Silver – The metal with a split personality

Silver has existed since eternity, so next time you touch a silver coin or bar, remember that you are touching star dust from a time before our planet was even born!

Like gold, platinum and other heavy elements, silver was created in stellar explosions (supernovae) long before our solar system was formed. It has been part of Earth's crust since its beginning, over 4.5 billion years ago. Chemically, silver is indestructible, it only transforms. You can melt it, dissolve it in acid, or oxidize it, but the silver atoms themselves don't vanish and hence can always be recovered through different chemical processes.

An industrial workhorse

Silver is the most versatile of all noble metals. It conducts electricity, kills germs, captures images, and reflects light. Silver's extraordinary usefulness stems from a unique combination of physical, chemical, and biological properties, namely:

- Electrical conductivity: Silver has the highest electrical conductivity of any known element (even higher than copper or gold). Combined with its indestructible nature, no other substitute yet matches silver's combination of conductivity, reliability, and resistance to degradation.
- Thermal conductivity: Silver conducts heat better than any other metal.
- Optical Reflectivity: Silver reflects 95% of visible light and much of infrared radiation
- Chemical Reactivity: Silver is chemically stable in air and water but reacts selectively with sulphur and halogens. Its predictable reactivity makes it both durable and controllable for industrial processes.
- Antimicrobial & Biocidal Properties: Silver ions (Ag^+) destroy bacteria, fungi, and viruses by disrupting their cell walls and enzymes
- Ductility, Malleability, and Aesthetic: Silver is soft, easily shaped, and highly lustrous
- Electrochemical Stability: Silver forms stable compounds with predictable voltage characteristics.

Property	Scientific Basis	Key Applications
Highest electrical conductivity	Free electron mobility	5G, Advanced electronics, solar cells, EVs
Highest thermal conductivity	Metallic bonding efficiency	Heat sinks, aerospace, solar PV
Optical reflectivity	Surface electron response	Mirrors, coatings, optics

Authors: Bharat Gupta & Krish Juthani

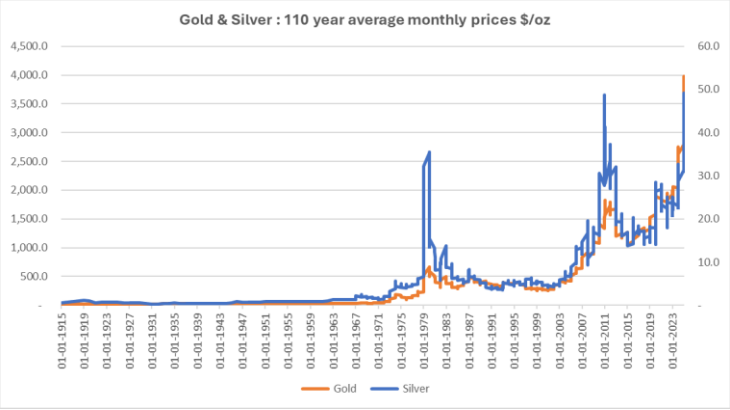
Property	Scientific Basis	Key Applications
Antimicrobial activity	Silver ions destroy microbes	Medicine, hygiene, water filters
Chemical stability	Resistant to oxidation	Emerging nanotech and solid-state energy systems
Ductility & malleability	Soft metallic bonding	Jewellery, fine instruments
Photochemical reactivity	Halide light sensitivity	Photography, sensors
Catalytic behaviour	Facilitates oxidation reactions	Plastics, chemicals, fuels

It's wide industrial utility, makes silver an extremely versatile metal with continuous demand for real world, practical uses. The future demand scenario for silver is overwhelmingly bullish, especially driven by its irreplaceable role in the global transition to green energy and advanced electronics. While there are substitutes for silver in certain applications, they do not currently pose a significant overall compromise to the metal's industrial demand due to performance trade-offs or technical challenges.

Silver as a monetary asset

Silver has been one of humanity's oldest forms of money. It was scarce but not too rare, easily divisible, corrosion-resistant, and widely trusted and hence, perfect for daily exchange. From India, Mesopotamia, Egypt and Greece, world's oldest civilisations have used silver as money along with gold. It was only in 20th century that silver lost that role. Central banks no longer hold silver reserves, but individuals, funds, and sovereign mints (e.g., American Eagle, Canadian Maple Leaf, Indian coinage) have kept the tradition alive.

Silver still behaves like money because it has no counterparty risk (no liability or government decree), it is universally traded and trusted, deep bullion and futures markets exist, it is considered an inflation hedge and is portable.



Silvers' role as an inflation hedge is not direct but it follows gold's lead. Gold responds to sustained higher inflation and silver usually follows gold albeit with a lag.

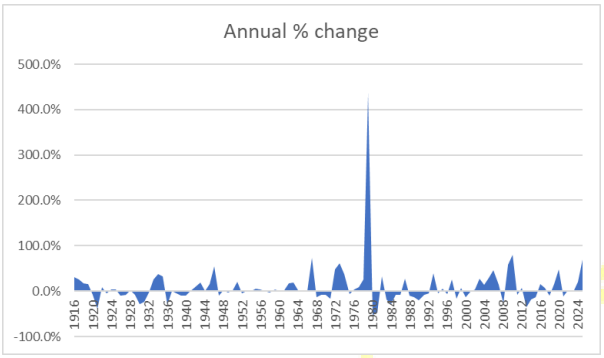
Chart (data sourced from macrotrends.net) on the left shows average monthly prices of gold and silver for last 110 years. The correlation between the two noble metal prices is 0.94.

The split personality

Primary driver for silver demand and prices, during most of the 20th century has been the industrial demand, except when there is a clarion call from its elder brother Gold (which happens during times of sustained high inflation, times of crisis or when the world is under grip of fear). When the latter happens, silver wakes up from its deep slumber and rushes to make

new peaks, creating havoc for its industrial users. In the last 50 years, this has happened about 4-5 times and the moves it has made, has shocked the biggest speculators, as the Hunt brothers would testify in early 1980s.

In the late 1970s, following golds lead due to sustained high inflation, silver moved quickly from sub $10/oz to $50/oz in a short period of a year. The spike was exacerbated by US investors called Hunt brothers, who led a speculative move to corner the silver market, but apparently, ended up going bankrupt.



Subsequent spikes in 2008 and 2012, were following gold's lead during and post the global financial crisis. It shot up again during 2020 – 21, due to panic caused by covid and subsequent, high inflation.

Chart (Data sourced from Macrotrends.net), shows the annual % change in silver prices since 1916. During 2025, the silver prices have shot up by 70% in the first 10 months of the year. This is largely following the lead from gold, which have also doubled since January 2024.

As is evident from the almost perfect correlation with gold prices of 0.94, silver prices don't just depend on its industrial demand drivers. In moments of crisis, it reminds us of its role as a monetary asset, as money, that the current generation has forgotten.

Recent demand – supply dynamics

There is another important trend brewing in the silver market. It's demand as an industrial commodity has been outstripping its supply. For last 6 years, since 2019, silver supply has been short and depleting inventories at various global exchanges.

Silver Supply and Demand

Million ounces	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025F	Year on Year 2024	Year on Year 2025F
Supply												
Mine Production	900.1	863.9	850.8	837.4	783.8	830.8	839.4	812.7	819.7	835.0	1%	2%
Recycling	156.3	160.2	162.3	163.8	180.5	190.7	193.5	183.5	193.9	193.2	6%	0%
Net Physical Disinvestment	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	na	na
Net Hedging Supply	0.0	0.0	0.0	13.9	8.5	0.0	0.0	0.0	0.0	0.9	na	na
Net Official Sector Sales	1.1	1.0	1.2	1.0	1.2	1.5	1.7	1.6	1.5	1.5	-9%	4%
Total Supply	**1,057.4**	**1,025.1**	**1,014.3**	**1,016.2**	**974.0**	**1,023.1**	**1,034.6**	**997.8**	**1,015.1**	**1,030.6**	**2%**	**2%**
Demand												
Industrial (total)	491.0	528.0	525.8	525.4	511.9	564.1	592.3	657.1	680.5	677.4	4%	0%
Electrical & Electronics	309.0	339.1	330.4	326.6	321.4	350.7	370.7	444.4	460.5	465.6	4%	1%
...of which photovoltaics	*81.6*	*99.3*	*87.0*	*74.9*	*82.8*	*88.9*	*118.1*	*192.7*	*197.6*	*195.7*	3%	-1%
Brazing Alloys & Solders	49.1	50.9	52.0	52.4	47.5	50.5	49.2	50.2	51.6	52.9	3%	3%
Other Industrial	132.9	138.0	143.5	146.4	142.9	162.9	172.4	162.6	168.4	158.9	4%	-6%
Photography	34.7	32.4	31.4	30.7	26.9	27.7	27.7	27.3	25.5	24.2	-7%	-5%
Jewelry	189.1	196.2	203.2	201.5	150.9	182.0	234.5	203.1	208.7	196.2	3%	-6%
Silverware	53.5	59.4	67.1	61.3	31.2	40.7	73.5	55.1	54.2	46.0	-2%	-15%
Net Physical Investment	212.9	155.8	165.9	187.4	208.1	284.3	338.3	244.3	190.9	204.4	-22%	7%
Net Hedging Demand	12.0	1.1	7.4	0.0	0.0	3.5	17.9	11.5	4.3	0.0	-62%	na
Total Demand	**993.3**	**972.9**	**1,000.8**	**1,006.4**	**929.0**	**1,102.4**	**1,284.2**	**1,198.5**	**1,164.1**	**1,148.3**	**-3%**	**-1%**
Market Balance	64.1	52.2	13.5	9.8	45.1	-79.3	-249.6	-200.6	-148.9	-117.6	-26%	-21%
Net Investment in ETPs	53.9	7.2	-21.4	83.3	331.1	64.9	-117.4	-37.6	61.6	70.0	na	14%
Market Balance less ETPs	**10.2**	**45.1**	**34.9**	**-73.5**	**-286.1**	**-144.3**	**-132.2**	**-163.0**	**-210.5**	**-187.6**	**29%**	**-11%**
Nominal Silver Price (US $/oz, London price)	17.14	17.05	15.71	16.21	20.55	25.14	21.73	23.35	28.27	-	21%	na

Source: Metals Focus

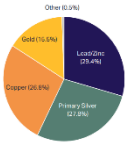
As can be seen from the chart on the left, sourced from Metals Focus, average price of silver has moved gradually from $21.73 in 2022 to $28.27 in 2024. We believe the price increases in 2020 and 2021 of about 20% and 25%, were influenced more by covid fear than supply shortage as prices dropped in 2022 as covid fear receded.

Salient feature of silver market is that its supply is constrained at about a billion ounces per annum, largely led by production constraints at about 800mn ounce per annum. Silver is a by-product of copper, zinc and gold production. As can be seen from the chart on the left, 3/4th of the silver production is as a by product of other source metals. Silver production is hence structurally paralysed. The supply doesn't respond to increase in demand or run down of global inventory. As can be seen from the chart on the prior page, even though silver has been in short supply and prices have gradually moved up, production has hardly responded.

Silver Mine Production by Source Metal in 2024

Million ounces	Lead/Zinc	Primary Silver	Copper	Gold	Other
North America	22.1	135.9	13.9	59.2	0.2
Central & South America	74.7	47.3	75.6	36.2	0.0
Europe	11.5	1.6	51.3	1.6	0.0
Africa	3.0	6.3	5.6	3.5	0.0
CIS	11.4	14.6	29.7	11.2	2.7
Asia	100.3	8.1	37.7	9.6	1.5
Oceania	18.2	13.6	5.7	5.8	0.0
Total	**241.3**	**227.5**	**219.4**	**127.1**	**4.4**

Source: Metals Focus



This means the global silver supply is not dictated by the price of silver, but by the demand for industrial base metals. Silver is merely a passenger in a car driven by copper and zinc. This is why, as Keith Neumeyer, CEO of First Majestic Silver, has repeatedly stated, "*The miners cannot just flip a switch to produce more silver*." The world could be asking for silver at $100 an ounce, but if copper and zinc demand is weak, silver output will remain stagnant or even fall. This structural reality is why years of deficits (about 10% to 20% of total annual supply or about 16% to 25% of annual production) have not been met with a surge in production. It is the ultimate anchor on supply, ensuring that the pressure from demand continues to build, tightening the coiled spring to its breaking point.

Silver's indispensable role in modern technology provides the relentless demand that underpins the bull case. As Michael Cinnamond, CFO of mining giant Pan American Silver, puts it, "*The green energy transition runs on silver... This is not speculative demand; it is physical, inelastic demand*." This industrial base consumes silver and, in many cases, removes it from the market forever, tightening the physical squeeze each year.

Caveat to industrial demand as prices rise: While there are substitutes for silver in certain applications, they do not currently pose a significant overall compromise to the metal's industrial demand due to performance trade-offs or technical challenges. E.g. in silvers role as electrical conductor: copper is the main alternative being explored, particularly in solar cells. However, silver is often preferred where high performance, reliability, and miniaturization are essential, as its conductivity is superior. Aluminium has lower conductivity and presents manufacturing challenges. Gold is an option in some high-end electronics but is more expensive.

Silver price forecast

So, how far can silver price go? In 2024, silver prices went up by 21% and in 2025, they are already up 70% in the first 9 months of the year. 5 times in the last 110 years, silver prices have seen 3 or more years of consecutive annual price increases of more than 10%:

- World war I
- Great depression
- World war II
- Post 1971, Nixon shock
- Boom years of 2003 – 2007

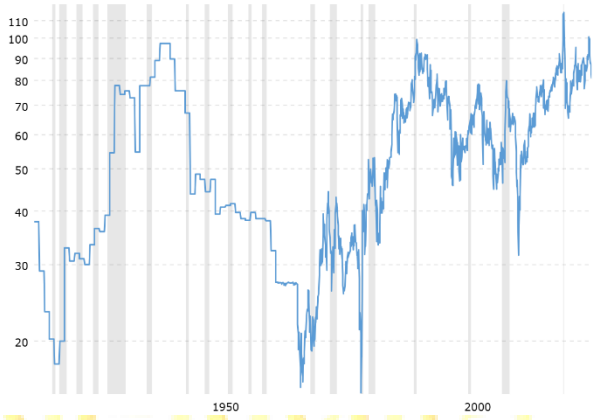
As of the writing of this paper, silver has scaled new highs of and stayed above $50/oz for 4 days. There is frenzy in ETF markets (Indian ETFs are trading above NAVs) and the media is full of articles about silver prices.

While we have volatile geopolitical environment but nothing as bad as first 4 periods cited above, unless gold and silver markets are sensing an outcome that is currently unknown or has a very small tail risk.

There could potentially be three reasons or arguments that can be made in favour of another year (i.e. 2026) of silver price increase:

1. The ongoing demand – supply deficit is a new paradigm and will continue to drive prices higher. As mentioned earlier, silver used in PV cells, EV batteries, 5G infrastructure and high-end electronics is taking silver out of physical market for a long time (before they can be recycled);

2. Gold-Silver price ratio (GSR): This isn't just a number; it's a measure of deep historical value. Silver price increase from $11 pre covid to about $50 now, is also explained by gold & silver aficionados as move to bring the GSR to its long-term average.



The average GSR (source: Investopedia) over the 20th century was 47:1, and since 1974, after the end of the gold standard, the average has been closer to 60:1. The ratio has fluctuated significantly, ranging from below 20:1 to over 120:1. As of Oct 2025, the ratio is near 80:1, and unless Gold prices see a big decline, silver prices are expected to go higher.

3. Debasement trade and de-dollarisation: As per J P Morgan, there is a global move away from fiat currencies specifically US$ in favour of hard assets. This shift is driven by investors and world central banks to mitigate any risks emanating from rising sovereign debt, inflation and lose monetary policies. Secondly, due to geopolitical reasons, central banks have been shifting a higher percentage of their reserves from US treasuries in favour of gold.

This sentiment is best explained by David Morgan, founder of The Morgan Report, who has long predicted this setup: "*When you account for true inflation since 1980, the old high of $50 should be well into the triple digits already. The convergence of monetary demand and a real-world industrial shortage is the perfect storm for silver. Reaching $100 isn't a matter of if, but when*."

Based on 5 instances where silver saw sustained sharp increase in prices for 3 or more years, the current global set up doesn't make a strong case in its favour. However, 2 of the above 3 arguments are new ingredients into the mix (supply deficit and de-dollarisation) and the 3rd argument i.e. GSR gives it a strong historical context.

So will the silver prices go up? We believe the probability of higher prices over next few years is high driven by Gold's lead and the de-dollarisation trend. Investors would do well to keep the volatile nature of silver prices in mind, while making investment decisions.