MCX
METAL & ENERGY
Trade with Trust

BULLION
PERFORMANCE REVIEW



2019-2020

FOREWORD TO THE BULLION PERFORMANCE REVIEW

The Bullion Performance Report (PR) is the outcome of the SEBI circular SEBI/HO/CDMRD/ DNPMP/CIR/P/2020/21 dated February 04, 2020 that directing all recognised Stock Exchanges offering commodity derivatives segment to create a 'Performance review of the commodity derivatives contracts'. The PR, based on SEBI directive, has to be uploaded on the Exchange website by June 30, 2020 after the consent of the respective Product Advisory Committee (PAC).

Following the above directive the Bullion – Product Management Team (PMT) at The Exchange has created PRs for Gold & Silver that are traded on the Exchange. These have since been approved by the Bullion PAC.

The Bullion Performance Report highlights the important aspects of the trade like domestic and global demand, supply and import and export statistics. There is also extensive information on the volume, turnover, and open interest of Gold & Silver contracts traded on the Exchange, along with the price correlations with international markets and hedging efficiency to help the market participants give an empirical understanding of the performance of Gold & Silver on the Exchange.

All data has been sourced from established government websites and all the sources have been duly acknowledged. The data is updated till 31st March 2020.

Acknowledgement

We have been ably guided by the MCX Bullion PAC members in improving the content of the report and we are extremely thankful to them. We hope to keep improvising the report going forward

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.

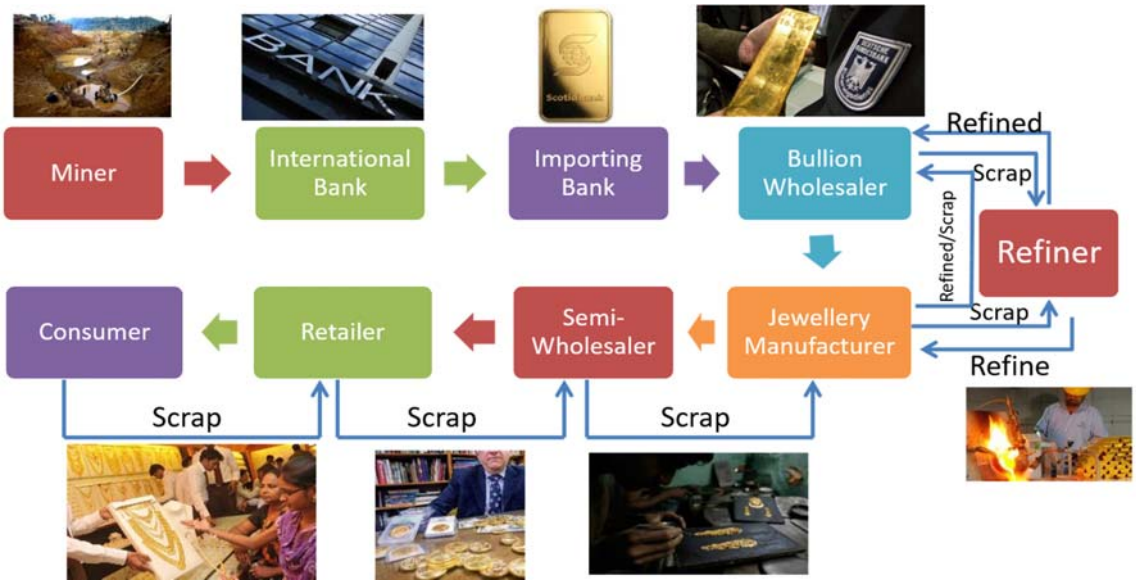
Silver(Ag) has been used for thousands of years for ornaments and utensils, trade, and as the basis for many monetary systems. Its value as a precious metal is considered second only to gold.

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) Varieties of grades 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 three grades -- 14 carat, 18 carat and 22 carat
3. As per BIS standard **IS 2112:2014** silver hallmark consists of following grade: 9999, 9995,999,990,925,900,835,800

b) Table - Fundamentals & Balance sheet (quantity)

GOLD		
Global Scenario	**2018**	**2019**
Opening Stocks	NA	NA
Production	3509	3464
Others (if any)	-	-
Consumption	4402	4368
Closing Stocks	NA	NA

*Source: Metals Focus, World Gold Council. **(Metric Tonnes)**

SILVER		
Global Scenario	**2018**	**2019**
Opening Stocks	NA	NA
Production	27511	26893
Others (if any)	-	-
Consumption	33227	31886
Closing Stocks	NA	NA

*Source - Silver Institute, Ministry of Commerce & Industry, GOI **(Metric Tonnes)**

GOLD (Metric Tonnes)		
Indian Scenario	**2018**	**2019**
Opening Stocks	NA	NA
Production	7	8
Imports	942	834
Total Supply	853	777
Exports	73	70
Domestic Consumption	760	691
Closing Supply	NA	NA

*Source – World Gold Council, Metals focus. India Dore imports stands at 275.9MT in 2018 and 211.5 MT in 2019.

SILVER (Metric Tonnes)		
Indian Scenario	**2018**	**2019**
Opening Stocks	NA	NA
Production	658	633
Imports	6693	5805
Total Supply	7740	6330
Exports	171	166
Domestic Consumption	3609	3554
Closing Supply	NA	NA

*Source - Silver Institute, Ministry of Commerce & Industry GOI

GOLD			
Serial No.	**Top 10 Gold Producing Countries**	**2018**	**2019**
1	China	404	383
2	Australia	313	325
3	Russia	295	329
4	United States	225	200
5	Canada	189	183
6	Ghana	149	153
7	Peru	158	143
8	Mexico	118	111
9	Uzbekistan	92	96
10	South Africa	128	118

*Source – World Gold Council, Metals focus **(Metric Tonnes)**

SILVER (Metric Tonnes)			
Serial No.	**Top 10 Silver Producing Countries**	**2018**	**2019**
1	Mexico	6321	6118
2	Peru	4659	4353
3	China	3694	3559
4	Russia	1395	1379
5	Chile	1354	1363
6	Bolivia	1283	1298
7	Poland	1273	1228
8	Australia	1138	1196
9	United States	900	1119
10	Argentina	852	1013

*Source – Metals focus

GOLD	2018		2019	
Serial No.	**Top 10 Major Consuming Countries**	**Quantity in Metric Tonnes**	**Top 10 Major Consuming Countries**	**Quantity in Metric Tonnes**
1	China	984	China	695
2	India	760	India	691
3	United States	157	United States	157
4	Germany	106	Germany	115
5	Iran	92	Turkey	93
6	Thailand	81	Iran	65
7	Turkey	77	Vietnam	54
8	Indonesia	65	Indonesia	47
9	Vietnam	60	Saudi Arabia	47
10	Hong Kong	52	Russia	46

*Source – World Gold Council, Metals focus

Silver	2018		2019	
Serial No.	**Top 10 Major Consuming Countries**	**Quantity in Metric Tonnes**	**Top 10 Major Consuming Countries**	**Quantity in Metric Tonnes**
NA	NA	NA	NA	NA

*data not available publicly

GOLD	2018		2019	
Serial No.	**Top 10 Major Exporting Countries**	**Quantity in Metric Tonnes**	**Top 10 Major Exporting Countries**	**Quantity in Metric Tonnes**
1	Switzerland	1580	Switzerland	1407
2	Hong Kong	911	Ghana	1297
3	United Kingdom	788	Hong Kong	575
4	Ghana	756	United Kingdom	531
5	Peru	543	Peru	395
6	United States	503	United States	391
7	Argentina	474	Canada	371
8	Chile	429	Australia	362
9	Australia	341	Argentina	327
10	Thailand	341	Chile	291

*Source –IHS Markit, GJPEC

Silver	2018		2019	
Serial No.	**Top 10 Major Exporting Countries**	**Quantity in Metric Tonnes**	**Top 10 Major Exporting Countries**	**Quantity in Metric Tonnes**
NA	NA	NA	NA	NA

*data not available publicly

GOLD	2018		2019	
Serial No.	**Top 10 Major Importing Countries**	**Quantity in Metric Tonnes**	**Top 10 Major Importing Countries**	**Quantity in Metric Tonnes**
1	Switzerland	2254	Switzerland	2104
2	China	1506	UK	1528
3	India	942	China	988
4	UK	629	India	834
5	Hong Kong	666	Hong Kong	356
6	Singapore	356	Canada	316
7	Turkey	299	Turkey	290
8	Thailand	284	Singapore	236
9	USA	231	USA	218
10	Italy	159	Italy	167

*Source – IHS Markit, Metals focus

Silver	2018		2019	
Serial No.	**Top 10 Major Importing Countries**	**Quantity in Metric Tonnes**	**Top 10 Major Importing Countries**	**Quantity in Metric Tonnes**
NA	NA	NA	NA	NA

*data not available publicly

GOLD			
Serial No.	**Top 10 Major Producing states in India for gold**	**2018**	**2019**
1.	Karnataka	7.1	8.3

*Source - Metals focus **(Metric Tonnes)**

SILVER			
Serial No.	**Top 10 Major Producing states in India for silver**	**2018**	**2019**
1.	Rajasthan	658	633

*Silver Institute **(Metric Tonnes)**

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

Pandemic COVID 19 Impact: Government of India Ministry of Home Affairs, Circular No. 40-3/2020-DM-I (A) Dated 24th March 2020.Due to lockdown, as per the mentioned circular, gold spot market was closed pan India.

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

- 2019 has been a golden year for precious metals as escalated trade disputes created a risk-averse environment among investors and demand for safe-haven assets increased.
- Increased prices continued to weigh on physical gold demand, especially in emerging economies including China and India. In India, higher duties on gold imports put further pressure on demand. India's gold imports dropped YoY to 834 MT in 2019 from 942 MT for the full-year 2018. As per WGC, the March 2020 gold import of India stood at 21.7 Tons, April and May were near-zero.

- Total known ETF holdings of gold increased by 9.8m Oz in 2019 as investors poured more money into the safe-haven asset. Over January-March, Exchange traded funds (ETFs) storing gold on behalf of investors mainly in the United States and Europe added a whopping 298 tonnes worth some $16 billion to their hoard, the WGC said in its latest quarterly report. At the same time, use of gold in jewellery dropped to 325.8 tonnes, down 39% from the first quarter last year and the lowest in at least a decade.

- Falling Fed rates in the US and negative interest rates in Europe further supported the higher inflow of investment money into precious metals rather than chasing treasuries only. At its final policy meeting of 2019, the Fed left rates unchanged following three consecutive cuts and signalled they would stay on hold through next year. Responding to the economic impact of the coronavirus outbreak, the Federal Reserve had by 15 March cut interest rates to a range of 0-0.25% from 1.5%-1.75% at the beginning of March.

- The sentiment in the financial markets across the world is decidedly negative; with the coronavirus (Covid-19) taking, a heavy toll not only on human lives but also on economic activity.
- However, exceptionally large-scale economic crisis packages, totalling nearly 20 per cent of global GDP, are helping to bolster health care, create "lifelines" for businesses and households, support future recovery efforts and ensure financial stability and well-functioning markets.
- Central banks around the world cut interest rates sharply during the 2007-2009 financial crisis. Following the coronavirus outbreak, emergency measures have been announced by many central banks. With central banks around the world cutting rates like there's no tomorrow and yields on government bonds falling to zero or negative, gold – which pays no interest anyway – suddenly looks much more attractive. Around 45 countries around the world have cut key policy rates.

- The concerns over supply and the rush on gold purchases sent futures in New York skyrocketing to the highest premium over spot gold in London in decades and underscores how desperate investors are to find a safe haven amid the market tumult brought on by the virus.
- Government's deficits around the world are about to explode following the massive stimulus packages that have been announced, and higher sovereign debts are a boon for bullion.
- The Gold to Silver ratio at 125.5 has climbed to a multi-year high. This ratio suggests how many ounces of silver can be bought with one ounce of gold. It reflects the relative strength of the two metals. A rising or higher ratio indicates that gold is outperforming and a lower or falling ratio implies that silver prices are outperforming gold

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-19	204	0.04	3	0.10	11260	2611	1025
May-19	274	0.06	4	0.11	11887	2699	1015
Jun-19	298	0.08	4	0.13	13357	3059	1177
Jul-19	451	0.14	6	0.18	16382	3867	1328
Aug-19	384	0.20	7	0.23	18806	4833	1640
Sep-19	397	0.23	7	0.27	19243	5809	1950
Oct-19	303	0.15	5	0.19	16790	4523	1497
Nov-19	300	0.11	4	0.15	14981	4238	1420
Dec-19	257	0.10	4	0.12	13295	4297	1403
Jan-20	375	0.23	6	0.23	17801	6130	2295
Feb-20	328	0.26	6	0.24	15821	5054	1940
Mar-20	465	0.76	12	0.68	18577	8163	3048
FY19-20	4,034	2	68	3	1,88,200	55,283	19,739

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

Month	GOLD OPTIONS	SILVER OPTIONS
Apr-19	8	295
May-19	27	182
Jun-19	20	378
Jul-19	38	318
Aug-19	29	669
Sep-19	40	360
Oct-19	19	266
Nov-19	24	416
Dec-19	13	240
Jan-20	44	523
Feb-20	32	599
Mar-20	81	354
FY 19-20	377	4599

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

Annual traded volume in gold all variants for calendar year 2019: 4166

Total deliverable gold supply: 777

Annual traded volume as proportion of total deliverable supply for gold: **5**

Annual traded volume in silver all variants for calendar year 2019: 222808

Total deliverable silver supply: 6329

Annual traded volume as proportion of total deliverable supply for silver: **35**

*total deliverable supply is available publicly for calendar year so we have taken annual traded volume for calendar year 2019.

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

Annual traded volume in gold all variants for calendar year 2019: 4166

Total annual production of gold: 8

Annual traded volume as proportion of total annual production for gold: **502**

Annual traded volume in Silver all variants for calendar year 2019: 222809

Total annual production of silver: 633

Annual traded volume as proportion of total annual production for silver: **352**

*total annual production is available publicly for calendar year so we have taken annual traded volume for calendar year 2019.

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

Annual average Open interest in gold all variants: 23

Total annual production of gold: 8

Annual average Open interest as proportion of total production for gold: **3**

Annual average Open interest in silver all variants: 643

Total annual production of silver: 633

Annual average Open interest as proportion of total production for silver: **1**

*total annual production is available publicly for calendar year so we have taken annual average Open interest for calendar year 2019.

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

Annual average Open interest in gold all variants: 23

Total deliverable gold supply: 777

Annual average Open interest as proportion of total deliverable supply: **0.03**

Annual average Open interest in Silver: 643

Total deliverable silver supply: 6330

Annual average Open interest as proportion of total deliverable supply: **0.10**

*total deliverable supply is available publicly for calendar year so we have taken annual average Open interest for calendar year 2019.

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

Month	GOLD	GOLD GUINEA	GOLD MINI	GOLD PETAL	SILVER	SILVER MINI	SILVER MICRO
Apr-19	64941	14	8860	33	42176	9791	3847
May-19	87086	20	11891	35	43818	9966	3752
Jun-19	99974	28	14904	44	50029	11465	4416
Jul-19	156799	47	21718	63	65147	15420	5282
Aug-19	145638	77	27524	85	83007	21346	7256
Sep-19	151820	88	24905	103	91712	27736	9315
Oct-19	115559	58	19504	74	76648	20664	6844
Nov-19	113717	41	17057	59	67181	19013	6372
Dec-19	97896	39	14608	46	59966	19429	6343
Jan-20	150595	92	22547	91	83328	28711	10752
Feb-20	136454	109	24699	99	74003	23640	9092
Mar-20	195697	321	50004	280	75862	33203	12657
FY 19-20	1516176	934	258223	1011	812877	240384	85929

Month	GOLD OPTIONS	SILVER OPTIONS
Apr-19	2660	1134
May-19	8566	690
Jun-19	6885	1438
Jul-19	13350	1274
Aug-19	10913	2923
Sep-19	15412	1777
Oct-19	7452	1256
Nov-19	9281	1910
Dec-19	4983	1107
Jan-20	17771	2470
Feb-20	13400	2842
Mar-20	33551	1613
FY 19-20	144223	20432

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

Monthly quantity of delivery (in kilograms):

Month/ Variant	Apr-19	May-19	Jun-19	Jul-19	Aug-19	Sep-19	Oct-19	Nov-19	Dec-19	Jan-20	Feb-20	Mar-20
GOLD			114		4598		917		132		215	
GOLD GUINEA	0.60	0.37	1.51	0.23	1.90	1.58	0.98	0.01	0.30	0.10	0.31	
GOLD MINI	72	23	47	84	561	1710	378	136	60	199	90	47
GOLD PETAL	0.04		0.01	0.98	0.02	0.96		2.00	3.05	1.22	0.24	1.77
SILVER		12690		84390		19470			14520			17520
SILVER MINI												
SILVER MICRO											454	

Annual quantity of delivery (in kilograms):

Variant	Delivery in kilograms
GOLD	5976
GOLD GUINEA	8
GOLD MINI	3406
GOLD PETAL	10
SILVER	148590
SILVER MINI	-
SILVER MICRO	454

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

Monthly value of delivery (in Rs. Crores):

Month/ Variant	Apr-19	May-19	Jun-19	Jul-19	Aug-19	Sep-19	Oct-19	Nov-19	Dec-19	Jan-20	Feb-20	Mar-20
GOLD			37		1624		343		50		87	
GOLD GUINEA			1		1	1						
GOLD MINI	23	7	15	28	197	665	142	53	23	77	37	20
GOLD PETAL								1	1		1	
SILVER		46		310		96			65			77
SILVER MINI												
SILVER MICRO											2	

Annual value of delivery (in Rs. Crores):

Variant	Delivery (in Rs. Crores)
GOLD	2141
GOLD GUINEA	3
GOLD MINI	1287
GOLD PETAL	4
SILVER	595
SILVER MINI	0
SILVER MICRO	2

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

Month wise Average Open Interest (in Metric Tonnes):

Month/ Variant	Apr-19	May-19	Jun-19	Jul-19	Aug-19	Sep-19	Oct-19	Nov-19	Dec-19	Jan-20	Feb-20	Mar-20
GOLD	17	16	20	28	27	26	22	20	19	23	23	21
GOLD GUINEA	0.004	.003	0.007	0.009	.013	.010	0.007	0.005	0.006	0.008	.011	.012
GOLD MINI	1	1	1	2	3	2	1	1	1	1	1	1
GOLD PETAL	0.006	0.005	0.009	0.014	.012	0.009	0.009	0.013	0.009	0.010	.010	0.014
SILVER	695	812	746	567	539	342	319	416	352	311	287	203
SILVER MINI	102	126	103	75	59	53	58	61	51	48	48	40
SILVER MICRO	62	73	58	40	31	22	25	30	29	29	30	23

Annual average Open Interest (in Metric Tonnes):

Variant	AOI
GOLD	22
GOLD GUINEA	0.01
GOLD MINI	1
GOLD PETAL	0.01
SILVER	464
SILVER MINI	68
SILVER MICRO	38

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

Month	GOLD OPTIONS	SILVER OPTIONS
Apr-19	1	69
May-19	3	35
Jun-19	2	50
Jul-19	4	49
Aug-19	5	80
Sep-19	6	35
Oct-19	4	64
Nov-19	3	68
Dec-19	2	43
Jan-20	5	67
Feb-20	3	75
Mar-20	6	36
FY 19-20	4	56

j. Annual average volume to open interest ratio

Variant	Volume to Open Interest ratio
GOLD	0.71
GOLD GUINEA	1.11
GOLD MINI	1.86
GOLD PETAL	0.97
SILVER	1.57
SILVER MINI	3.12
SILVER MICRO	2.03

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

- Total number of UCC in Gold is 164467 and in silver is 206754 during the FY 19-20

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

Average based weekly data							
Commodity	**Instrument**	**Avg. Open Interest based weekly data**	**Unit**	**FPOs/ Farmers/ VCPs/ Hedgers**		**% FPOs/ Farmers/ VCPs/ Hedgers**	
				Long	**Short**	**Long**	**Short**
GOLD	Futures	22714	KGS	4804	8389	21	37
GOLD	Options	3936	KGS	1762	893	45	23
SILVER	Futures	395346	KGS	55405	126908	14	32
SILVER	Options	57322	KGS	17575	22146	31	39

Note: Details are provided based on weekly disclosure on the Exchange website for the period October 2019 to March 2020 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)
GOLD	1901
SILVER	2390

***Based on the classification provided by the members as on March 31, 2020 for clients traded during FY 2019-20.**

n. Algorithmic trading as percentage of total trading

FINANCIAL YEAR	BASE ASSET	
	GOLD (%) (Includes all Variants)	**SILVER (%) (Includes all Variants)**
2019-20	34	38

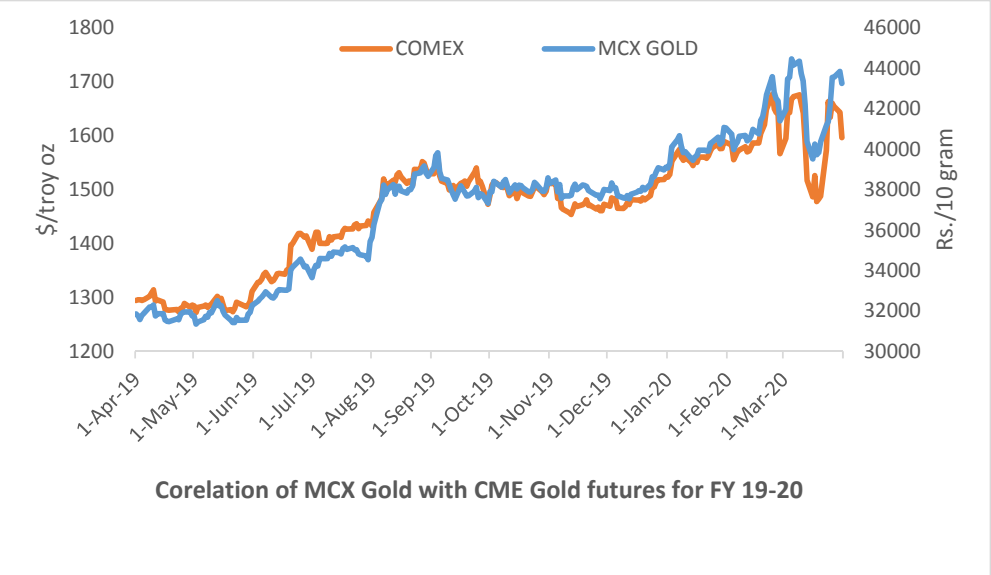
o. Delivery defaults:

Variant	Number of instances	Quantity involved (in kilograms)	Value involved (in Rs. Crores)
GOLD	3	8	2.78
GOLD GUINEA	3	0.10	0.04
GOLD MINI	3	0.01	0.23
GOLD PETAL	7	0.14	0.06
SILVER	1	30	0.11
SILVER MICRO	1	21	0.10

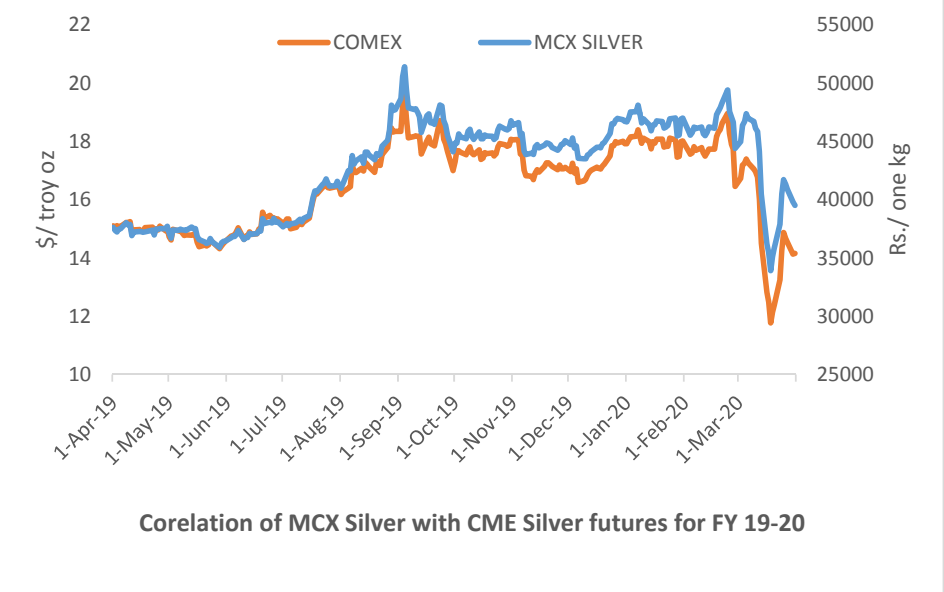
3. Price movements

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: 98.16 %
  Silver: 95.75 %
- Ratio of standard deviation of Exchange futures price vis-à-vis international futures price:
  Gold: 0.88
  Silver: 0.02



Corelation of MCX Gold with CME Gold futures for FY 19-20

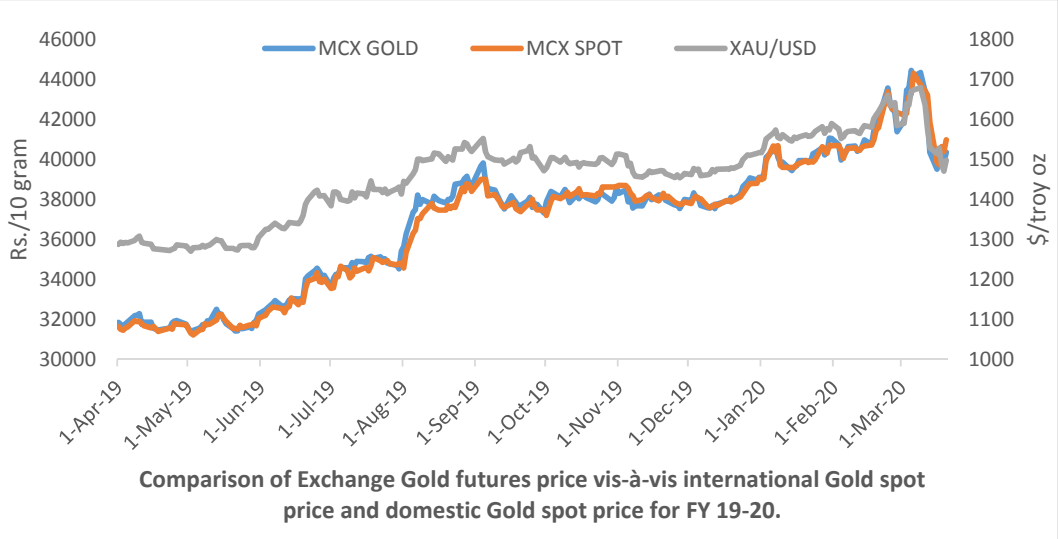


Corelation of MCX Silver with CME Silver futures for FY 19-20

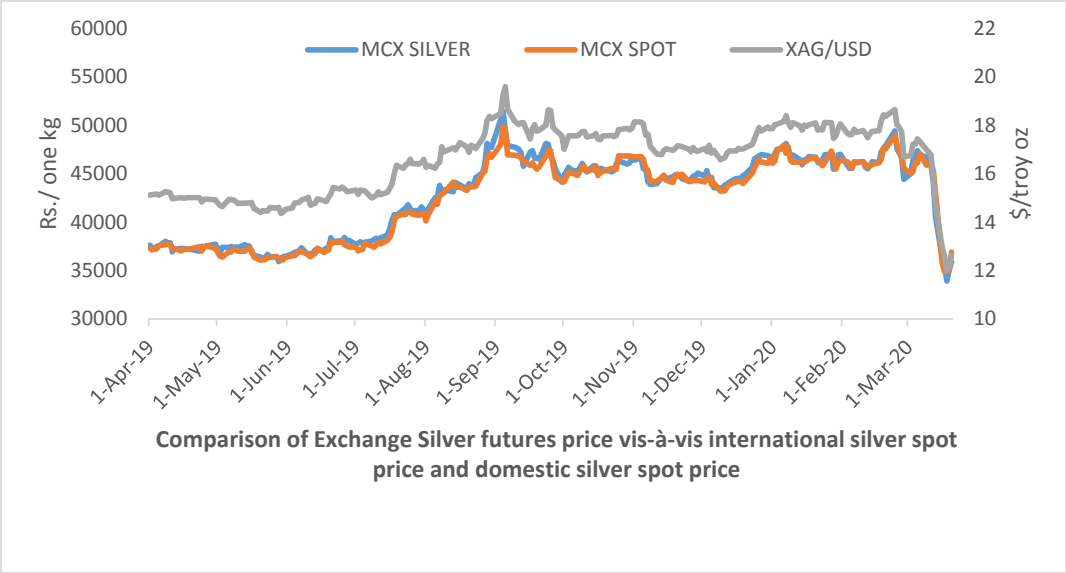
b. Comparison, correlation and ratio of standard deviation of Exchange futures price vis-à-vis international spot price (wherever relevant comparable are available) and domestic spot price (Exchange polled price).

- Correlation of Exchange futures price vis-à-vis domestic Spot price (Exchange polled price):
  Gold: 99.43 %
  Silver: 99.10 %
- Ratio of standard deviation of Exchange futures price vis-à-vis domestic Spot price (Exchange polled price):
  Gold: 1.11
  Silver: 0.94

- Correlation of Exchange futures price vis-à-vis international Spot price:
  Gold: 98.25 %
  Silver: 95.22 %
- Ratio of standard deviation of Exchange futures price vis-à-vis international Spot price:
  Gold: 0.98
  Silver: 0.96



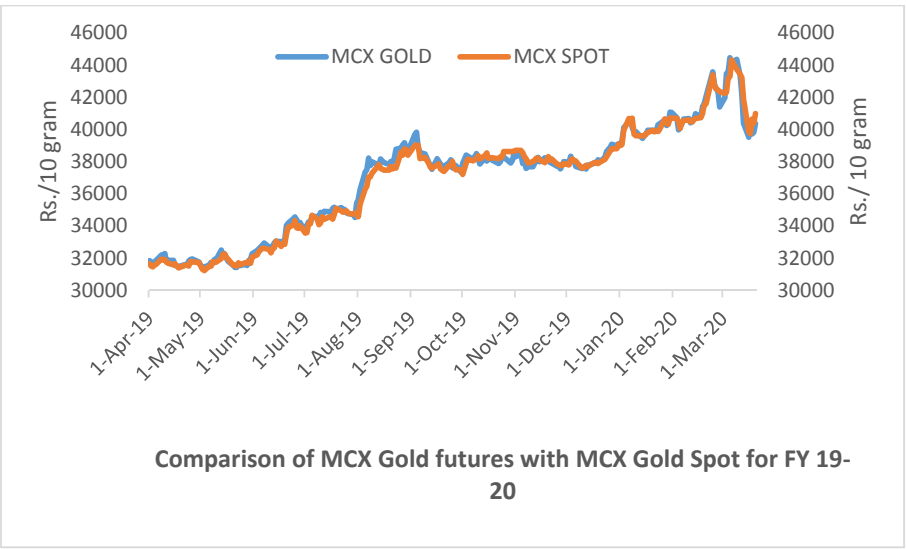
Comparison of Exchange Gold futures price vis-à-vis international Gold spot price and domestic Gold spot price for FY 19-20.



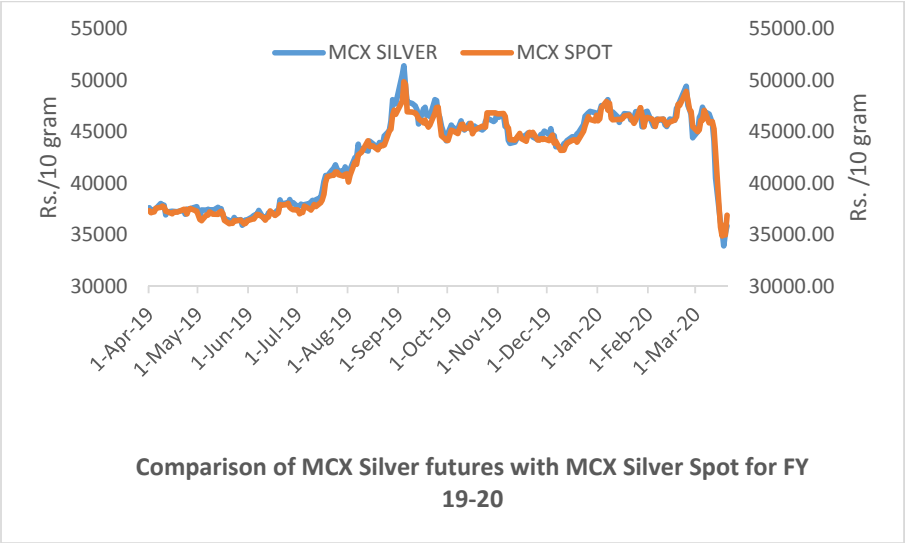
Comparison of Exchange Silver futures price vis-à-vis international silver spot price and domestic silver spot price

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 (Exchange polled price):
  Gold: 99.43 %
  Silver: 99.10 %
- Ratio of standard deviation of Exchange futures price vis-à-vis domestic Spot price (Exchange polled price):
  Gold: 1.11
  Silver: 0.94



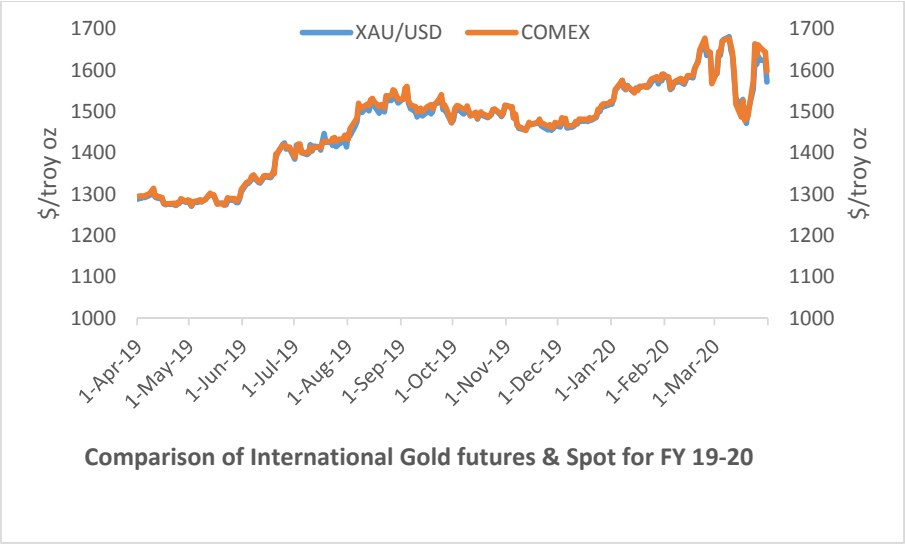
Comparison of MCX Gold futures with MCX Gold Spot for FY 19-20



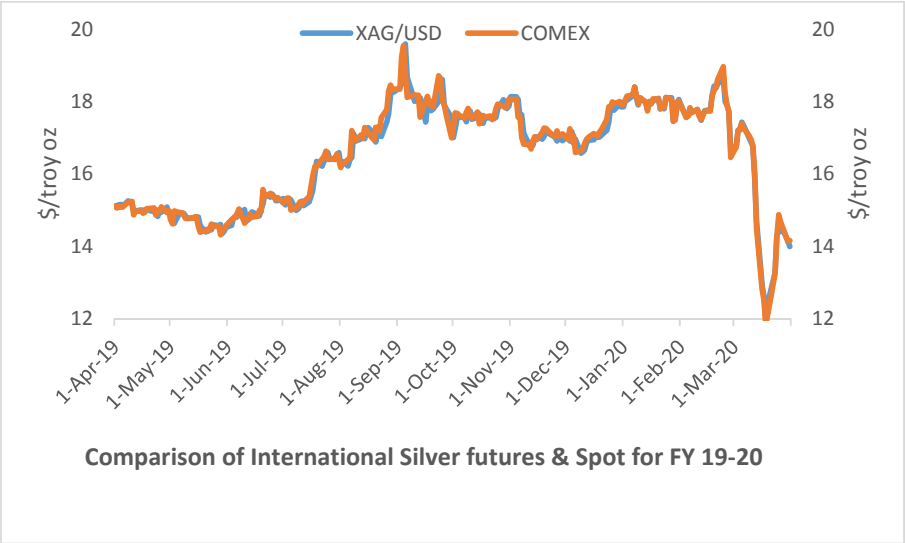
Comparison of MCX Silver futures with MCX Silver Spot for FY 19-20

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: 99.43 %
  Silver: 99.10 %
- Ratio of standard deviation of international futures price vis-à-vis international spot prices: Gold: 1.11
  Silver: 0.94

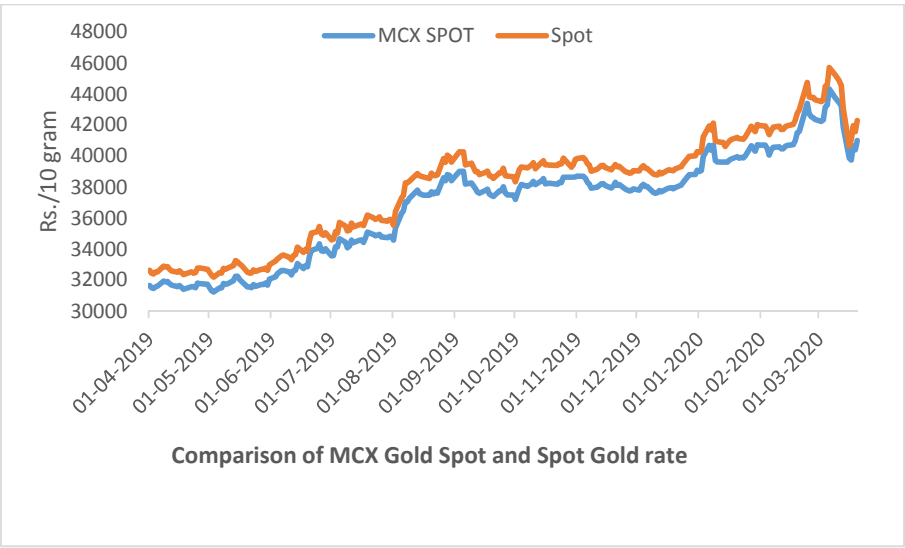


Comparison of International Gold futures & Spot for FY 19-20

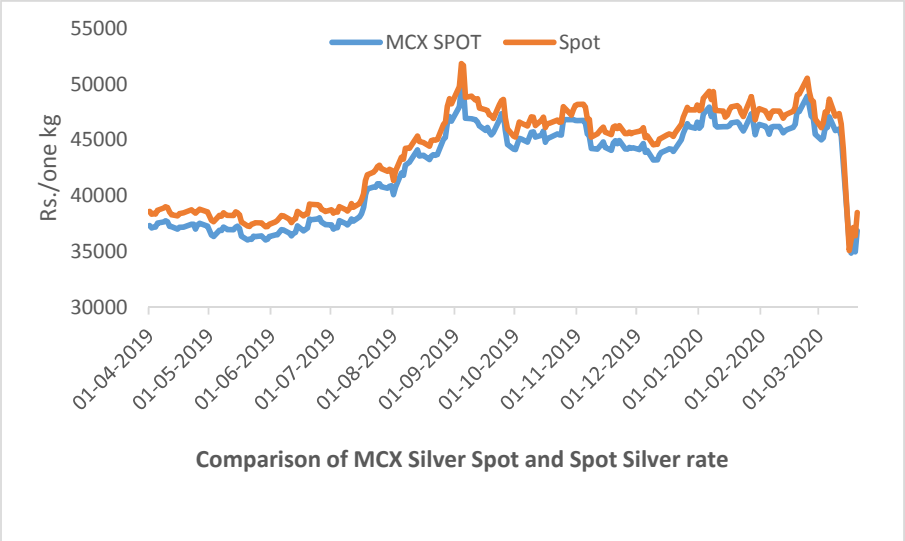


Comparison of International Silver futures & Spot for FY 19-20

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.



Comparison of MCX Gold Spot and Spot Gold rate



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 of Daily Futures Price Volatility %	Min Daily Futures Price Volatility %	Max of Daily Spot Price Volatility %	Min Daily Spot Price Volatility %
GOLD	1.8	0.5	1.8	0.4
GOLDGUINEA	4.5	0.3	1.8	0.4
GOLDM	1.8	0.5	1.8	0.4
GOLDPETAL	1.8	0.4	1.7	0.4
SILVER	4.1	0.7	4.9	0.6
SILVERM	4.1	0.7	4.9	0.6
SILVERMIC	4.0	0.7	4.9	0.6

Method of Computation of volatility: Exponentially Weighted Moving Average (EWMA)

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 Silver mini futures contract was in contango by more than 4% for the near month contract for one time on March 18, 2020.

At that time there had been a shortage of silver for ready physical delivery, with per kilo price for the silver being was at a premium of Rs 1,500-2,000. The bullion market was under the immense pressure of margin calls, as erosion continues with selling in the global equity market.

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 efficiency and Basis risk for gold and silver.

Hedge Efficiency for 2019-20	
Commodity	**Hedge efficiency**
Gold	98.14%
Silver	96.46%

Note:
Dates where spot prices are not available have been ignored for the analysis.
Hedging efficiency is the 'R Square' value of the regression equation between near-month futures prices and MCX polled spot prices during the financial year.

Basis Risk for 2019-20			
Commodity	**Unit**	**Avg. Basis (unit)**	**Std. Dev**
Gold	Rs/10grms	-2.47	28.13
Silver	Rs/Kg	-1.51	12.40

Note:
Dates where spot prices are not available have been ignored for the analysis.
Basis Risk is computed as the Standard deviation of daily normal return 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	2018	Quantity (Metric Tonnes)	2019	Quantity (Metric Tonnes)
1	Delhi	502	Delhi	423
2	Cochin	153	Cochin	156
3	Chennai	133	Chennai	127
4	Ahmedabad	53	Ahmedabad	39
5	Kolkata	32	Kolkata	28
6	Hyderabad	31	Hyderabad	23
7	Mumbai	23	Mumbai	26
8	Bangalore	11	Bangalore	8
9	Surat	0.9	Coimbatore	2
10	Jaipur	0.8	Surat	1.4

India Top 10 major importing cities - Silver	2018	Quantity (Mic Tonnes)	2019	Quantity (Metric Tonnes)
1	Chennai	6692	Chennai	4870
2	Ahmedabad	393	Kandla	703
3	Delhi	210	Delhi	145
4	Kolkata	68	Ahmedabad	142
5	Mumbai	62	Mumbai	105
6	Hyderabad	36	Jaipur	30
7	Jaipur	30	Surat	7
8	Bangalore	14	Hyderabad	8
9	Surat	5	Kolkata	3
10	Cochin	0.8	Bangalore	2

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 115 awareness programs in FY 2019-20 targeted 10034 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.

- MCX has introduced additional delivery centres at Chennai, Hyderabad, Kochi, Bengaluru, Kolkata, Mumbai and New Delhi for Gold and Gold Mini Contracts, and
- Additional delivery centres at Agra, Chennai, Delhi, Jaipur, Mumbai, Rajkot and Salem for Silver contract.
- Alignment of trading lot and delivery lot of gold petal, silver mini and silver micro contracts and successfully done delivery of 8290 coins of gold petal (since October 2019) and 454 bars of silver micro (since February 2020) in FY 19-20.
- We continuously do awareness programs along with the bullion and jewellery associations for jewellers and bullion traders across the country.
- The improvement of performance of all bullion contract is evident from the below performance of bullion contracts in FY 19-20.

- Total Bullion Turnover: INR 35112.36 cr. Highest post imposition of CTT
- Gold all variant Turnover: INR 22207 cr. Highest post imposition of CTT
- Gold all variant Volume: 55.85 MT Highest since six and half year.
- Silver all variant Turnover: INR 12905 cr. Highest post imposition of CTT
- Silver all variant Volume: 3503.57 MT Highest post imposition of CTT
- Silver 30 kg Volume: 2237.40 MT Highest post imposition of CTT
- Gold options Turnover: INR 3916.18 cr. highest since one and half year
- Gold options Volume: 9.49 MT highest since one and half year
- Gold option open interest hit all-time high of 8.75MT on March 20, 2020

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