

WORLD SILVER SURVEY 2003 - A SUMMARY

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This report is a summary of the *World Silver Survey 2003*. The *World Silver Survey (WSS)* is an annual review of the international silver market. It contains the only truly global analysis of the world's silver markets and has been produced by Gold Fields Mineral Services (GFMS), the London-based analysts of global precious metals markets, on behalf of The Silver Institute in Washington since 1994. The *WSS* is a unique source of silver supply and demand statistics for more than sixty countries. It contains a comprehensive analysis of investor activity, worldwide silver stocks and bullion flows as well as a lucid and concise account of the financial, economic and social factors underlying market trends. Details on how to order the full 80-page *WSS* can be found on Page 8.

1. Review and Outlook

For what is often called an “industrial commodity”, silver was remarkably resilient last year in the face of adverse economic conditions. Indeed, at \$4.599, its average price was actually up 5% year-on-year. This compares favorably with copper, lead and zinc, which fell 1%, 5% and 12% respectively in 2002. One might therefore argue that silver still retains some precious metal characteristics, including the ability to rise in value during a crisis. However, it would be unwise to stretch this point too far. After all, the price comparison is a good deal less flattering when the yardstick is gold, which enjoyed a far more substantial 14% increase in 2002. (On an intra-year basis the difference is yet more stark - gold rising 25% while silver recorded a mere 2% gain.)

A review of the supply/demand data provides us with an explanation for silver's resilience last year and some pointers for 2003. One key change for supply

Silver - Its Unique Properties

Silver's unique properties include its strength, malleability and ductility, its electrical and thermal conductivity, its sensitivity to and high reflectance of light and, despite it being classed as a precious metal, its reactivity which is the basis for its use in catalysts and photography. This versatility means that there are few substitute metals for silver in most applications, particularly in high-tech uses in which reliability, precision and safety are paramount.

was the fall in net government sales, chiefly through lower Chinese disposals. The latter's price sensitivity was also important in keeping prices comparatively range bound and this dynamic should continue to operate for the remainder of 2003. Another factor was the modest level of net disinvestment last year. No major pick up in private dishoarding is expected this year, such an event possibly requiring prices closer to \$6. The impact of the slight fall in mine production and the small rise in scrap last year was limited. This year may see another small drop in mine production but again not on a scale to impact prices greatly.

Turning to demand, the weakness of fabrication last year was critical in restraining silver's price gains and this may remain a factor in 2003 on account of the poor economic outlook. Photographic demand will also remain under pressure from the particular weakness of the tourism industry and digital inroads. Partly outweighing fabrication's weakness last year was the small fall in producers' hedge positions though de-hedging is not thought likely to be an important factor in 2003.

In conclusion, this mix of supply/demand factors means silver is unlikely to move substantially outside its 2002 trading range. A move to the downside would require a severe economic downturn or for holders of bullion stocks to dramatically review price targets. Neither of which seems very likely. The upside looks set to be constrained by the weakness of fabrication demand (especially in India) plus the market cap of Chinese stock sales. Nevertheless, silver's residual

World Silver Supply and Demand

(Million ounces)

Change

2001 2002 y-o-y

Supply

Mine Production	589.2	585.9	-1%
Net Government Sales	87.2	71.3	-18%
Old Silver Scrap	182.7	184.9	1%
Producer Hedging	18.9	-	n/a
Implied Net Disinvestment	-	20.9	n/a
Total Supply	878.0	863.0	-2%

Demand

Fabrication			
Industrial Applications	338.1	342.4	1%
Photography	213.9	205.3	-4%
Jewelry & Silverware	286.0	259.2	-9%
Coins & Medals	30.5	31.3	3%
Total Fabrication	868.5	838.2	-3%
Net Government Purchases	-	-	n/a
Producer Hedging	-	24.8	n/a
Implied Net Investment	9.5	-	n/a
Total Demand	878.0	863.0	-2%

Source: GFMS

precious metal status could see prices having some slight bias to the upside in 2003, particularly if gold makes a move and if political and financial tensions were to grow again.

2. Silver Price Developments in 2002

Silver prices rose in a comparatively volatile manner by just over 5% year-on-year in 2002 to \$4.60. This annual average, however, remains low historically; excluding 2001, the last time the average was lower than 2002's was in 1993. In real (dollar) terms, the situation is yet more brutal; (again excepting 2001), the annual average has not been lower this side of World War II.

The year as a whole was dominated by three key forces - investor activity (often in sympathy with gold), changes in the pace of Chinese selling and generally weak fabrication (though 2002 began with a fall driven by a separate cause, the fizzling out of an earlier lease rate squeeze).

Speculative activity was perhaps the main driver for most of the year, certainly for short to mid term moves such as the fund sell off from mid-July to mid-October. In explaining greater investor interest, it is difficult to argue the metal was a strong direct beneficiary of geopolitical, let alone macro-economic, concerns. Interest was instead more the product of the favorable speculative climate that spilled over from the impact of these two factors on gold. It was no coincidence the timing of the gold and silver rallies was broadly the same and it would be hard to argue silver led the way. An important difference between the two was that gold seemingly attracted a fair few longer term 'buy and hold' investors whereas silver appeared to be of interest just to short term players, which made it difficult for silver to hold on to gains.

A perhaps more important reason for silver not being able to hold on to its gains was the far smaller amount of de-hedging than that seen in gold. This made up over 10% of last year's gold demand but for silver, while hedging moved to the demand side, it made up less than 3% of the total.

Another factor specific to the unwinding of silver's gains was sales from Chinese government stocks. Total disposals from this source last year were in fact a little lower than in 2001 (though still substantial). But the acceleration in the rate of these sales as the price reached the \$5 mark in early Summer was critical in

Silver - Trading Details

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.

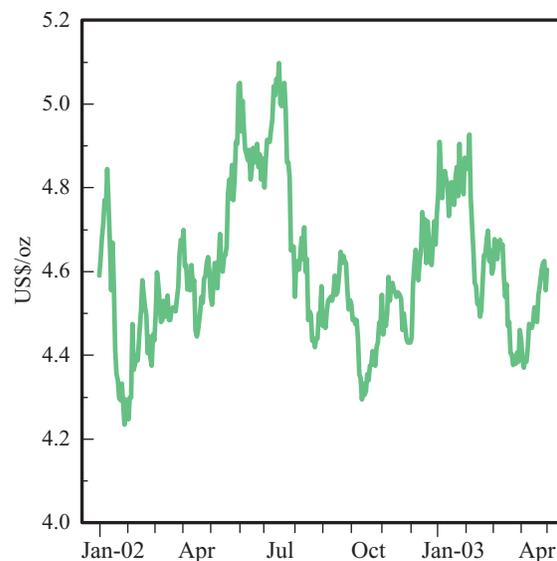
Silver is invariably quoted in US dollars per troy ounce.

turning the market. Similarly, in the fourth quarter when prices fell below \$4.40, a marked slow down in Chinese selling helped stop the market sinking further.

The final key area for price sluggishness relates to fabrication demand which last year fell by over 3%, chiefly as a result of the slowdown in world GDP growth and the price-linked drop of around 23% in Indian demand. Silver also seemed to have fewer end users willing to take metal on dips in the market. In part this is due to silver being less dependent on the price responsive markets. Middle Eastern fabrication, for example, represents less than 2% of global silver demand but around 15% of total gold demand.

So far in 2003, silver prices have continued to move largely at the whim of short term speculators though gold's collapse and further Chinese selling also contributed to silver's descent from over \$4.90 in early January to back under \$4.40 by late March. Fabrication certainly did not stand in the way of this fall, nor explain April's modest recovery, as this source of demand has remained weak.

The Silver Price since January 2002



3. Supply - Developments in 2002

- Total supply declined by 1.7% last year, to reach 863.0 Moz (26,843 t).
- The fall was concentrated in government sales (specifically from China) which dropped 18% of 16 Moz (500 t).
- Mine production fell by 0.6%, with sharp declines in the United States and Chile outweighing strong growth in Australia, Canada and Russia.
- Scrap supply increased marginally to reach 184.9 Moz (5,751 t).
- A small amount of net disinvestment occurred.

Mine production in 2002 was some 0.6% or 3.3 Moz (103 t) down on the level of 2001. Output fell in the Americas as well as in Asia and Africa.

Mexico maintained its position as the world's number one producer, with higher output at Industrias Peñoles (the world's largest silver producer) resulting in a slight rise in that country's production. Sharp declines were recorded in the United States and Chile largely due to lower by-product silver production at copper mines. The decline in the United States was

exacerbated by the closure of the McCoy/Cove gold mine in Nevada. Partially offsetting these declines were strong performances from Australia, Canada and Russia which recorded output increases of 5%, 8% and 20% respectively.

Weak global base metals prices contributed to a 3% reduction in silver production from lead and zinc and a 1% decline in silver output from copper mines. The declines in output from lead and zinc mines also relates to a structural reduction in concentrate production due to reserve exhaustion, a situation that was particularly evident in Europe following the closure of mines at Los Frailes in Spain and Laisvall in Sweden. Silver by-product from gold mines also declined last year, largely due to lower grades and mine closures in the United States and Chile.

In contrast to the decline in silver production as a by-product, silver output from primary mines rose by 8% to reach 161.0 Moz (5,008 t). A major factor contributing to this was a 27% increase in production from Cannington in Australia, the world's largest silver producing mine.

At the moment, it appears silver output will fall again in 2003 as base metals producers are forecast to further scale back their operations and little new

Silver Supply - Its Components

Mine production is unsurprisingly the largest component of silver supply. It normally accounts for a little under two-thirds of the total (last year was slightly higher at 68%).

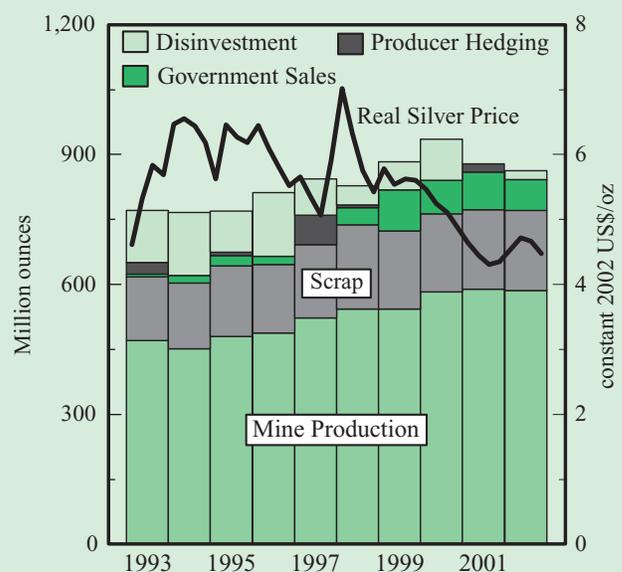
But mine production is not the sole source - the others being scrap, disinvestment, government sales and producer hedging. Scrap, or more properly, "old scrap", is the silver that returns to the market when recovered from existing manufactured goods or waste. This could include old jewelry, photographic chemicals, even discarded computers (but it excludes silver that is returned untransformed by the manufacturing process - so called "process scrap"). Old scrap normally makes up around a fifth of supply.

Disinvestment and government sales are similar in that both comprise the return to the market of old coins or bars respectively by the private sector or governments. It is worth bearing in mind that these sources may not add to supply every year on a net basis. In some years, individuals have been net investors (as appears to have been the case in 2001) and governments net buyers (as occurred most recently in 1997).

The final, though normally minor, component of supply is

producer hedging or the early sale by mining companies of future production, a form of "accelerated supply". Hedging may also not appear every year as an element of supply on a net basis as it can contribute to demand (the case in 2002).

World Silver Supply

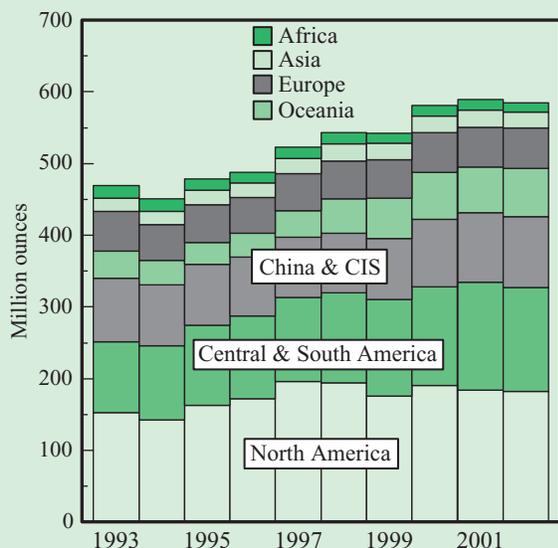


Mine Production - Where It Comes From

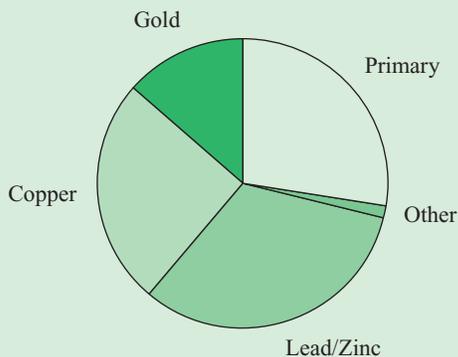
Geographically, just over half of mined silver comes from the Americas with Mexico, Peru and the United States, respectively, the first, second and fourth largest producing countries. The third largest is Australia.

Of greater market relevance, however, is the type of mine that silver comes from - most silver emerges as a by-product of the mining of other metals. Only a little over a quarter of output comes from mines where the main source of revenue is silver, a so called primary silver mine. As shown in the graph below, much more comes from lead/zinc mines. This is important as the price of silver will only have a direct impact on primary output, which means the amount of silver mined is more a function of the price of other metals.

World Silver Mine Production



Silver Mine Production by Source Metal (2002)



Source: GFMS

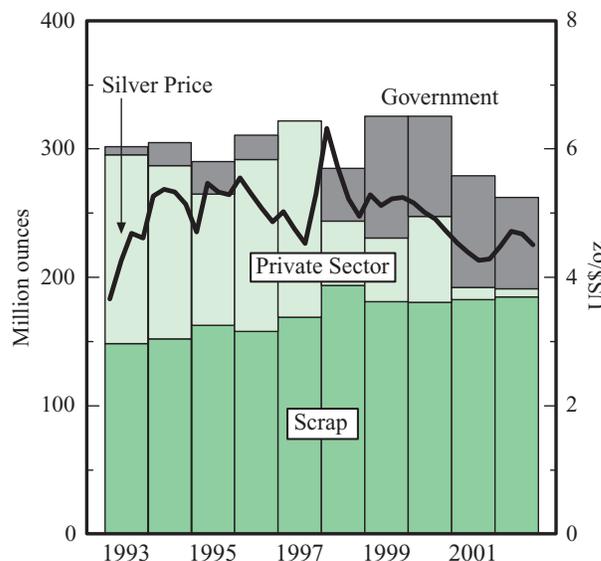
additional capacity is scheduled to come on stream. However, potential increases in Russia (where mining at the giant Dukat mine started in December 2002) and China could alter the outlook.

Scrap supply increased marginally last year, up by 1.2%, to reach 184.9 Moz (5,751 t). An 8% decline in scrap generation in the United States (that was in fact related to abnormally high scrap in 2001) was offset by an increase in shipments of old Maria Theresa Taler coins from the Middle East.

Net **government sales** fell sharply in 2002. The reduction was due to Chinese sales which declined from 68 Moz (2,100 t) in 2001 to 51 Moz (1,600 t) last year. 2002's decline in Chinese sales was, we believe, more related to the low silver price than exhausted stocks (indeed we have revised upwards our estimate of outstanding Chinese stocks). Net sales from other countries were dominated by the United States, where stocks were used to supply the bulk of the US Mint's silver coinage programs.

The market returned to a small level of net implied **disinvestment** in 2002. The implied net investment/disinvestment number is a residual figure and should be treated as indicative rather than actual. Indeed the small absolute size of this number (20.9 Moz or under 3% of total demand) suggests a lack of commitment on the part of investors rather than a return to wholesale selling. Moreover, the small level of net disinvestment does not necessarily imply a lack of investors in the market - indeed turnover and open interest on the Comex increased sharply last year.

Supply from Above-ground Stocks



4. Demand - Developments in 2002

- Total fabrication fell by 3.5% in 2002 to 838.2 Moz (26,071 t), its lowest level since 1998.
- Jewelry and silverware suffered most, slipping 9% to 259.2 Moz (8,061 t).
- Photographic demand dropped 4%, its third consecutive annual decline, to 205.3 Moz (6,386 t).
- Industrial demand in contrast rose a fraction, partially recovering to 342.4 Moz (10,651 t).
- Coin and medal fabrication rose 3% to 31.3 Moz (973 t), mainly due to US gains.
- Hedging moved to the demand side with the net producer book falling by 24.8 Moz (772 t).

The 3.5% fall in **total fabrication** in 2002 was primarily the result of the 9% drop in jewelry and silverware offtake which in turn was overwhelmingly due to a slump in Indian demand. In fact, if India were excluded from the global picture, total fabrication last year actually rose by 1%. However, on a non-India basis, total fabrication in 2002 was still 7% lower than in 2000. This highlights the extent to which other factors were at work, blocking a stronger recovery from the 2001 slump taking place.

The prime driver of the fall in 2001 fabrication was the 10% collapse in **industrial** offtake. The fact that this component rose only just over 1% in 2002 therefore shows the extent to which it has still to recover. But even here India has the power to distort. On a non-India basis, industrial fabrication fell by 13% in 2001 but then rose by a more healthy 4% last year. That it remains substantially below its 2000 peak illustrates how the general slowdown in the world economy and the specific collapse in such industries as IT and telecommunications are still hurting offtake. The start of a healthier recovery last year was mainly the result of an end to and partial reversal of 2001's damaging destocking, for example in the United States, and through robust demand for consumer durables in East Asia. The 13% slump in India's industrial demand (chiefly non-traditional quasi-industrial products) in 2002 was mainly due to a quite separate factor, the weakness of its agricultural sector.

This weakness and silver's price volatility were the key contributors to the close to 30% fall in India's **jewelry & silverware** fabrication in 2002. As before, this performance masks improvements elsewhere and, excluding India, this category of fabrication rose by

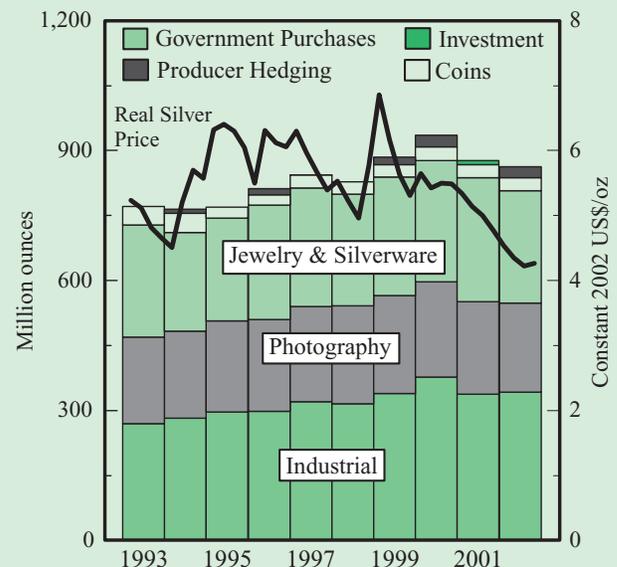
1% last year (versus the 9% global fall). Much of this gain was concentrated in Thailand and then China, the CIS, Mexico and Turkey. Their gains were due mainly to buoyant jewelry consumption and also to market share gain, through low labor cost advantages, from European producers, the only other major jewelry fabricating region to show a fall last year. The health of jewelry consumption (outside of India) last year was partly due to the swing in fashion in favor of silver though there was also an element of consumers trading down from gold in economically depressed times. In contrast, silverware consumption is again estimated to have fallen sharply, chiefly through ongoing secular changes to consumer spending patterns.

Silver Demand - Its Components

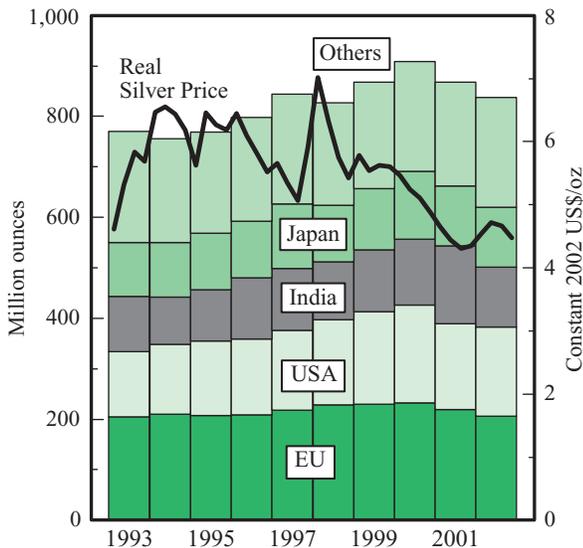
Demand is dominated by three main categories: jewelry and silverware; industrial and photographic fabrication. These accounted respectively for 30%, 40% and 24% of demand last year. These shares have been broadly stable though photographic's share has slipped a little over the last decade. Coin demand, the final part of fabrication offtake, has also seen a slight fall in its share of the total.

The remaining elements of demand, government purchases, producer hedging and investment, are alike in that, on a net basis, they may not feature every year on the demand side. The official sector, for example, has not generated significant net purchases since 1992, whilst investment's appearance on the demand side in 2001 was the first in a decade. Net hedging contributed to demand last year though it added to supply in 2001.

World Silver Demand



World Silver Fabrication



Photographic demand for silver fell by 4% in 2002 to 205.3 Moz (6,386 t). This was its third consecutive annual drop which could be taken as a sign that the decline has now become structural due to digital inroads. This is most marked in Japan (whose offtake fell by 7% last year) but it is also important in North America and Europe. Outside of these areas, silver nitrate consumption is faring better, in some cases rising. The fall in photographic demand in 2002, however, was also due to cyclical or one-off factors such as the sluggish world economy and a terrorism derived reluctance to travel.

The final sector of fabrication, **coins & medals**, rose by 3% last year to 31.3 Moz (973 t). This was primarily the result of higher US bullion coin fabrication which offset that country's lower commemorative minting and the decline in European fabrication, in particular German output.

Producer hedging switched to the demand side of the balance in 2002 as a result of the 24.8 Moz (772 t) cut in the net hedge position. Given that 2001 saw modest levels of net hedging, the combined swing from that year stands at 43.7 Moz (1,359 t). This left the global hedge book at end 2002 at 72.4 Moz (2,253 t). The drop in hedging in 2002 was mainly due to a collapse in the open options positions. This was chiefly a function of producers having taken out so many options contracts in fourth quarter 2001 when the market was in backwardation. This options change more than offset the small addition to producers' forward positions, a good chunk of which were added in the second quarter of 2002 when prices were firmer.

Silver's Fabrication Uses

Industry: Silver can be found in many electrical applications, particularly conductors, switches and contacts. Contacts provide junctions between two conductors that can be separated and through which a current can flow, and account for the largest proportion of electrical demand. The main uses of silver in electronics include pastes for silk-screened circuit paths, multi-layer ceramic capacitors, silvered film in electrically heated automobile windshields, and in conductive adhesives.

The ease of electro-deposition of silver, mainly from the salts silver cyanide and potassium silver cyanide, accounts for its widespread use in plating.

The joining of materials through silver brazing or soldering alloys is facilitated by the metal's fluidity and strength. These alloys are used widely in applications such as refrigeration equipment, automobiles and aerospace.

Miscellaneous industrial uses for silver include mirrors, batteries, as a catalyst in numerous chemical reactions and as a bactericide and algacide.

Jewelry and Silverware: Silver possesses working qualities similar to gold, enjoys greater reflectivity and can achieve the most brilliant polish of any metal. Pure silver (999 fineness) does not tarnish easily but to make it durable for jewelry, it is often alloyed with small quantities of copper. It is also widely used with base metals in gold alloys. Sterling silver, at a fineness of 925, has for long been the standard for silverware. Plated silverware usually has a coating of 20-30 microns, while jewelry plating is only 3-5 microns.

Photography: The photographic process is based on the presence of light-sensitive silver halide crystals, prepared by mixing a solution of soluble silver, usually silver nitrate, with a soluble alkali metal halide such as sodium chloride. Within this sector, the radiography market is now the largest end user. Just a little smaller is consumer demand with the printed images taking slightly more silver than that used in the films themselves. The graphic arts account for much of the remaining offtake. Photographic film manufacturers demand very high quality silver.

Coins: Historically, silver was more widely used in coinage than gold, being in greater supply and of less value, thus being practical for everyday payments. Most nations were on a silver standard until the late 19th century with silver coin forming the main circulating currency. But after the gold rushes, the silver standard increasingly gave way to gold. Silver was gradually phased out of regular coinage, although it is still used in some circulating coins and in bullion coins for investors.

Copies of the full *World Silver Survey 2003* report and previous editions can be obtained by contacting The Silver Institute at the address or telephone number below. For copies outside of North America, contact GFMS at the address beneath that. The standard price per copy is US\$175, €190 or £115.

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Notes:

Units used:

Supply and demand data are given in units of million troy ounces (Moz) rounded to one decimal place and then, bracketed, in units of tons (t) rounded to the nearest whole number. 1 Moz = 31.103 t (metric tons), 1 tonne = 32,151 troy ounces, 1 tonne = 1,000,000 grams (g)

Terminology:

“-” = not available or not applicable, “y-o-y” means year on year, “dollar” refers to the US dollar unless otherwise stated, “implied net (dis)investment” is the residual derived from combining all the other GFMS data on silver supply/demand as shown in the table on Page 2.

Prices:

Unless otherwise stated, US dollar prices are for the London Silver Market fixing.

Table Rounding:

Throughout the tables, totals may not add due to independent rounding.

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The data on which this report is based has been obtained by The Silver Institute and GFMS from sources which are generally believed to be reliable. However, this does not guarantee complete accuracy in the information presented here. It is in the nature of the precious metals markets that estimates for a number of components must be made on the basis of incomplete information. A number of figures may have been revised from last year's World Silver Survey in the light of new information. The opinions expressed here represent those of the authors of the report at the time of writing.

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