



COMMODITY PROFILE – SILVER

Silver (Chemical symbol Ag) is a brilliant grey-white metal that is quite soft and malleable. Silver is unique amongst metals due to the fact that it can be classified as both a precious metal and an industrial metal. Silver has a number of unique properties including its strength, malleability and ductility, its sensitivity to and high reflectance of light and the ability to endure extreme temperature ranges. Its combination of unique properties makes it exceptional amongst metals and difficult to substitute. The metal occurs naturally in its pure, free form (native silver), as an alloy with gold (electrum) and other metals, and in minerals such as argentite and chlorargyrite. The main source of silver is in 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.

Properties & Uses

Silver has a number of unique properties including its strength, malleability and ductility, its sensitivity to and high reflectance of light and the ability to endure extreme temperature ranges. It is quite resistant to corrosion and does not oxidise easily, although it readily forms a surface tarnish of silver sulphide. Silver has the highest electrical and thermal conductivity of any metal. Due to these qualities (and its relative scarcity), it is often classified along with gold and platinum as a precious metal.

Silver has been known and used for thousands of years. In ancient times, silver was used for jewelry, ornaments, utensils, and as a substance that could be bartered for other goods and services. Today, silver is sought as a valuable and practical industrial commodity. Much like gold, silver can be used as both an industrial commodity and as a monetary investment -

though industrial uses are by far the main driver of the silver market. The four main uses of silver are industrial, photography, silverware & jewelry and coins & medals production.

Applications of Silver

Demand for silver is built on three main pillars: industrial uses, photography and jewelry and silverware. Together, these three categories represent more than 95% of annual silver consumption. Some of the applications of silver or areas where silver and silver contents are used are shown as below:

Precious metal - A major use of silver is as a precious metal, and it has long been used for making high-value objects reflecting the wealth and status of the owner. The major use of silver is happens in making of jewellery and ornaments.

Currency - Many nations used silver as the basic unit of monetary value. The words for "silver" and "money" are the same in at least 14 languages.

Dentistry - Silver can be alloyed with mercury, tin and other metals at room temperature to make amalgams that are widely used for dental fillings. To make dental amalgam, a mixture of powdered silver and other metals is mixed with mercury to make a stiff paste that can be adapted to the shape of a cavity.

Photography and electronics - Silver nitrate is used in photography. Some electrical and electronic products use silver for its superior conductivity, even when tarnished. For example, printed circuits are made using silver paints, and computer keyboards use silver electrical contacts.

Solder and brazing - Silver is used to make solder and brazing alloys, electrical contacts, and high-capacity silver-zinc and silver-cadmium batteries. Silver in a thin layer on top of a bearing material can provide a significant increase in galling resistance and reduce wear under heavy load, particularly against steel.

Mirrors and optics - Mirrors which need superior reflectivity for visible light are made with silver as the reflecting material in a process called silvering, though common mirrors are backed with aluminium.

Nuclear reactors - Because silver readily absorbs free neutrons, it is commonly used to make control rods that regulate the fission chain reaction in pressurized water nuclear reactors, generally in the form of an alloy containing 80% silver, 15% indium, and 5% cadmium.

Food and clothing - In India and Pakistan, foods, especially sweets, can be found decorated with a thin layer of silver known as vark. Silver inhibits the growth of bacteria and fungi. Silver is used in clothing in a form in which silver ions are integrated into the polymer from which yarns are made, and a form in which the silver is coated onto the yarns.

Medicine - Silver ions and silver compounds show a toxic effect on some bacteria, viruses, algae and fungi, typical for heavy metals like lead or mercury, but without the high toxicity to humans that are normally associated with these other metals. Its germicidal effects kill many microbial organisms in vitro.

INDIAN
COMMODITY EXCHANGE
Seize the right opportunity

International Scenario

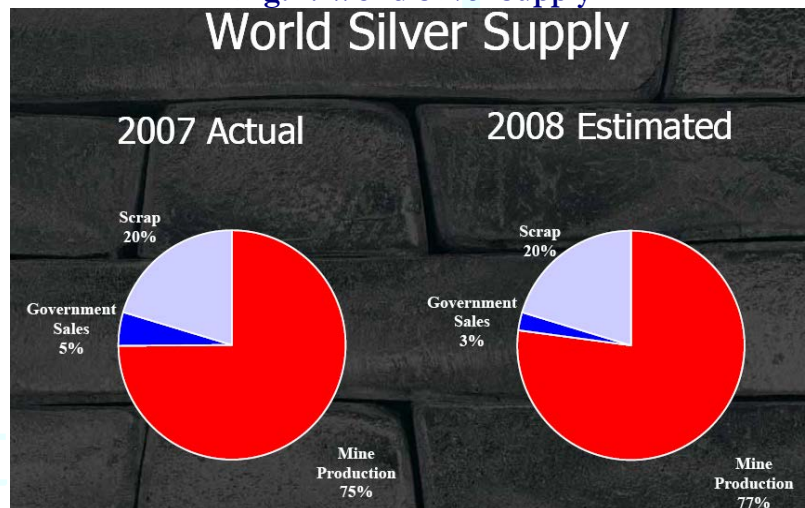
Peru is the world's biggest silver mining country with 3,557,000 tonnes of silver, accounting for 17% of total mined silver production. Other major silver mining countries are Mexico, China, Chile and Australia. Mexico and Peru are very old silver's country (since 1500), and their silver's production remains among the top five nations of silver for decades, even centuries.

World Silver Supply & Demand

Supply

Supply largely comes from mine production, which accounts for approximately 70-75 per cent of global supply in the past decade. Recycled silver scrap is the second largest source of silver, accounting for 20 per cent of global supply. The remaining supply comes from producer hedging, government sales and implied net disinvestment.

Fig. 1: World Silver Supply



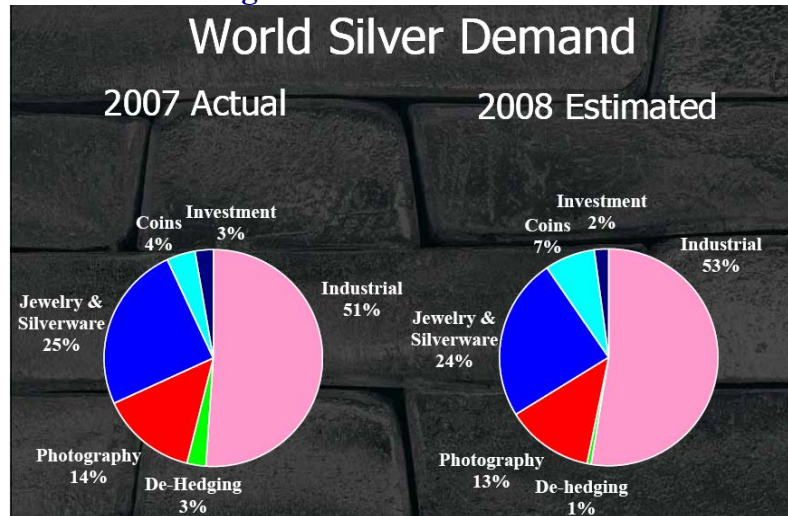
Source: GFMS Ltd.

Demand

Global silver demand is dominated by three main sources: Jewellery & silverware, industrial uses, and photographic fabrication. Industrial applications are the main source of demand in the silver market. Silver is a good thermal and electrical conductor, making it useful in

switches and fuses. It is also used in batteries and its quality as a bactericide allows it to be used in water purification systems and a wide range of consumer products.

Fig. 2: World Silver Demand



Source: GFMS Ltd.

Table 1: Silver Demand-Supply Balance

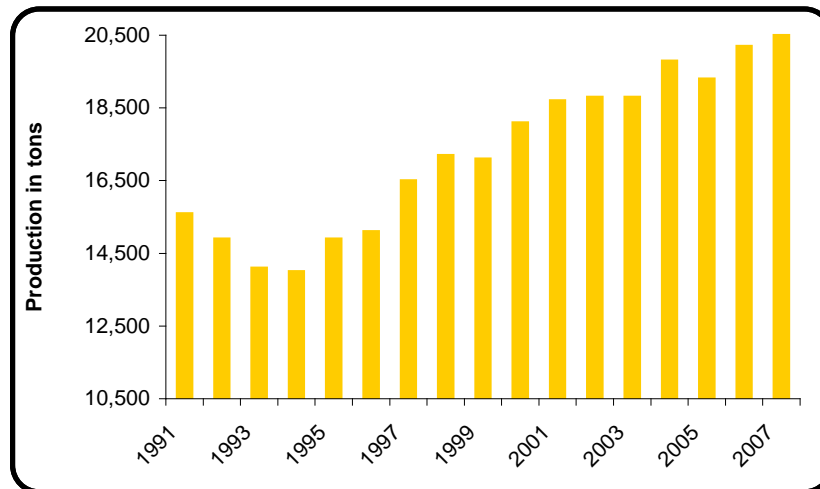
Global Demand-Supply (in tonnes)

tonnes	2001	2002	2003	2004	2005	2006	2007
Supply							
Mine Production	18854.94	18463.04	18680.76	19318.38	20024.43	20136.41	20858.01
Net Government Sales	1959.52	1875.54	2749.55	1872.43	2099.49	2432.29	1315.68
Old Silver Scrap	5682.61	5831.91	5723.04	5713.71	5785.25	5847.46	5648.40
Producer Hedging	587.86	--	--	298.59	858.46	--	--
Implied Net Disinvestment	--	335.92	--	--	--	--	--
Total Supply	27084.93	26506.40	27153.36	27203.12	28767.63	28416.16	27822.08
Demand							
Industrial Applications	10425.89	10550.31	10880.00	11424.32	12606.25	13212.77	14161.42
Photography	6628.16	6354.45	5999.87	5561.31	4985.89	4478.90	3990.58
Jewelry	5421.34	5253.38	5573.75	5440.00	5405.79	5172.51	5082.31
Silverware	3300.08	2597.14	2609.58	2093.27	2108.82	1903.53	1828.89
Coins & Medals	948.66	982.87	1110.39	1318.79	1244.14	1237.92	1175.71
Total Fabrication	26724.13	25735.04	26173.60	25837.68	26357.11	26002.53	26242.02
Producer De-Hedging	--	771.37	650.06	--	--	211.50	777.59
Implied Net Investment	348.36	--	326.59	1368.55	2413.63	2202.13	802.47
Total Demand	53796.61	52244.55	53323.84	53043.91	55121.62	54421.79	54060.99

Source: GFMS

World Silver Production

Fig. 3: World Silver Production



Source: United States Geological Survey

Global silver production is increasing over the years. In the year 2007, the output has seen to be over 20,000 tons. Global silver mine production reached a fresh record high in 2008 totaled 680.9 million ounces, driven by strong production increases in Bolivia, Russia, and Peru. Peru is the world's biggest silver mining country in 2008, followed by Mexico, China, Australia, and Chile.

Table 2: Major Silver Producing Countries in 2008

Sl. No	Country	Mln ounces
1.	Peru	118.3
2.	Mexico	104.2
3.	China	82.8
4.	Australia	61.9
5.	Chile	44.9
6.	Poland	38.9
7.	Russia	36.1
8.	United States	36.0
9.	Bolivia	35.8
10.	Canada	21.5
11.	Kazakhstan	20.2

According to the US Geological Survey (USGS), silver production in Peru was 118.3 million fine ounces in 2008, while Mexico and China occupied the second and third place with 104 million and 83 million fine ounces respectively.

Major World Markets for Silver Trading

Silver is predominantly traded on the London Bullion Market and COMEX in New York. The former, as the global hub of OTC (Over-The-Counter) trading in silver, is the metal's main physical market. Here, a bidding process generates a daily reference price known as the fix. COMEX, in contrast, is a futures and options exchange. It is here that most fund activity is focused. Silver is invariably quoted in US Dollars per troy ounce.

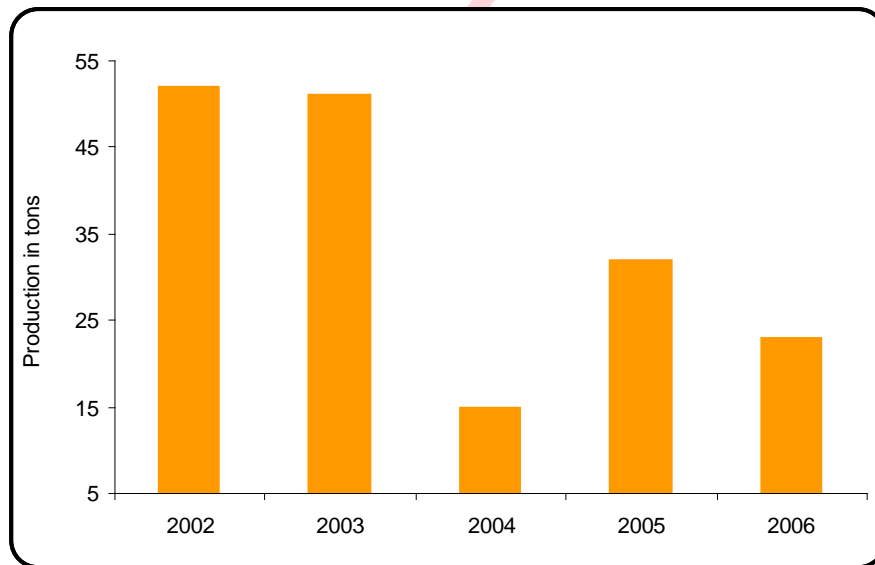


INDIAN
COMMODITY EXCHANGE
Seize the right opportunity

Domestic Scenario

India hardly produces any silver and is basically a silver importing country. The three major silver producing states in India are Rajasthan, Gujarat & Jharkhand. Rajasthan is the leading silver producing state in India.

Fig. 4: Silver Production in India (2002-06)



Source: United States Geological Survey

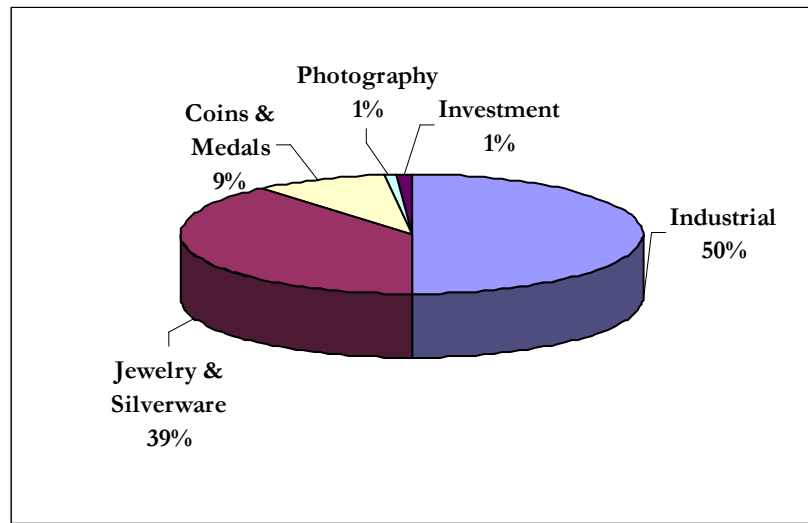
India produces a small quantity of silver ranging from 15 tons to 55 tons in recent years. With this the country is unable to meet its demand and therefore imports significant quantity.

Silver Demand & Supply

Silver Demand

The annual demand for silver is about 3,200 tonnes. In the domestic market of about 3,200 tonnes, with almost 50% demand coming from industrial uses, 39% from jewelry and silver ware, 9% from coins and medals and about 1% each from photography and implied net investment.

Fig. 5: Silver Uses in India (% Share)



Silver Supply

The supply comes 77.1 % from imports, 18.8 % from secondary silver and 2.5% from Hindustan Zinc. Hindalco too shares about 1.7% of market. As the domestic supply of silver is so low, India is meeting most of the demand by either imports through RBI - 77.1%, or through recycled silver - 18.8%.

Hindustan Zinc has 2.5% share in the domestic market as of now and is the largest silver producer in the country. With production of about 51 tonnes of silver in 2006-07, the company increased its production to 80 tonnes in 2007-08.

Open General License (OGL) imports are the only significant source of supply to the Indian market. Around 50% of India's silver requirements last year were met through imports of Chinese silver and other important sources of supply being UK, CIS, Australia and Dubai.

Silver Mines in India

- Sindesar Khurd mine: It is present in Rajasthan. Known for rich silver content and is owned by Hindustan Zinc.
- Rampura Agucha, Rajpura Dariba and Zawar: in Rajasthan
- Visakhapatnam in Andhra Pradesh

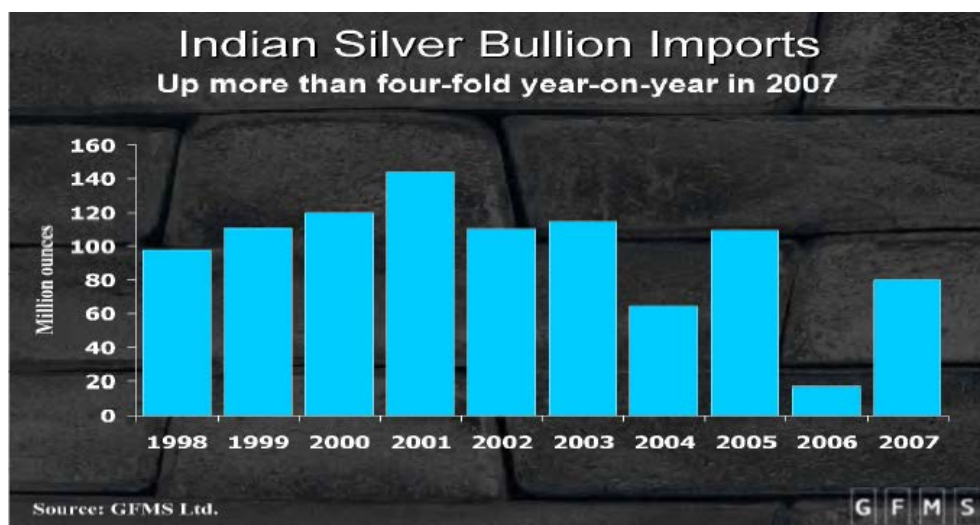
Import of Silver in India

India is one of the major consumers of silver in the world. The country produces small quantity and rest imports. Now, India has become the world's largest silver importer. High prices, dull market conditions and re-cycling of scrap silver materials have led to a big fall in the imports of silver by India. India used to consume around 3,000-4,000 tonnes silver a few years back. In 2008, silver imports have plunged to about 2,000-2,500 tonnes. The imports are at least 50% lower compared to previous years. Demand for silver has declined due to high price of silver.

Apart from a few banks such as Nova Scotia, ICICI Bank, Kotak Mahindra, Punjab National Bank and Union Bank of India which import silver, agencies like Minerals and Metals Trading Corporation and State Trading Corporation (STC) are also involved in the import process from time to time.

The major importing center of silver in India was Mumbai but now it has been shifted to Ahmedabad and Jaipur due to high sales tax and octroi charges.

Fig. 6: Silver Imports in India (1998-2007)

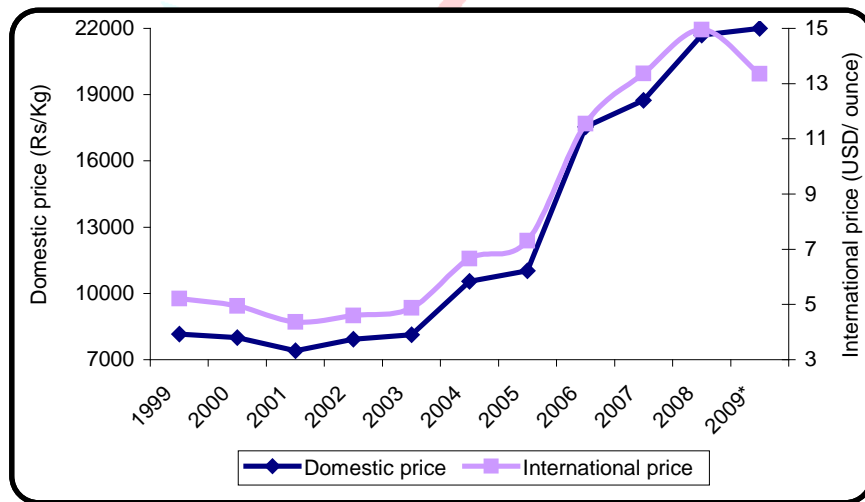


Source: GFMS Ltd.

Silver Prices

Silver often tracks the price of gold due to demand as a store of value, although the ratio can vary. Geo-political uncertainties and a depreciating dollar have all acted in favour of demand for precious metals including silver and boosted silver prices in the last year.

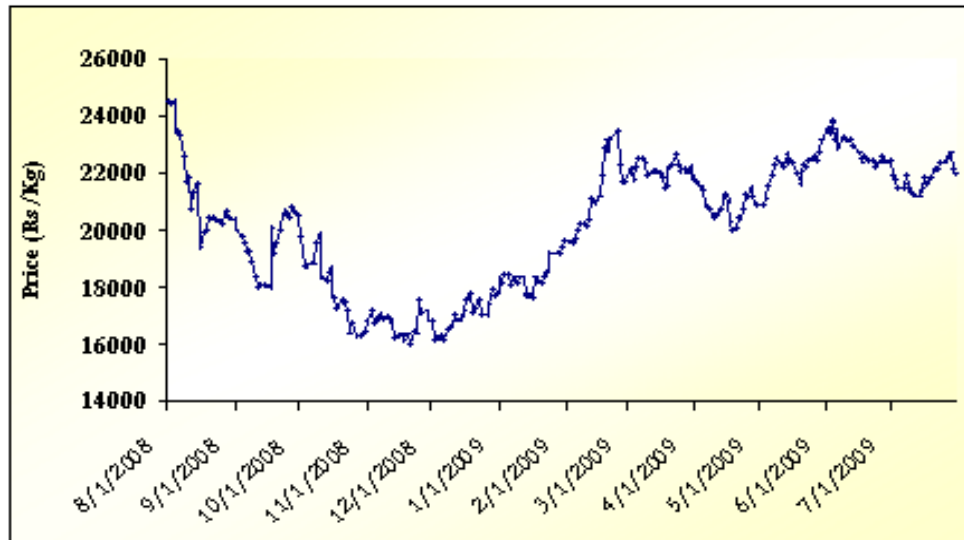
Fig. 7: Silver Spot Prices in Domestic and International Market



Note: * indicates avg. price up to Aug 2009.

Silver prices are surging over the years both in the national and international markets. During the current year (Jan-Aug), prices averaged at Rs. 22,000 per kg and USD 13.35 per ounce. Price are ruling lower international market during the current year compared with a year ago. This could be mainly attributed to poor demand followed by global downturn. However, domestic prices are ruling firm as the Indian currency has weakened against US Dollar.

Fig. 8: Silver Spot Prices at Ahmedabad (Aug'08-July'09)



Factors influencing Silver Prices

- International supply prospect – mining and scraps availability etc.
- Sales by China and other Central Banks
- Sector-wise demand trend including jewellery, photography, silverware, and coins and medals
- Domestic demand seasonality – festival and marriage etc
- US dollar movement against other currencies
- Indian rupee movement against the US dollar
- Geopolitical tensions
- Global economic situation

References

- United States Geological Survey (USGS)
- www.silverinstitute.org
- GFMS