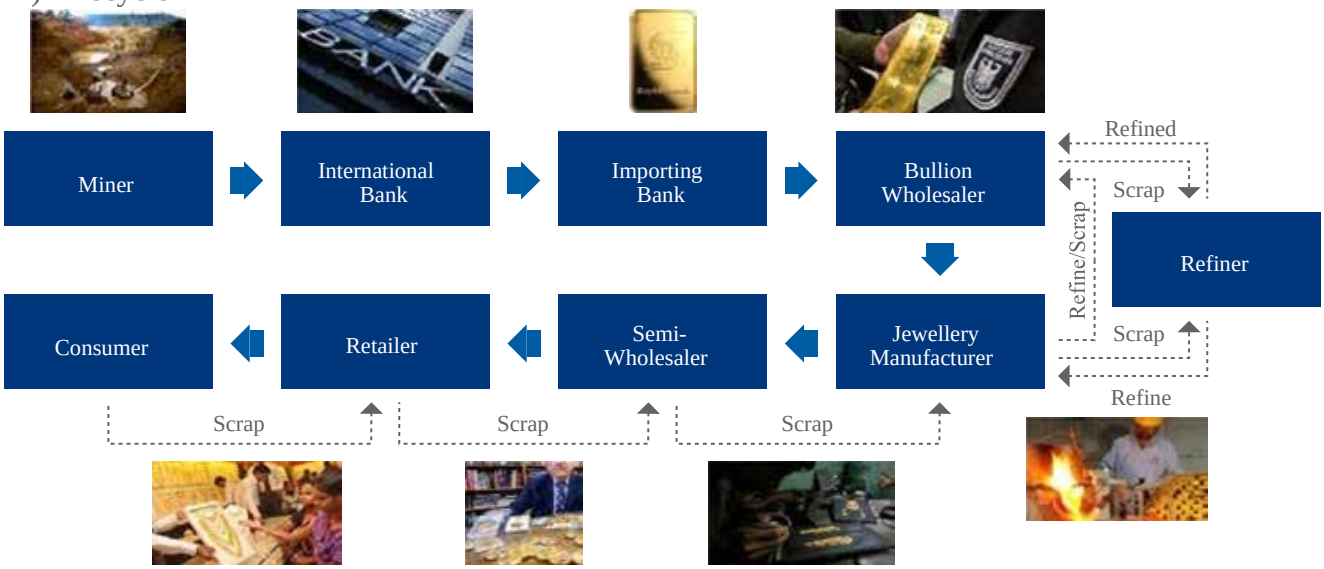
Silver (Ag) has been used for thousands of years for ornaments and utensils, trade, and as the basis for many monetary systems. Its value as a precious metal is considered second only to gold.

Silver is a brilliant grey-white metal that is soft and malleable. Its unique properties include its strength, malleability, ductility, electrical and thermal conductivity, sensitivity, high reflectance of light, and reactivity. The main source of silver is lead ore, although it can also be found associated with copper, zinc and gold and produced as a by-product of base metal mining activities. Secondary silver sources include coin melt, scrap recovery, and dis-hoarding from countries where export is restricted.

ii) Sample Picture



iii) Lifecycle



iv) Various varieties/grade of the commodity found in India

1. The Bureau of Indian Standards (BIS) has formulated the standard for Refined Gold and Silver Bars for Good Delivery - IS 17278 : 2019
2. The Bureau of Indian Standards (BIS) has formulated standards IS 1417:2016 for hallmarking gold jewellery in six grades -- 14 carat, 18 carat, 20 carat, 22 carat, 23 carat and 24 carat
3. As per BIS standard IS 2112:2014 silver hallmark consists of following fineness: 999.9,999.5,999, 990,970, 925, 900, 835, 800

b. Table - Fundamentals & Balance sheet (quantity)

GOLD (In Metric Tonnes)		
Global Scenario	2021	2022
Opening Stocks	NA	NA
Production[1]	4705	4756
Others (if any)	-	-
Consumption[2]	4013	4741
Closing Stocks	NA	NA

Note:
1. Mine Production + Recycled Gold
2. Consumption is considered as demand of Jewellery fabrication, Technology, Investment and Central Bank & other Inst.
Source: Metals Focus, Refinitiv GFMS, ICE Benchmark Administration, World Gold Council

SILVER (In Metric Tonnes)		
Global Scenario	2021	2022
Opening Stocks	NA	NA
Production[1]	31194	31196
Others (if any)	-	-
Consumption[2]	32833	38643
Closing Stocks	NA	NA

Note:
1. Mine Production + Recycling,
2. Consumption is considered as demand of Jewellery, Silverware, Industrial and Net Physical Investment.
**Source – Metals Focus, World Silver Survey 2023*

GOLD (In Metric Tonnes)		
Indian Scenario	2021	2022
Opening Stocks	NA	NA
Production[1]	82	109
Imports[2]	1003	764
Total Supply	1007	783
Exports	0.1	1.36
Domestic Consumption[3]	797	774
Closing Supply	NA	NA

Note:

1. *Scrap + Domestic supply from local mine production, recovery from imported copper concentrates and disinvestment.*
2. *Gross Import of which dore was 220 and 249 tonnes for 2021 and 2022 respectively, and net import was 925 and 673 tonnes for the year 2021 and 2022 respectively.*
3. *Domestic consumption is considered as Consumer demand.*

**Source – Metals focus, World Gold Council and export data taken from Ministry of Commerce (7108 GOLD (INCL GOLD PLTD WTH PLTNM) UNWROUGHT OR IN SEMI MNFCTRD FORMS/IN PWDR FORM Unit)*

SILVER (In Metric Tonnes)		
Indian Scenario	2021	2022
Opening Stocks	NA	NA
Production[1]	1146	1174
Imports	2773	9535
Total Supply	3919	10709
Exports[2]	493	94
Domestic Consumption[3]	4508	8933
Closing Supply	NA	NA

Note:

1. *Mine Production + Recycling*
2. *Export data was taken from Ministry of Commerce, available for Commodity: 7106 SILVER (INCLD SLVR PLTD WTH GOLD/PLTNM) UNWROGHT/IN SEMI MNFCTRD FORM/IN*
3. *Domestic consumption includes Industrial demand, Jewellery, Silverware, Brazing & alloy, Physical Investment*

**Source - Metals Focus, World Silver Survey 2023*

GOLD (In Metric Tonnes)		
Top 10 Gold Producing Countries	2021	2022
China	329	372
Russia	309	309
Australia	312	311
Canada	223	190
United States	187	170
Ghana	88	88
Peru	97	97
Mexico	125	124
Indonesia	103	115
South Africa	105	90

** Source: World Bureau of Metal Statistics*

SILVER (In Metric Tonnes)		
Top 10 Silver Producing Countries	2021	2022
Mexico	6097	6195
China	3511	3476
Peru	3593	3330
Poland	1307	1319
Chile	1281	1302
Russia	1212	1280
Bolivia	1292	1203
Australia	1330	1199
United States	1013	1007
Argentina	868	963
India	689	694

**Source - Metals Focus, World Silver Survey 2023*

GOLD (In Metric Tonnes)		
Top 10 Major Consuming Countries	2021	2022
Greater China	994	825
India	797	774
United States	265	257
Germany	174	196
Turkey	95	122
Vietnam	43	59
Indonesia	47	50
Russia	47	61
Saudi Arabia	44	50
Switzerland	44	49

Table is for Consumer Demand
**Source – World Gold Council, Metals focus*

SILVER (In Metric Tonnes)		
Top 10 Major Consuming Countries	2021	2022
India	4508	8933
USA	8214	8564
China	4729	5640
Japan	3521	3056
Germany	2780	2590
Italy	994	1029
United Kingdom	764	690
South Korea	582	617
Australia	467	539
Canada	444	488

** Source – Metals Focus, World Silver Survey 2023*
Note: Consumption consider for demand of Industrial , Photography, Jewelry, Silverware, Net Physical Investment

Gold			
2021		2022	
Top 10 Major Exporting Countries	Quantity in Metric Tonnes	Top 10 Major Exporting Countries	Quantity in Metric Tonnes
-	-	-	-

**Data not available publicly*

SILVER		
Top 10 Major Exporting Countries	2021	2022
-	-	-

**Data not available publicly.*

Gold			
2021		2022	
Top 10 Major Importing Countries	Quantity in Metric Tonnes	Top 10 Major Importing Countries	Quantity in Metric Tonnes
-	-	-	-

**Data not available publicaly.*

SILVER		
Top 10 Major Importing Countries	2021	2022
-	-	-

**Data not available publicly.*

GOLD (In Metric Tonnes)		
Top 10 Major Producing states in India for gold	FY 2021-22	FY 2022-23
Karnataka	1.23	1.25
Gujarat	8.7	13.8

**Source – Monthly Data of Ministry of Mines, Government of India, Hindalco production included*

SILVER (In Metric Tonnes)		
Top 10 Major Producing states in India for silver	FY 2021-22	FY 2022-23
Rajasthan	647	714

**Source – Monthly Data of Ministry of Mines, Government of India*

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

- The basic custom duty on Silver was raised to 10% from 7.5% and Agriculture Infrastructure and Development Cess (AIDC) on imports to 5% from 2.5%. However, the basic custome duty on Gold reduced to 10% from 12.5% and raised AIDC on imports to 5% from 2.5%. So, the effective import duty for Gold and Silver is 15%.
- Comprehensive Economic Partnership Agreement (CEPA) was signed on February 18, 2022 between India and UAE which came into effect from May 1, 2022. The import of Gold by Qualified Jewellers under India-UAE CEPA, shall be in accordance with the Tariff Rate Quota (TRQ) scheme governed by the applicable guidelines and handbook of procedures under the extant Foreign Trade Policy prescribed by DGFT and Customs on Import of Gold.

d) Geo political issues in the commodity and its impact on Indian scenario.

- 2022 saw a record annual average LBMA Gold Price PM of US$1,800/oz.
- The gold price closed the year with a marginal gain, despite facing notable headwinds from the strong US dollar and rising global interest rates.
- Annual gold demand (excluding OTC) jumped 18% to 4,741t, almost on a par with 2011 – a time of exceptional investment demand. The strong full-year total was aided by record Q4 demand of 1,337t.
- Jewellery consumption softened a fraction in 2022, down by 3% at 2,086t. Much of the weakness came through in the fourth quarter as the gold price surged.
- Total annual gold supply increased by 2% in 2022, to 4,755t. Mine production inched up to a four-year high of 3,612t.
- A second consecutive quarter of huge central bank demand (417t) took annual buying in the sector to a high of 1,136t, the majority of which was unreported.

- Full-year mine production grew 1% but failed to match its 2018 peak. Annual recycling supply made only marginal gains, despite strong local currency price rises in many markets.
- Gold reserves in India increased to 794.63 Tonnes valued at Rs. 3,71, 500 crore (as on March 31, 2023) from 760.42 Tonnes valued at Rs. 3, 23, 596 crore (as on April 1, 2022).
- Indian gold demand remained robust compared with longer-term pre-pandemic levels. Despite a fairly soft start to the year, Indian consumer demand recovered and only just fell shy of the strong levels of demand seen during 2021. Continued recovery from COVID-19 boosted yearly comparisons, although the sharp local price rally choked off demand in the closing weeks of December.
- The dollar index hit a 20-year high against a basket of currencies in 2022.
- The Federal Reserve hiked the fed funds rate 8 times during the year 2022 and the 75 bps hiked on June 2022 was the most since 1994.
- Silver jewelry fabrication soared by 29% to 234.1Moz (7,280t), a record high from 2010. This was mostly driven by India where pent-up demand, post-pandemic, combined with heavy re- stocking by retailers and a move to higher purities led to volumes doubling compared to 2021 (up 60% on pre -COVID levels).
- Physical investment rose for a fifth straight year to a new high of 332.9Moz (10,356t). India emerged as the top performer last year (+188% y/y) with silver investment.
- 2022 was an outstanding year for global physical investment in silver. Bar and coin demand jumped by 22% y/y to a new high of 332.9Moz (10,356t). This outcome was led by a healthy recovery in India, where demand had collapsed the year before.
- Indian physical investment saw a staggering 188% jump last year and touched 79.4Moz (2,470t), its highest since the 2015 record.
- One of the most notable features of 2022 silver market was India’s record imports of silver bullion, which surged by 244% to 306.6Moz (9,535t).

2. TRADING RELATED PARAMETERS

a. Monthly and Annual traded volume (quantity in appropriate units
Monthly and annual traded volume (in Metric Tonnes):

Month	GOLD	GOLD GUINEA	GOLD MINI	GOLD PETAL	SILVER	SILVER MINI	SILVER MICRO
Apr-22	119	0.6	35	0.7	7809	23016	3324
May-22	161	0.6	34	0.7	9121	27686	3811
Jun-22	146	0.6	36	0.7	13286	33838	4700
Jul-22	160	0.5	33	0.6	11470	30710	3996
Aug-22	131	0.4	28	0.6	12618	30638	4281
Sep-22	184	0.5	42	0.8	14544	37406	5163
Oct-22	160	0.5	34	0.7	12998	36351	4988
Nov-22	168	0.5	32	0.7	15853	41254	5911
Dec-22	114	0.4	25	0.5	11714	35205	5127
Jan-23	154	0.3	26	0.5	10451	29012	4432
Feb-23	147	0.4	27	0.4	12320	27970	4057
Mar-23	190	0.4	38	0.6	11877	34186	4713
FY 22-23	1832	6	390	8	144062	387271	54504

Monthly and annual traded volume of options (in Metric Tonnes):

Month	GOLD OPTIONS	GOLD MINI OPTIONS	SILVER OPTIONS	SILVER MINI OPTIONS
Apr-22	27	1	580	73
May-22	67	4	307	61
Jun-22	21	2	781	117
Jul-22	61	2	548	89
Aug-22	26	2	1433	135
Sep-22	73	4	702	102

Oct-22	33	6	1193	180
Nov-22	94	9	3027	312
Dec-22	45	9	838	226
Jan-23	71	6	910	175
Feb-23	45	5	2209	359
Mar-23	187	10	1814	618
FY 22-23	748	59	14342	2446

b. Annual traded volume as proportion of total deliverable supply(quantity in Metric Tonnes)

Annual traded volume in gold all variants for calendar year 2022: 2270 MT

Total deliverable gold supply: 783 MT

Annual traded volume as proportion of total deliverable supply for gold: 2.9

Annual traded volume in silver all variants for calendar year 2022: 251042 MT

Total deliverable silver supply: 10709 MT

Annual traded volume as proportion of total deliverable supply for silver: 23

Note: total deliverable supply is available publicly for calendar year 2022 so we have taken annual traded volume for calendar year 2022.

c. Annual traded volume as proportion of total annual production(quantity in Metric Tonnes)

Annual traded volume in gold all variants for calendar year 2022: 2270 MT

Total annual production of gold: 109 MT

Annual traded volume as proportion of total annual production for gold: 21

Annual traded volume in Silver all variants for calendar year 2022: 251042 MT

Total annual production of silver: 1174 MT

Annual traded volume as proportion of total annual production for silver: 214

Note: total annual production is available publicly for calendar year 2022 so we have taken annual traded volume for calendar year 2022.

d. Annual average Open interest as proportion of total production(quantity in Metric Tonnes)

Annual average Open interest in gold all variants: 18.8 MT

Total annual production of gold: 109 MT

Annual average Open interest as proportion of total production for gold: 0.2

Annual average Open interest in silver all variants: 771 MT

Total annual production of silver: 1174 MT

Annual average Open interest as proportion of total production for silver: 0.7

Note: total annual production is available publicly for calendar year 2022 so we have taken annual average Open interest for calendar year 2022.

e. Annual average Open interest as proportion of total deliverable supply(quantity in Metric Tonnes)

Annual average Open interest in gold all variants: 18.8 MT

Total deliverable gold supply: 783 MT

Annual average Open interest as proportion of total deliverable supply: 0.02

Annual average Open interest in Silver: 771 MT

Total deliverable silver supply: 10709 MT

Annual average Open interest as proportion of total deliverable supply: 0.07

Note: total deliverable supply is available publicly for calendar year 2022 so we have taken annual average Open interest for calendar year 2022.

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

Month	GOLD	GOLD GUINEA	GOLD MINI	GOLD PETAL	SILVER	SILVER MINI	SILVER MICRO
Apr-22	62142	314	18086	352	52242	25840	22433
May-22	81530	293	17268	364	56114	28537	23594
Jun-22	74143	290	18215	370	80890	34589	28867
Jul-22	81428	258	16919	330	64669	29136	22803
Aug-22	67468	221	14469	293	71585	29392	24727
Sep-22	91941	272	20714	397	81176	35121	29175
Oct-22	81242	244	17148	343	75704	35558	29376
Nov-22	87194	273	16857	345	97128	42376	36515
Dec-22	61746	218	13626	274	79495	39848	34826
Jan-23	86819	196	14430	255	71923	33344	30591
Feb-23	83285	207	15436	231	82490	31421	27402
Mar-23	110185	252	21969	352	79591	38347	31709
FY 22-23	969124	3038	205137	3906	893008	403508	342018

Month	GOLD OPTIONS	GOLD MINI OPTIONS	SILVER OPTIONS	SILVER MINI OPTIONS
Apr-22	13926	394	3961	497
May-22	34297	1997	1986	397
Jun-22	10813	968	4846	737

Jul-22	31083	1075	3252	533
Aug-22	13710	1075	8301	797
Sep-22	37184	2164	4059	596
Oct-22	17103	2947	7129	1084
Nov-22	49021	4814	18613	1924
Dec-22	24466	4521	5718	1538
Jan-23	39676	3162	6351	1219
Feb-23	25575	2888	14944	2454
Mar-23	108761	6056	12446	4254
FY 22-23	405616	32060	91605	16029

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

Monthly quantity of delivery (in kilograms):

Month	GOLD	GOLD GUINEA	GOLD MINI	GOLD PETAL	SILVER	SILVER MINI	SILVER MICRO
Apr-22	183	0.02	199	0.5	11640	6890	2643
May-22	52	0.18	63	0.01	7410	-	-
Jun-22	305	0.1	26	-	22530	3290	3720
Jul-22	-	0.1	104	3.1	8640	-	-
Aug-22	69	4.2	502	0.5	39360	2880	18857
Sep-22	293	4.2	624	0.4	12180	-	-
Oct-22	116	0.8	366	0.5	-	-	-
Nov-22	242	3.4	759	1.7	49590	5345	11431
Dec-22	84	0.5	241	0.1	10350	-	-
Jan-23	214	0.6	771	4.5	-	-	-
Feb-23	133	7.6	183	2.1	118890	15760	20848
Mar-23	271	6.0	482	1.3	14010	-	-
FY 22-23	1962	28	4320	15	294600	34165	57499

Annual quantity of delivery (in kilograms):

Variant	Delivery in kilograms
GOLD	1962
GOLD GUINEA	28

GOLD MINI	4320
GOLD PETAL	15
SILVER	294600
SILVER MINI	34165
SILVER MICRO	57499

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

Monthly value of delivery (in Rs. Crores):

Month	GOLD	GOLD GUINEA	GOLD MINI	GOLD PETAL	SILVER	SILVER MINI	SILVER MICRO
Apr-22	94	0.01	103	0.2	74	45	17
May-22	26	0.1	32	0.01	46	-	
Jun-22	156	0.1	13	-	133	20	22
Jul-22	-	0.03	54	1.5	50	-	-
Aug-22	35	2.2	256	0.3	210	16	104
Sep-22	146	2.1	311	0.2	64	-	-
Oct-22	58	0.4	183	0.2	-	-	-
Nov-22	127	1.8	395	0.9	303	33	70
Dec-22	45	0.3	131	0.0	66	-	-
Jan-23	122	0.3	435	2.5	-	-	-
Feb-23	77	4.2	104	1.2	749	101	135
Mar-23	161	3.6	286	0.7	89	-	-
FY 22-23	1047	15	2302	8	1785	214	349

Annual value of delivery (in Rs. Crores):

Variant	Delivery (in Crores)
GOLD	1047
GOLD GUINEA	15
GOLD MINI	2302

GOLD PETAL	8
SILVER	1785
SILVER MINI	214
SILVER MICRO	349

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

Month wise Average Open Interest of Futures Contracts (in Metric Tonnes):

Month	GOLD	GOLD GUINEA	GOLD MINI	GOLD PETAL	SILVER	SILVER MINI	SILVER MICRO
Apr-22	19	0.04	1	0.05	282	90	82
May-22	15	0.04	1	0.05	460	155	148
Jun-22	16	0.04	1	0.05	456	148	151
Jul-22	16	0.03	1	0.04	664	210	200
Aug-22	18	0.03	1	0.05	662	180	167
Sep-22	18	0.06	3	0.07	642	189	163
Oct-22	16	0.05	2	0.07	584	159	139
Nov-22	16	0.05	2	0.06	581	128	121
Dec-22	17	0.05	2	0.05	640	160	144
Jan-23	20	0.03	2	0.05	611	145	133
Feb-23	19	0.03	2	0.04	592	134	132
Mar-23	19	0.03	2	0.04	458	150	131

Month wise Average Open Interest of Options Contracts (in Metric Tonnes):

Month	GOLD OPTIONS	GOLD MINI OPTIONS	SILVER OPTIONS	SILVER MINI OPTIONS
Apr-22	2.8	0.1	48.7	6.4
May-22	4.1	0.1	43.5	9.5
Jun-22	2.5	0.1	58.8	9.5
Jul-22	4.4	0.1	71.7	13.1
Aug-22	2.7	0.1	96.0	11.9
Sep-22	4.2	0.1	84.6	12.2
Oct-22	3.6	0.3	130.5	19.5
Nov-22	5.4	0.2	149.7	18.4
Dec-22	5.6	0.2	82.3	18.7
Jan-23	6.7	0.2	109.0	23.9

Feb-23	5.1	0.2	120.4	21.0
Mar-23	7.1	0.3	108.3	23.8

Annual average Open Interest of Futures Contracts (in Metric Tonnes):

Variant	AOI
GOLD	17
GOLD GUINEA	0.04
GOLD MINI	2
GOLD PETAL	0.05
SILVER	553
SILVER MINI	154
SILVER MICRO	143

Annual average Open Interest of options (in Metric Tonnes):

Variant	AOI
GOLD	4.5
GOLD MINI	0.2
SILVER	92
SILVER MINI	16

j. Annual average volume to open interest ratio

Variant	Volume to Open Interest ratio
GOLD	0.4
GOLD GUINEA	0.5
GOLD MINI	0.9
GOLD PETAL	0.6
SILVER	1
SILVER MINI	1.6
SILVER MICRO	1.5

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

Total number of UCC in Gold is 140294, Silver is 262932 and overall Bullion is 318945 during the FY 22-23.

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

Commodity	Instrument	UNIT	Average of Open Interest	Average of Long %	Average of Short %
GOLD	Futures	KGS	19330	18.36	73.81
GOLD	Options	KGS	4708	18.43	15.98
SILVER	Futures	KGS	852258	11.84	29.11
SILVER	Options	KGS	107927	18.92	22.77

Note: Details are provided based on daily disclosure on the Exchange website for the period April 2022 to March 2023 in line with SEBI circular no. SEBI/HO/CDMRD/DNPMP/CIR/P/2019/08 Dated January 04, 2019 Based on the data provided by the members from time to time pertaining to Farmers/ FPOs, VCPs/ Hedgers..

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

Commodity	Value Chain Participants (VCPs)/ Hedgers
GOLD	2606
SILVER	3589

Note: Based on the classification provided by the members as on March 31, 2023 for clients traded during FY 2022-23. In case of classification of OWN (Prop Account) is uploaded as VCPs for any commodity, the same is included in "VCPs/ Hedger' category.

n. Algorithmic trading as percentage of total trading

% Algorithmic Turnover to Total Turnover (F.Y. 2022-23)

FUTURES + OPTIONS

Financial Year	Base Asset	
	GOLD (%) (Includes all Variants)	SILVER (%) (Includes all Variants)
FY 2022-23	40.51%	46.50%

Note : *1. Algorithmic Turnover against the Total Turnover of asset Gold and Silver (Includes all variants) is considered. (including Futures & Options)*

o. Delivery defaults:

Variant	Number of instances	Quantity involved (in kilograms)	Value involved (in Rs. Crores)
GOLD	1	2	1
GOLD GUINEA	2	0.05	0.03
GOLD MINI	2	0.2	0.1
GOLD PETAL	3	0.2	0.09
SILVER	0	0	0
SILVER MINI	2	15	0.09
SILVER MICRO	0	0	0

3. PRICE MOVEMENTS

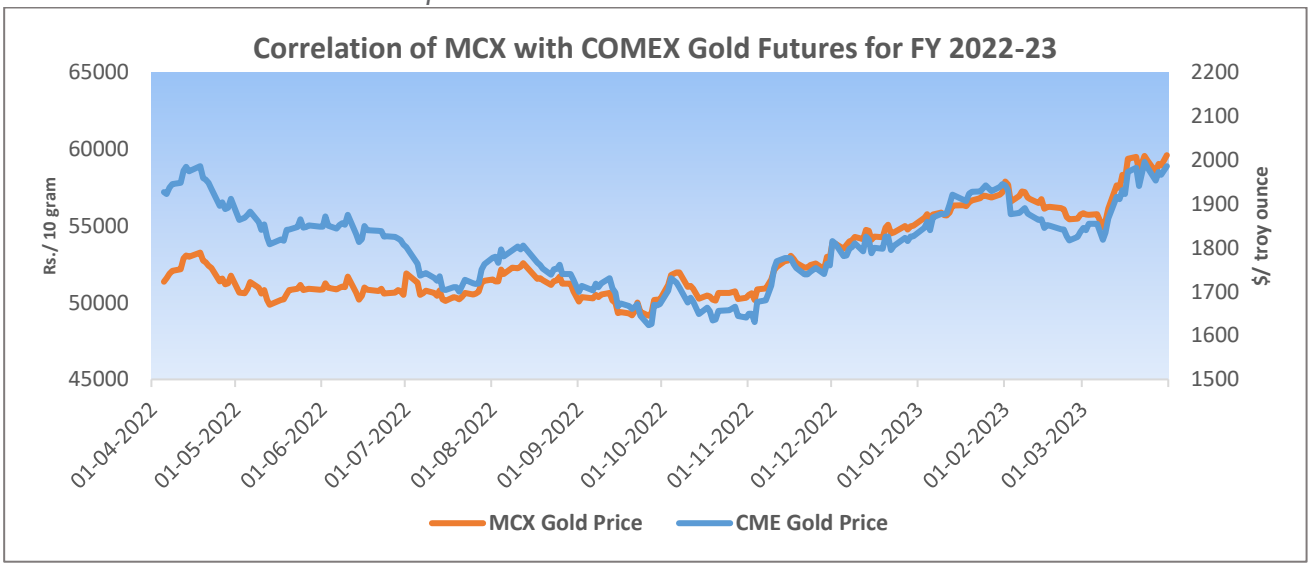
a. Comparison, correlation and ratio of standard deviation of Exchange futures price vis-à-vis international futures price (wherever relevant comparable are available).

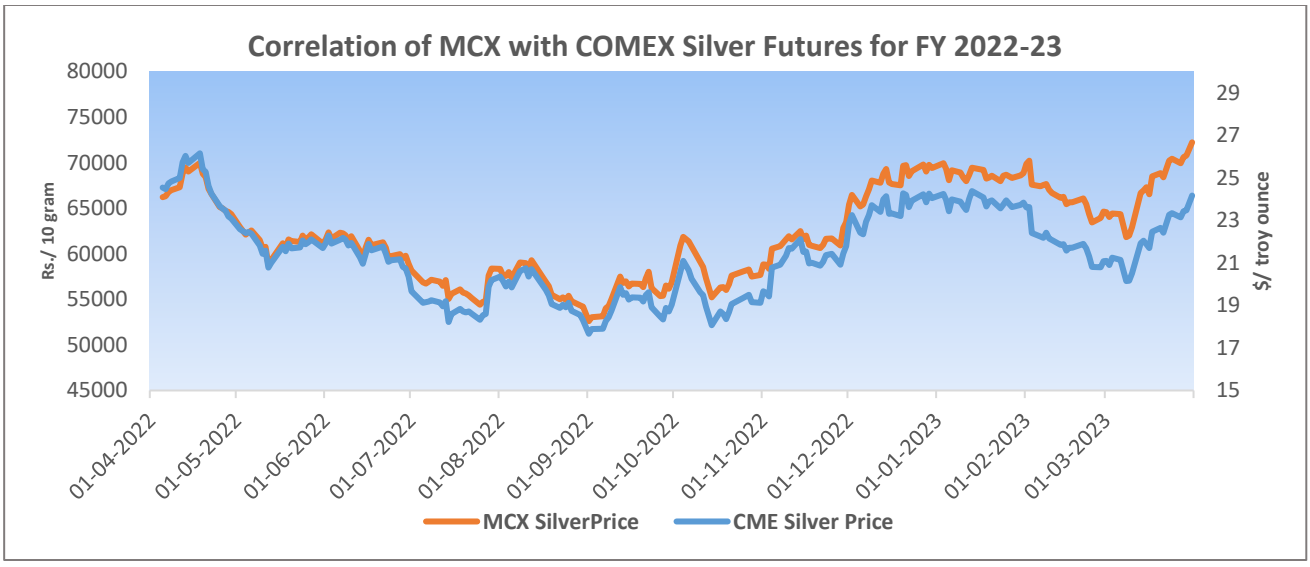
Correlation of Exchange futures price vis-à-vis international futures price:

Gold: 99.6 % | Silver: 99.5 %

Ratio of standard deviation of Exchange futures price vis-à-vis international futures price:
Gold: 0.78 | Silver: 0.75

Note: MCX Gold and Silver Futers Near Month Closing Price and CME Gold and Silver Futures Near Month Settled Price have taken from MCX website and CME website





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).

Correlation of Exchange futures price vis-à-vis domestic Spot price (Exchange polled price):

Gold: 99 % | Silver: 98 %

Ratio of standard deviation of Exchange futures price vis-à-vis domestic Spot price (Exchange polled price):

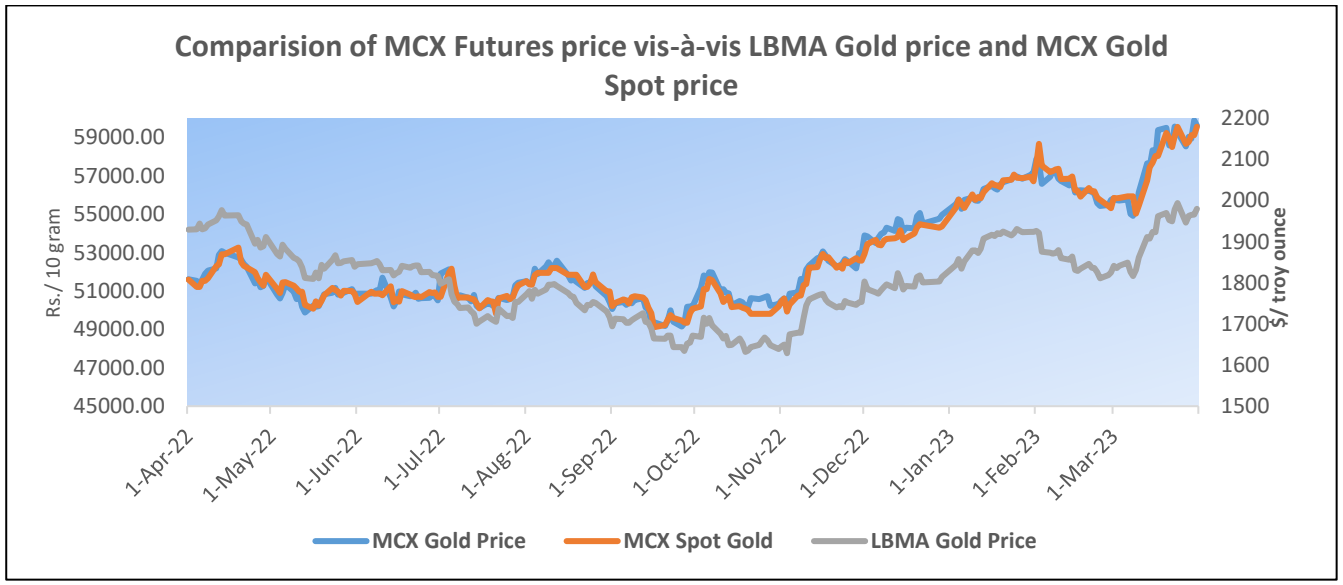
Gold: 1.08 | Silver: 0.98

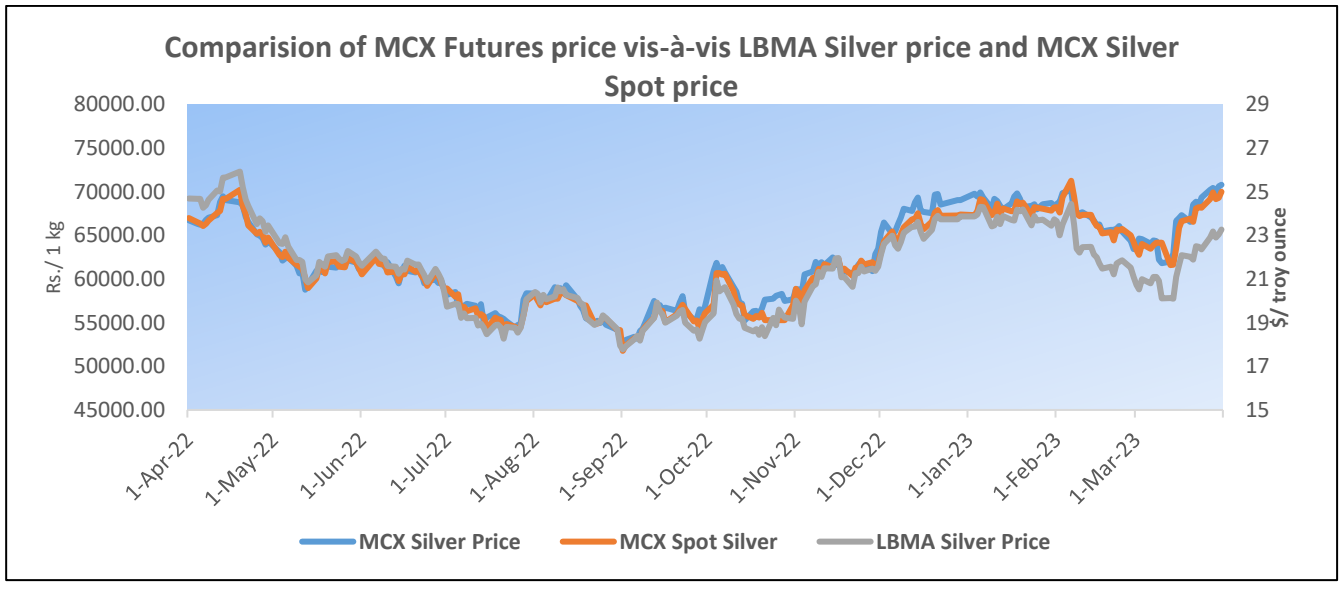
Correlation of Exchange futures price vis-à-vis international Spot price:

Gold: 99 % | Silver: 99 %

Ratio of standard deviation of Exchange futures price vis-à-vis international Spot price: Gold: 0.86 | Silver: 0.75

Note: MCX Gold and Silver Futures Near Month Closing Price, MCX Gold and Silver Second Session Spot Polling Price and LBMA Gold and Silver fixing have taken from MCX website and LBMA website





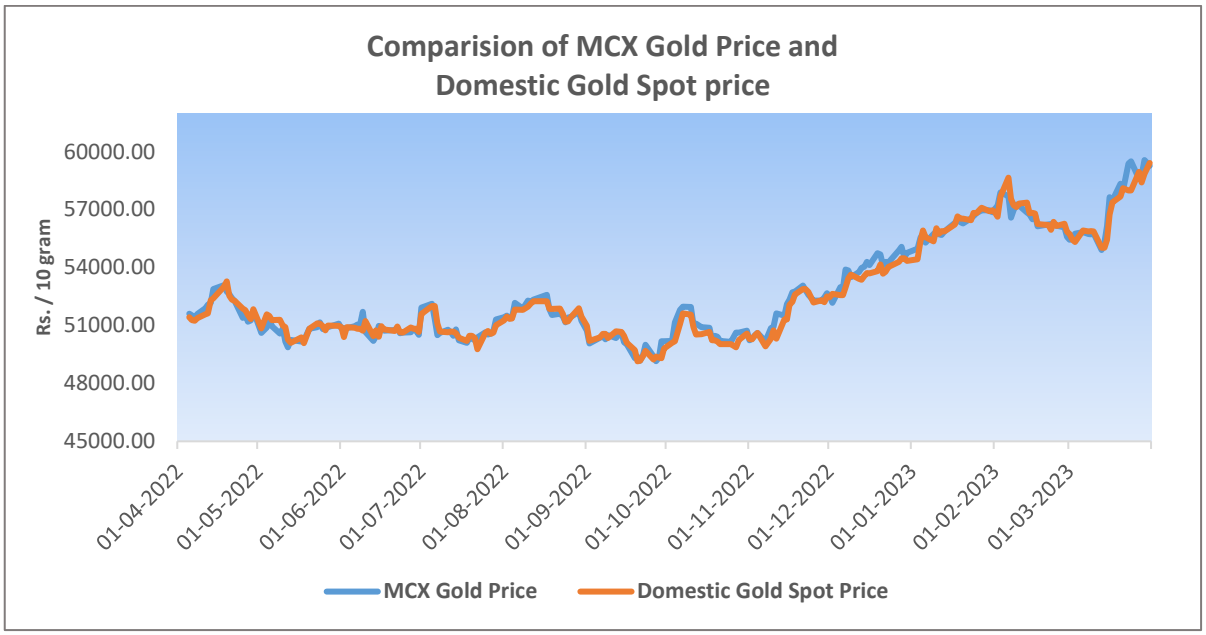
c. Correlation between Exchange futures & domestic spot prices along with ratio of standard deviation.

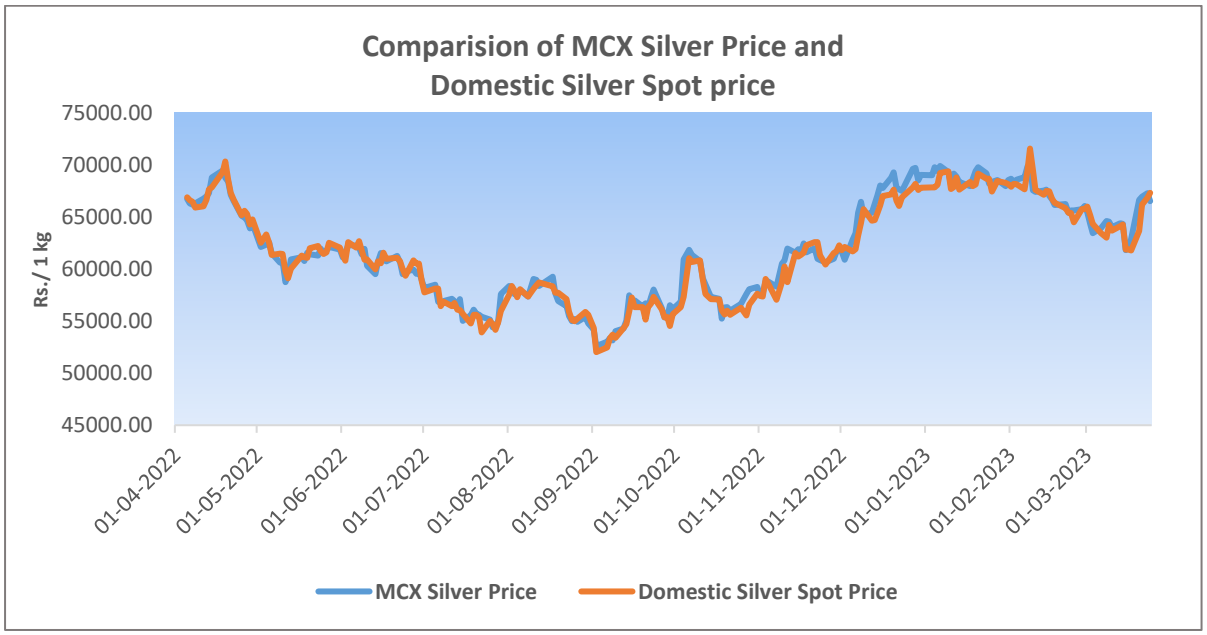
Correlation of Exchange futures price vis-à-vis domestic Spot price:

Gold: 99.09 % | Silver: 98.58 %

Ratio of standard deviation of Exchange futures price vis-à-vis domestic Spot price:
Gold: 1.08 | Silver: 1.02

Note: MCX Gold and Silver Near Month Closing Price and Domestic Gold and Silver Spot Price have taken from MCX website and Bullion World Magazine.

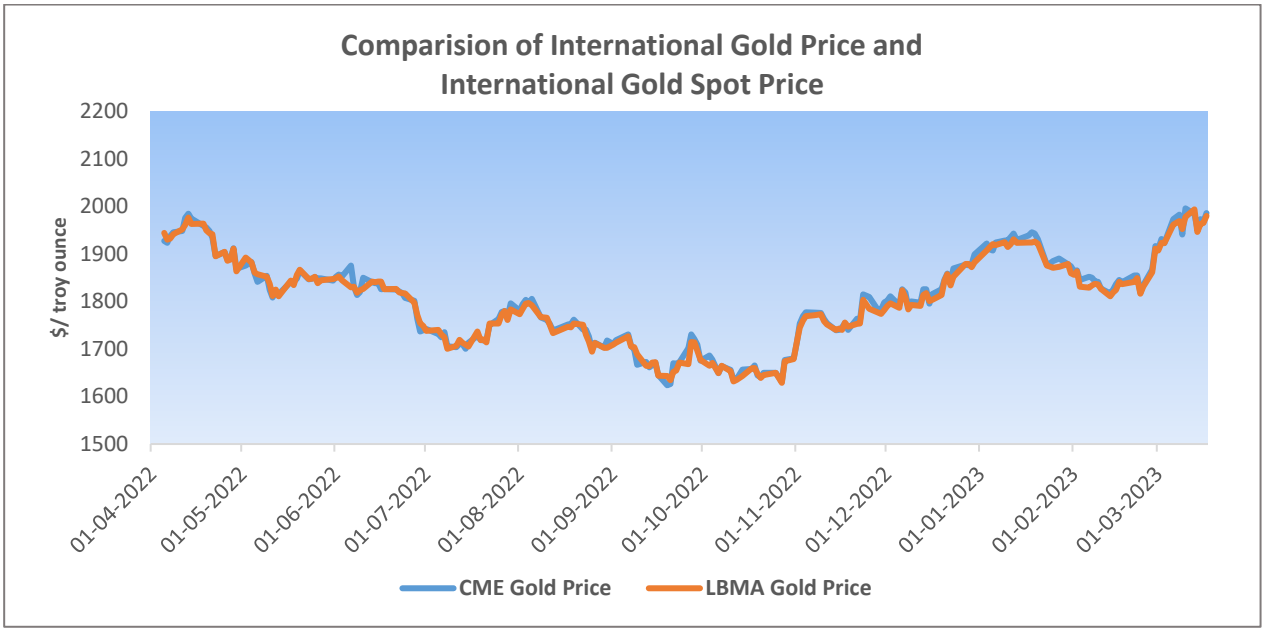




d. Correlation between international futures & international spot prices along with ratio of standard deviation (wherever relevant comparable are available).

Correlation of international futures price vis-à-vis international spot prices:
Gold: 99.5 % | Silver: 98.6 %
Ratio of standard deviation of international futures price vis-à-vis international spot prices:
Gold: 1.09 | Silver: 1.02

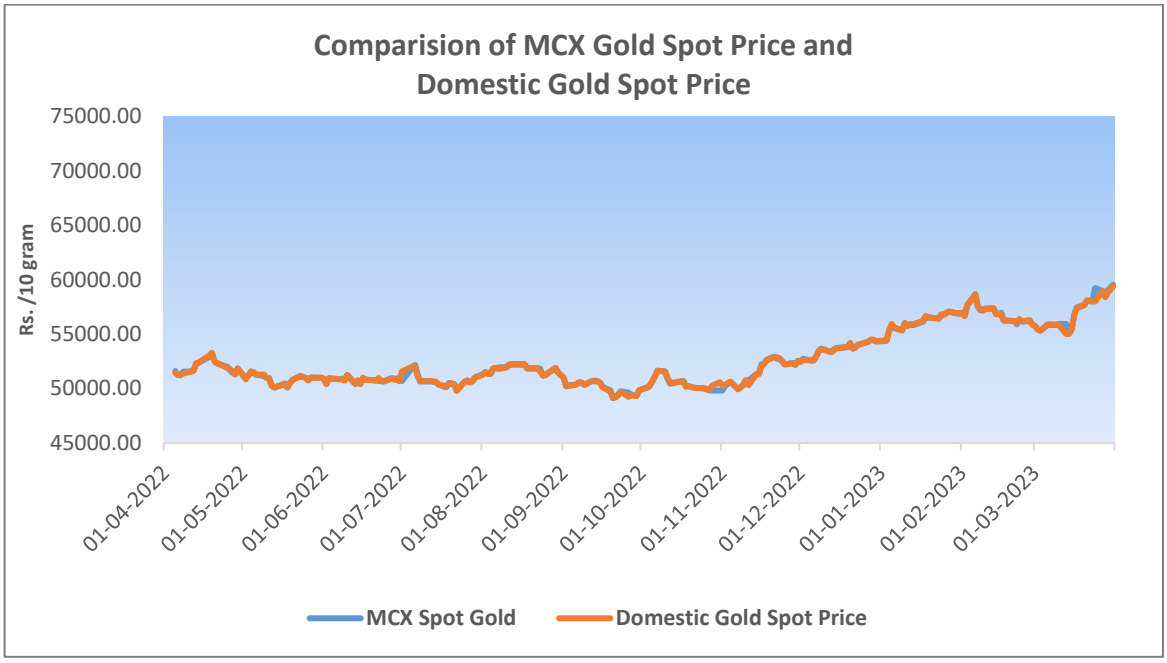
Note: CME Gold and Silver Near Month Settled Price and LBMA Gold and Silver Price have taken from CME website and LBMA website

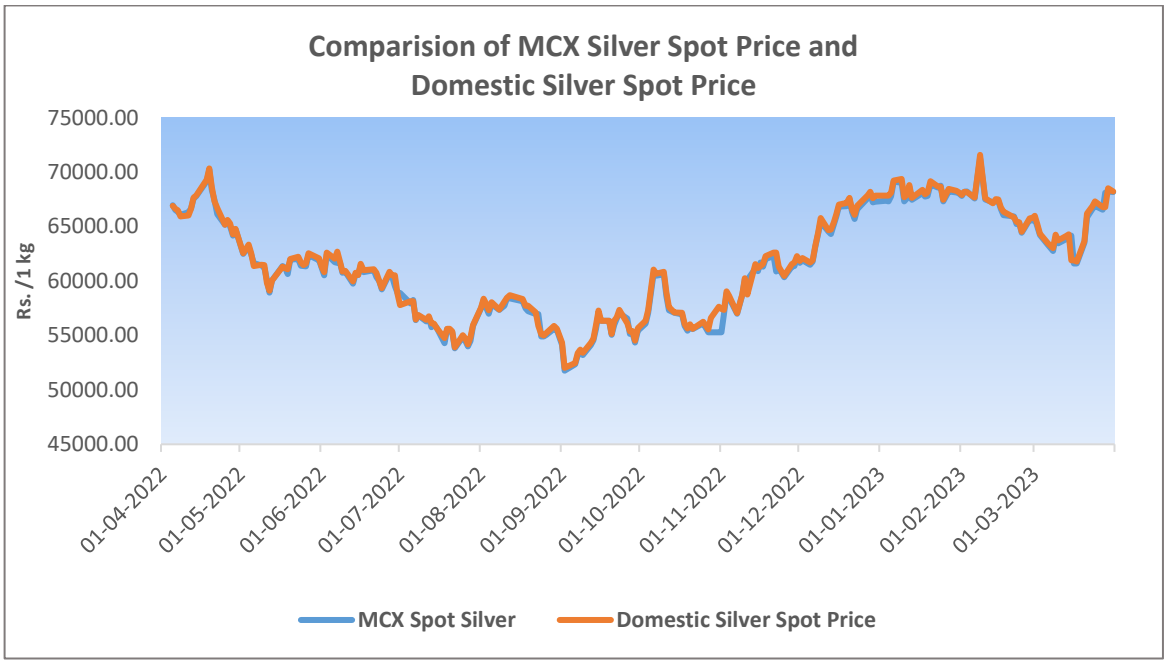




e. Comparison of Exchange polled price and mandi price (in case of agricultural commodities) / other relevant price (in case non-agricultural commodities) at basis centre.

Note: MCX Gold and Silver Spot Price and Domestic Gold and Silver Spot Price have taken from MCX website and Bullion World Magazine





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

Commodity	Max Future Price Volatility %	Min Future Price Volatility %	Max Spot Price Volatility %	Min Spot Price Volatility %
GOLD	1.07	0.45	0.97	0.46
GOLDGUINEA	1.05	0.43	0.97	0.46
GOLDM	1.03	0.44	0.97	0.46
GOLDPETAL	0.96	0.35	0.96	0.48
SILVER	2.27	0.96	2.15	1.08
SILVERM	2.13	0.89	2.15	1.08
SILVERMIC	2.09	0.89	2.15	1.08

Methodology adopted for computing daily price volatility is Exponential Weighted Moving Average (EWMA)

Note: Only near month contracts have been considered for above working

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.

There is no backwardation/contango by more than 4% for the near month contract in the period under review.

4. OTHERS 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.

Hedge Ratio for 2022-23	
Commodity	Hedge Ratio
Gold	0.70
Silver	0.72

Note: Hedging efficiency is the value of Coefficient of Determination (R2) obtained from regressing changes in five-day moving average of daily MCX Spot Prices on changes in five-day moving average of daily MCX Futures Prices during the period

Basis Risk for 2022-23			
Commodity	Unit of Basis	Avg Return of Basis (unit)	Basis Risk
Gold	Rs/10 grams	-0.23	8.62
Silver	Rs/Kg	-0.41	11.41

Note:

Basis Risk is computed as the Standard Deviation of normal returns in Basis, which is excess of Spot over Futures price. In case Basis is zero for any day , next day's Basis return has been ignored for computing the Standard Deviation.

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).

Based on top Gold and Silver importing and consumption cities of India, MCX has established delivery and additional delivery centers in major cities.

India Top 10 major importing cities - Gold			
FY 2021-22	Quantity (Metric Tonnes)	FY 2022-23	Quantity (Metric Tonnes)
Acc Coimbatore	3.7	Ahmedabad	22
Ahmedabad Air Cargo Complex	19.9	Bangalore	2
Bangalore Airport	14.2	Mumbai	69
Chennai Air	60.4	Calcutta	6
Chennai Epz	0.0	Delhi	245
Cochin Airport	0.7	Hyderabad	8
Delhi Air	366.9	Chennai	47
Dpcc Mumbai	1.6	Others	36

Epz/Sez Surat	2.0	SEZ/EPZ	162
Gift Gandhinagar	14.4		
Hyderabad Airport	28.8		
Jaipur A.C.	0.1		
Kolkata Air	5.2		
Mani Kanchan Sez	1.6		
Mumbai Air	9.0		
Riico Sez I, Sitapura	0.1		
Riico Sez-Ii Sitapura	0.7		
Seepz	11.2		
Sez Cochin	1.1		
Sez Noida	2.9		
Sri City Pvt Ltd	315.3		

Source: Refinitiv FY 2022-23

India Top 10 major importing cities - Silver			
2021	Quantity (Metric Tonnes)	2022	Quantity (Metric Tonnes)
-	-	-	-

Note: Data is not available publically

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

Data is not available.

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

MCX PMT – Bullion team has done 117 awareness programs in FY 2022-23 targeted 7367 members of Bullion fraternity including refiners, bullion traders and potential jewellers.

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

Following steps has taken to improve hedging effectiveness of all Bullion contracts as well as to improve the performance of illiquid contracts.

- After success of Gold Options with Gold (1 kg) Futures as underlying contract, MCX launched Gold Mini Options with Gold Mini (100 gram) Futures as underlying on April 25, 2022.

  The average daily turnover of Gold Mini Options with Gold Mini (100 gram) Futures as underlying during FY 2022-23 was 132 crore.

  Gold Mini Options with Gold Mini (100 gram) Futures as underlying recorded the highest volume and turnover of **1290 kg** and **760 crore** respectively on March 27, 2023 and recorded the highest open interest of **836 kg** on February 9, 2023 during the FY 2022-23.

- To make the Exchange's bullion derivative contracts more relevant to the physical market players and in line with the broader national objective of 'Atmanirbhar Bharat', MCX empaneled 2 more domestic refiners as per "MCX Good Delivery Norms for BIS-Standard Gold/Silver" during FY 2022-23 and totalled to 4 refiners for delivery in the existing contract specifications of Gold Mini (100 grams) futures contract.

  MCX has recorded the delivery of **3961 kg** of Indian refined Gold valued at **2116 crore** via MCX empanelled domestic refiners for delivery of Gold under the existing contract specifications of Gold Mini (100 grams) Futures contract during the FY 2022-23.

  However, **5073 kgs** of Indian refined Gold valued at **2669 cr.** has been delivered via MCX empanelled domestic refiners since inception.

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