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WORLD SILVER SURVEY 2005

THE SILVER INSTITUTE

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World Silver Survey 2005

Produced for The Silver Institute
by GFMS Limited

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Coeur d' Alene Mines Corporation is the world's largest primary silver producer and a growing, low-cost gold producer. Producing properties include two of the largest silver mines in the United States, and two new, expanding low-cost mines in southern Chile and Argentina. In April, 2005 the Company also acquired the silver production and reserves of the Endeavor mine in Australia. In 2004, Coeur produced 14.1 million ounces of silver and 129,000 ounces of gold at an average cash cost of $3.65 per ounce of silver. The Company has no silver or gold production hedged. Through an aggressive exploration program, Coeur silver reserve levels increased by 12% in 2004 to 196 million ounces, a company record. The company also has 1.4 million ounces of gold reserves. An expanded exploration program, focused primarily at existing operating mines, is continuing in 2005. Coeur also has two 100%-owned development projects nearing production, in Bolivia and Alaska, which are expected to increase company-wide silver production by 66% and gold production by 77% from current levels in 2006. Coeur entered 2005 in its strongest financial position in more than a decade, with $322 million in cash, cash equivalents and short-term investments and no net debt. Coeur common shares are traded on the New York Stock Exchange (NYSE) under the symbol CDE and the Toronto Stock Exchange (TSX) under the symbol CDM.

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Noranda is a leading copper and nickel company with investments in fully-integrated zinc and aluminum assets. The Company's primary focus is the identification and development of world-class copper and nickel mining deposits. Noranda is also a major recycler of secondary copper, nickel and precious metals. It employs 15,000 people at its operations and offices in 18 countries and is listed on the New York Stock Exchange and the Toronto Stock Exchange (NRD).

The ***World Silver Survey*** has been published annually by The Silver Institute since 1990. Copies of previous editions can be obtained by contacting The Silver Institute at the address and telephone number on the opening page. For copies outside of North America, contact GFMS at the address on page 6.

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The data on which this report is based has been obtained by The Silver Institute and GFMS Limited 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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Table of Contents

Tables

Focus Boxes

This is the eleventh annual survey of the world silver market to be produced for The Silver Institute by GFMS Limited, the London-based analysts of global precious metals markets. The information contained here is based in part on the analysis of the GFMS database of international trade statistics, company report data and other public-domain information. But more importantly, it is also based on a series of interviews with the industry's main players, carried out every year by the GFMS team of analysts and consultants, which provide the essential data to allow the compilation of reliable estimates for world supply and demand.

GFMS is grateful to the many miners, refiners, bullion dealers, bankers and fabricators throughout the world who have contributed their time and information to ensuring that the picture of the industry described in the *World Silver Survey* is as complete and accurate as possible.

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Units used:

supply and demand data are given in units of million troy ounces (Moz) rounded to one decimal place.
1 Moz = 31.103 t (metric tons)
1 ton = 32,151 troy ounces
1 ton = 1,000,000 grams (g)

Terminology:

"-" = not available or not applicable
0.0 = zero or less than 0.05
"dollar" refers to the US dollar unless otherwise stated.

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.

1. Summary and Outlook

Silver's stunning performance in 2004 – the annual average price rising 36.5% to a 17-year high of $6.658 – raises several important questions. Chief among these is whether last year's development signals a fundamental change in the market and in the price level or merely a temporary blip up from the metal's largely unspectacular record since the late 1980s? GFMS' view is that changes in silver's supply/demand balance have provided a foundation for higher prices, although the absolute levels reached over the last eighteen months or so owe more to temporary factors and therefore may not be sustainable in the long run.

An important foundation for the rally in silver has been the strength of fabrication demand. Even though fabrication fell by 2% last year, this was an outstanding result in the light of the increase in silver prices. Furthermore, excluding the one key price sensitive area of demand - Indian jewelry & silverware fabrication - offtake of silver actually rose last year in spite of the drag from what is now clearly a secular decline in photographic end-use. Looking ahead, even though a slowdown in world GDP growth could cloud the picture, the underlying trend in fabrication seems to be positive, particularly if one bears in mind the scope for some recovery in Indian jewelry & silverware demand from the very low levels reached in 2004.

The supply side has also seen some supportive developments for the price. Scrap supply is tending to decline independently of the price because of lower photographic demand. Government sales dropped last year, as the flow of Chinese silver was reduced. This could well herald a period of reduced pressure on the price from government sales, in spite of occasional contributions from the likes of Russia (as last year) or the Indian program of stock disposals (a factor since early 2005). In contrast, and tempering the "good news" on the supply side of the equation, global mine production rose by 3.8% or 23.2 Moz (720 t) last year. Furthermore, supply from this source is expected to increase further and faster from approximately late 2006 onwards. In the

Table 1 - World Silver Supply and Demand (million ounces)

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Supply										
Mine Production	483.0	491.0	520.7	544.0	548.5	587.3	611.8	607.4	611.2	634.4
Net Government Sales	25.3	18.9	-	40.6	93.1	75.2	71.7	54.9	88.2	61.7
Old Silver Scrap	162.9	158.3	169.3	193.9	181.2	180.4	182.4	187.1	183.6	181.1
Producer Hedging	7.5	-	68.1	6.5	-	-	18.9	-	-	2.0
Implied Net Disinvestment	89.9	142.8	85.5	44.0	61.1	88.5	-	14.1	-	-
Total Supply	**768.6**	**811.1**	**843.6**	**829.1**	**883.9**	**931.4**	**884.8**	**863.5**	**883.1**	**879.2**
Demand										
Fabrication										
Industrial Applications	295.7	297.7	320.8	316.4	339.2	375.4	336.3	340.1	350.5	367.1
Photography	209.9	210.1	217.4	225.4	227.9	218.3	213.1	204.3	192.9	181.0
Jewelry & Silverware	236.9	263.7	274.3	259.4	271.7	278.2	287.1	262.7	274.2	247.5
Coins & Medals	26.1	25.2	30.4	27.8	29.2	32.1	30.5	31.6	35.8	41.1
Total Fabrication	768.6	796.8	842.9	829.1	867.9	904.0	867.0	838.7	853.4	836.7
Net Government Purchases	-	-	0.7	-	-	-	-	-	-	-
Producer De-Hedging	-	14.3	-	-	16.0	27.4	-	24.8	21.0	-
Implied Net Investment	-	-	-	-	-	-	17.8	-	8.7	42.5
Total Demand	**768.6**	**811.1**	**843.6**	**829.1**	**883.9**	**931.4**	**884.8**	**863.5**	**883.1**	**879.2**
Silver Price (London US$/oz)	5.197	5.199	4.897	5.544	5.220	4.951	4.370	4.599	4.879	6.658

meantime, however, growth in mine production is unlikely to have too much influence on the price outlook, except via the expectations of investors and speculators.

It is, of course, this group – the investor community – that has driven silver prices to beyond what would have been achieved given the "improvement" in the other supply/demand factors discussed above. Investment demand for the metal has been the dominant factor behind silver's advance since late 2003. The sustainability of this element of the equation is therefore key to the trajectory of the silver price over the next few years. Yet even though GFMS has its doubts about the long-term contribution to be expected from this factor, we are of the view that, at a minimum, over the next year it will continue to be supportive of high silver prices. This is because the reasons behind the surge of investor interest in the metal largely will continue to apply for at least the next 12 months or so.

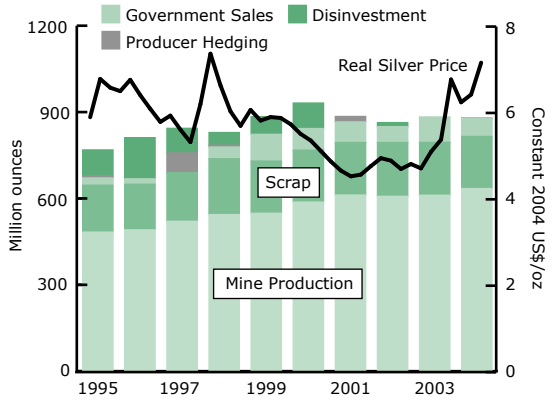
First, we see continued growth in investor interest in commodities as an asset class. Even if in the short run there could be some setbacks to commodity prices if and when the world, and in particular the Chinese, economy slows, the trend growth in investor dollars being committed to commodities is set to continue. Second, in our view, silver will, in any case, be driven more by developments in gold than in, for example, base metal prices. Historically, the correlation is much closer to the former and GFMS is forecasting further advances in gold prices over the next year. Third, silver's upward price trend and volatility should continue to attract speculative interest both in futures and in the over-the-counter market from funds and high net worth investors. Even though silver lacks the traditional safe haven qualities of gold, for some aggressive investors it is viewed as a more highly leveraged proxy for the yellow metal. Finally, the improvement in silver's supply/demand fundamentals is having a positive impact on market sentiment and behavior. We expect this to continue providing support for the price on dips and encouraging longs to maintain their core positions.

Supply

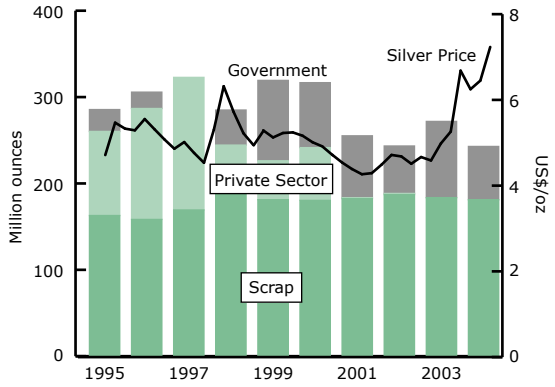
- ***Global mine production registered a 4%, or 23.2 Moz (720 t), rise year-on-year to reach 634.4 Moz (19,731 t).***
- ***A significant fall in the release of silver from Chinese stocks saw net government sales decline by 30% year-on-year.***
- ***Scrap supply fell to a four year low of 181.1 Moz (5,633 t).***
- ***Higher prices encouraged producers to increase their hedge cover, generating an estimated 2.0 Moz (62 t) of accelerated supply.***

Mine production registered strong growth in 2004 with an estimated 23.2 Moz (720 t) of additional supply. The significant rise took global output to a record high at 634.4 Moz (19,731 t). Growth was concentrated in the primary sector, with increased volumes generated at lead/zinc and copper operations heightening the gains. Silver as a secondary product of gold mining was the only category to register a fall, with output slipping by 2% year-on-year. Regarding the distribution of last year's rise, the world's four largest silver producers, namely, Mexico, Peru, Australia and China, provided the bulk of

World Silver Supply



Mobilization of Above-ground Stocks



the increase. Improvements in Russia and, to a lesser extent, in Chile further boosted the figure.

Peru and Chile both benefited from the restoration of idled capacity in the copper sector with higher throughput at BHP Billiton's Tintaya and Escondida mines. In addition, a return to the normal mine plan at Peru's Antamina following the removal of lakebed sediments in May 2004 helped lift output at the mine by 19% year-on-year. In Australia "congestion" issues at Cannington, the world's largest silver producing mine, were largely resolved with mining rates and throughput both significantly improved and output, despite a modest drop in grade, rose by 20% to reach 46.0 Moz (1,428 t). Lastly, the acceleration of the development of the silver rich lead/zinc ores in northeast China, and further gains at Russia's Dukat and Lunnoye operations, complemented by new output at Khakanjinskoye, helped lift respective output in these countries by 9% to 63.8 Moz (1,985 t) and by 10% to 37.9 Moz (1,180 t).

Compensating for a part of the growth, Kazakhstan, Bolivia and Indonesia, among others, suffered output declines. Mine closures played a role in the year-on-year losses in Bolivia and Indonesia, with results in the latter aggravated by operational difficulties at the giant Grasberg copper-gold mine. Elsewhere, there were modest falls in Canada, Sweden and Poland.

At 61.7 Moz (1,920 t), **net government sales** in 2004 registered a 30% year-on-year decline. The fall was mainly driven by a significant reduction in sales from Chinese stocks, which once again made up the bulk of the total, with much of the balance accounted for by higher sales from Russia. Elsewhere, European sales saw a marked decline, while India announced its intention to sell part of its silver stocks, starting in 2005.

The fall in global **scrap** supply, a slight decline of 1.3% may look surprising, given the 36.5% rise in the dollar silver price. However, the ongoing drop in photographic fabrication, overwhelmingly driven by digital penetration of silver halide markets in developed countries, was mirrored in a significant fall in such countries' photographic scrap. This more than offset higher volumes coming from the other main sources of supply, namely the industrial sector and the jewelry industry. Industrial scrap was higher last year, largely as a result of tighter environmental legislation, which has facilitated additional recycling. In addition, the higher silver price led to double-digit increases in jewelry & silverware scrap from some regions.

Producer hedging activities generated an estimated 2.0 Moz (62 t) of supply in 2004. The modest increase in delta-adjusted terms left total outstanding producer positions at end-2004 at 53.5 Moz (1,665 t), equivalent to roughly 8% of annual mine production. In nominal terms, volumes increased by 15.0 Moz (467 t), with the year-on-year gains mostly concentrated into forward sales and purchased put option contracts. The muted response of the book year-on-year in delta-adjusted terms was largely due to the low delta against the volume of sold calls, the bulk of which, at end-2004, were out-of-the-money.

Demand

- ***Total fabrication in 2004 fell by 2% to a six year low of 836.7 Moz (26,023 t).***
- ***Industrial offtake rose by 5% to 367.1 Moz (11,419 t), with electronics spearheading the gains.***
- ***Jewelry & silverware fabrication fell by almost 10% to 247.5 Moz (7,698 t), a nine year low.***
- ***Photographic demand fell for the fifth year in succession, to 181.0 Moz (5,629 t).***
- **Coin & medal *offtake increased by 15% in 2004 to a ten year high of 41.1 Moz (1,277 t).***
- ***Implied net investment rose by around a factor of five to 42.5 Moz (1,323 t).***

Total fabrication slipped by just under 2% to 836.7 Moz (26,023 t), its lowest level since 1998. The bulk of the losses were seen in jewelry & silverware, chiefly thanks to a slump in India (indeed, total fabrication *excluding* India actually rose by almost 4%). These losses plus a further decline for photographic offtake more than outweighed the sizeable gains for industrial and coin fabrication.

Last year's acceleration in global GDP growth fed through to a solid 5% increase in **industrial fabrication** to 367.1 Moz (11,419 t), or only a little under its peak in 2000 at the height of the 'tech bubble'. Most countries saw growth though India again saw a substantial fall due to losses in its semi-industrial areas. Much of the overall growth in industrial fabrication was driven by a buoyant **electronics** sector whose demand rose by almost 14% to 166.5 Moz (5,177 t). This was its third successive year of

growth, with offtake surpassing the previous record level set in 2000. Around three-quarters of these gains were attributable to Japan and the United States, as a result of booming end-use in a wide variety of new areas such as plasma display panels and more traditional areas, for example contacts and chip registers. People might have been expecting faster growth from China given media coverage of relocation of manufacturing capacity to that country. However, this has often only involved assembly using silver components fabricated elsewhere (for example fuses) or the focus has been on lower-tech areas of the industrial category, for example **brazing alloys**. In fact last year, China's 11% growth in this area meant that its share of global fabrication of brazing alloys (which rose 2% to 38.5 Moz or 1,197 t) climbed to a quarter.

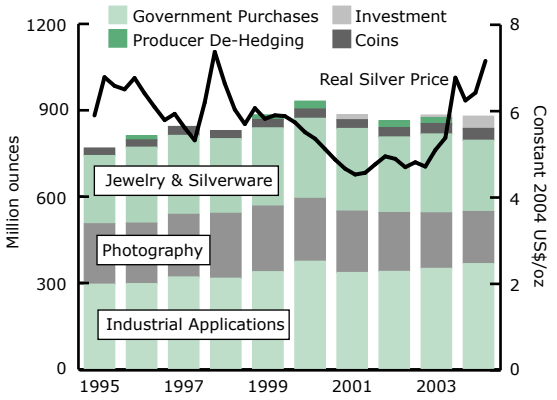
Last year, saw another decline in **photographic** fabrication, marking the fifth year in a row of falling volumes. The 6% decline may look modest, given widespread reports of the demise of this sector, but the decline within the industry has been far from uniform. Without doubt, digital products have made substantial inroads, notably, into the graphic arts and consumer film divisions. This was particularly telling in East Asia, where Japan, the second largest producer of silver nitrate for photographic uses, saw an 8% fall in 2004, the largest percentage decline the country's photographic industry has experienced. In other areas, paper consumption saw only a modest reduction and this was a contributory factor behind the "only" 5% fall in Europe, whereas every other major producing region saw declines in excess of 6%. The one positive note last year was in the motion picture sector, which may have actually seen higher silver consumption last year.

Jewelry & silverware fabrication fell a hefty 10% to 247.5 Moz (7,698 t), a nine year low. The decline was overwhelmingly due to the 32.7 (1,018 t) slump in Indian offtake, itself a product of the 30% rise in the local price and a poor monsoon. Indeed, if we were to exclude India, global jewelry & silverware fabrication would have risen by 3%. The countries that accounted for the bulk of this increase were Thailand and then China, chiefly on the back of jewelry export growth. It was this successful penetration of many markets in Europe that was largely responsible for the slight dip in that continent's jewelry fabrication, despite good signs of its jewelry consumption continuing to grow (if more slowly than previously). Global silverware fabrication looks to have fallen slightly faster than jewelry, as quality issues further undermined Indian demand and its secular decline in consumption continued in most western markets.

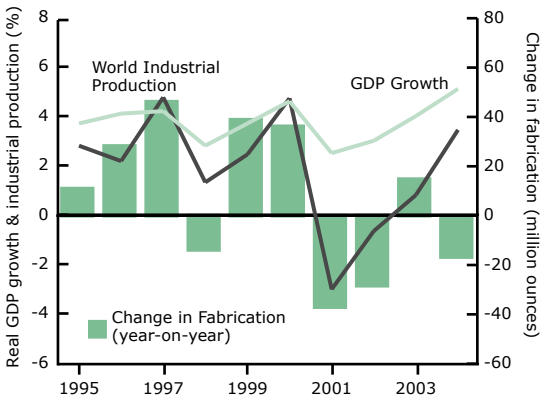
Implied net investment rose by almost 400% last year to a substantial 42.5 Moz or 1,323 t (please note that our previous estimate for 2003 of slight disinvestment has now been amended to modest *in*vestment). The boom in investor activity last year was mainly driven by funds operating on futures exchanges and considerable buy side interest from high net worth individuals, chiefly in the over-the-counter market. Their rationale for involvement was largely based on a belief that silver would act as a usefully geared home for capital to ride the coat-tails of expected rallies in gold and the base metals at a time of anticipated dollar weakness.

Coin & medal fabrication rose by almost 15% last year to 41.1 Moz (1,277 t). Much of the increase was due to increased minting of commemorative coins in Portugal, Spain and Canada plus higher US proof set demand.

World Silver Demand



Fabrication Demand and World Economic Indicators



2. Silver Prices

- ***Silver prices in 2004 averaged $6.66, a sizeable rise of 36% year-on-year and a 17-year high.***

- ***A surge in investment drove much of the rally though a fall in net government sales and higher industrial fabrication were also important.***

The silver price staged a dramatic rally last year, rising a hefty 36% to $6.658 basis annual averages. This was substantially greater than the 13%, 22% and 15% gain that gold, platinum and palladium respectively registered. Silver's intra-year gain was more modest at 14%, pointing out the strength of the two main corrections last year in April and December (and how low prices had been prior to the late 2003 rally). The rally also lifted the annual average out of the broad $4.50-$5.50 band in which it had become stuck for the last ten or so years.

In contrast to gold, the term bull market can be properly applied to silver as the increase in its price translated very clearly into other currencies. Euro silver for example rose by over 24% or almost ten times as fast as euro gold. Perhaps more important was the 30% rise in the rupee price, with its obvious deleterious implications for physical offtake. The non-dollar prices in the table below focus more on the consumption side of the picture, yet the situation does not alter if we turn to producer prices; the annual average in Mexican peso, Peruvian sol and Australian dollar terms (the currencies for the top three producers) rose respectively by 42%, 35% and 21%.

A rosy take on the market also stands up to a review of prices in real terms, with last year's annual average at a ten year high on this basis, and one has to return to 1989 to see a real price more than 5% above last year's.

As introduced above, the most dramatic feature in 2004 was the April spike to a high for the year of $8.29 (a price last surpassed in 1987) and the collapse back to a low for the year in May of $5.495. The second main feature was the steadier rally that then unfurled taking the price back over $8 by December, before a lesser but still substantial correction left the market end year at just under $7.

US$ Silver Price

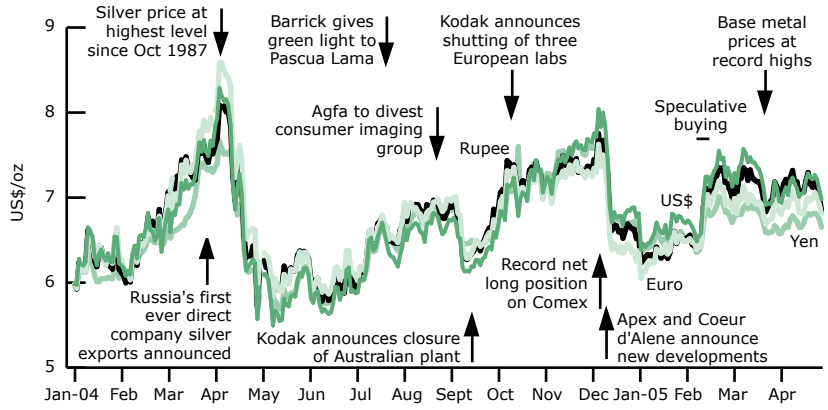
	1974	1984	1994	2004
Annual Average	4.672	8.145	5.285	6.658
Maximum	6.761	10.110	5.748	8.290
Minimum	3.271	6.220	4.640	5.495
Range:Average	74.7%	47.8%	21.0%	42.0%

The Silver Price in Other Currencies in 2004

	US$/oz	Euro/kg	Rupee/kg	Yen/10g
Annual Average	6.658	172.1	10,602	231.2
Change y-o-y	36.5%	24.2%	30.3%	27.5%
Maximum	8.290	219.3	12,310	278.2
Minimum	5.495	149.0	9,030	197.0

London Silver Market: Spot Price

US$/oz; other currencies reindexed to 2nd January 2004



The change in annual average lease rates last year varied sharply according to length of tenure. The average three month rate fell by just over 60% to a very weak 0.10%, while the six month rate was essentially flat at 0.41% and yet the 12-month rate rose by over a third to 0.92% (though even this rate is still low historically). Despite these differences, all rates behaved in a fairly similar fashion during the course of the year, moving broadly sideways in an erratic fashion through to mid-June, before sliding steadily to late September and then fitfully recovering to the year end. The mid-year slide, particularly for the short end, is believed to have been caused by a fall in industrial borrowing. The fourth quarter rally on the other hand (most pronounced for the 12-month rate) is thought largely a product of the swing to hedging by producers, which was concentrated in the final months of the year.

Given the dramatic gains and losses seen during the March/April price spike, it should come as little surprise that the second quarter saw the highest price volatility within the year and that the annual figure for 2004 almost doubled in comparison to 2003.

Market Analysis

By some margin, the most important of all the factors driving the price last year was investment, in particular as regards day-to-day moves or medium term developments such as the March/April price spike. Not only was the absolute change for investment the greatest of all the components of the supply/demand balance (basis the swing in implied net investment) but the net total masked

Volatility (US$ Price) - Annual Averages*

	2001	2002	2003	2004
Actual - 1 year	16%	19%	20%	39%
Implied - 1 month	17%	21%	22%	34%
Implied - 3 months	16%	19%	21%	33%
Implied - 1 year	16%	18%	19%	30%

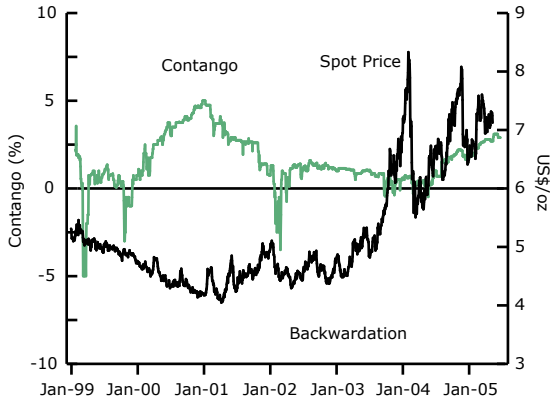
*implied statistics source: UBS

a considerable amount of changes in ownership within the investor community. This can be significant as it should always be remembered that net investment could be zero yet theoretically still bring about a major rally. This would occur as the eagerness of one buyer drove the price up to a point at which another investor was quite happy to take profits and sell. This is believed to have been quite common during the rally in March.

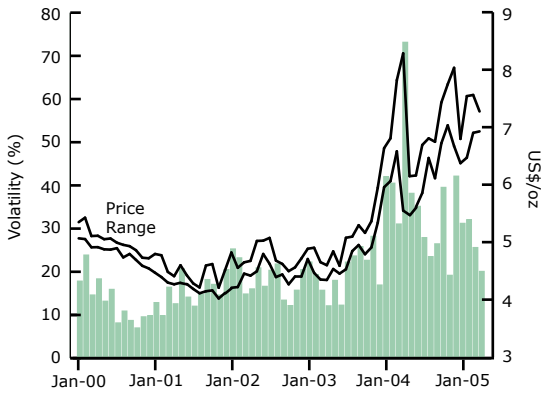
Investment last year remained dominated by hedge funds and commodity trading advisors, with much of their activity taking place on futures exchanges. The overlay of the Comex net non-commercial long (a proxy for the funds) on a price chart shows a very clear link between the two for much of the year. The chief exception to this was in the first quarter of 2004 when the 'fund' long scarcely moved higher yet the price rallied around $2. This is attributed to the focus of investment at the time being squarely placed on the over-the-counter market. It also highlights how at times other types of investors, most obviously high net worth individuals, though small in number, could be hugely important.

The rationale for investor involvement was largely based on interest in commodities in general remaining very much in vogue. This in turn mainly stemmed from people

London Spot Price and 3-month Contango



Daily Silver Price Volatility



still thinking there was some mileage left in commodities' front running of recent years' acceleration in global GDP growth and as 'alternative' investments were seen to remain attractive in a time of potential dollar weakness. Silver has never really enjoyed the 'safe haven' status that gold possesses. However, its linkage to gold and the base metals meant silver was often an attractive home for speculative capital since it was perceived as likely to ride the coat-tails of any rally in these other markets. These relationships were clearly illustrated last year with the March/April price spike shadowing boom/bust conditions in the base metals complex and silver's fourth quarter price rise gaining support from that period's gold rally (and dollar slide).

In commentary during the year, much was often made of the support that the silver market was receiving from industrial demand. This may seem slightly contradicted by the modest scale of its increase (just under 5%), yet its timing boosted its significance. Industrial offtake was at its strongest during the first half and this did much to halt the slide in prices in May. It cannot, however, be held responsible for the March/April rally as this sector's purchases would be likely to have been reined in and/or postponed when prices were looking excessive and frothy.

A related performance was also put in by the jewelry & silverware sector. While its total demand fell quite substantially, the bulk of any losses occurred as Indian buying dried up when prices were viewed as unsustainable. As soon as the market returned to 'fair' levels (particularly during the May/June window of sub-$6 prices), its offtake recovered strongly, again assisting the market to recuperate from the speculative bail out.

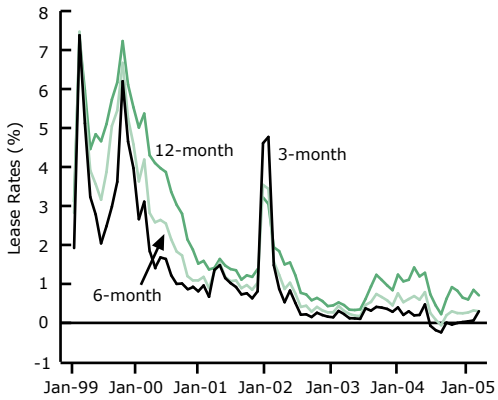
Higher investment and lower Indian demand in effect were substituting for one another. Furthermore, jewelry & silverware demand elsewhere grew (if we exclude India, fabrication in this category rose by 3% in 2004).

It may initially seem odd that, given the overall price derived fall for jewelry & silverware, its flipside, higher scrap, not only failed to materialise but in fact fell. This, however, should come as little surprise given that levels of at least $10 would be required to see much of a pick up in scrap from the industrial sector while photographic scrap continued its decline basis the switch to digital.

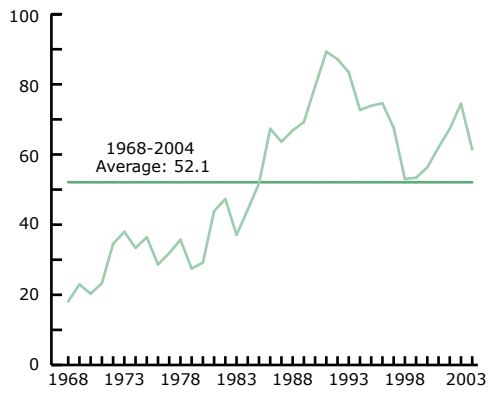
A more significant price driver on the supply side was the 30% slump in net government sales, due chiefly to China. There was, in sharp contrast, a marked rise in sales by Russia and these are thought to have mainly occurred during the March/April rally. It was primarily this in conjunction with a collapse in the physical markets and profit taking that brought to an end that rally.

The strength of the surge in investment, higher industrial demand and lower net government sales is illustrated in their ability to push aside the effects of the 8% or 46.1 Moz (1,435 t) rise in miners' supply (mine production plus net hedging) and the ongoing slide in photographic fabrication. This process was mutually reinforced by a change in sentiment; even if speculator dreams of $9 or $10 silver had faded, the market's view of the price floor definitely moved higher such that a $5.50-$6.00 range came to be seen as a good buying opportunity, rather than the shaky top of a rally as was the case in 2003.

Silver Leasing Rates



The Gold / Silver Price Ratio



Silver, Gold and Base Metal Prices

The bull run the commodities complex has experienced in recent years, putting the asset class in the spotlight, has fuelled much discussion over the relationship of silver with other commodities. Of particular interest is the question whether the price of the metal moves more in line with base metals and other industrial commodities, or that it instead follows the performance of the precious metals complex, and especially that of gold.

The view that silver is more closely related to industrial commodities has recently gained many supporters. This is mainly due to the fact that indeed correlations of the silver price with prices of some of the base metals as well as other commodities, have been particularly high in the last few years. Furthermore, the idea has solid backing. The bulk of silver demand is used in industrial and photographic applications, in contrast with gold, which is primarily an adornment and investment commodity. Furthermore, gold is a safe haven asset, a property that would be difficult to argue for silver.

A closer look at historical daily prices though reveals that however intuitive the conjecture might be, it is erroneous. The chart below, as well as the accompanying table, feature quarterly correlations of changes in the silver price with prices of some base metals, as well as the Goldman Sachs Commodity Index (GSCI). It is immediately clear that the link between silver and base metals prices has recently strengthened markedly (due to higher investment in the commodities complex). What is also apparent though is that during many quarters the apparent relationship broke down or even appeared to be negative. This is particularly pronounced for the GSCI.

Quarterly correlation coefficients between silver and gold prices on the other hand have been consistently positive. Furthermore they have tended to be higher than the ones between silver and other commodities, particularly the GSCI index. The question thus forms; what is driving the silver price?

Correlations of Changes in Daily Prices

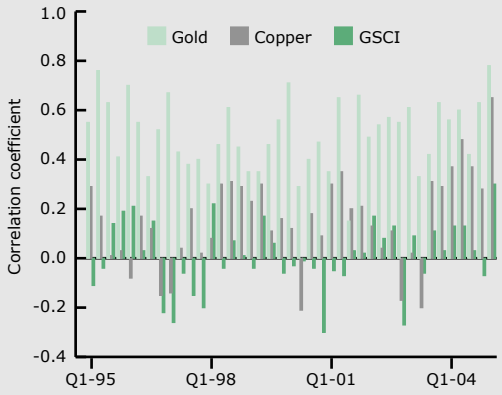
(using log-returns in spot prices)

	2004 Q1	2004 Q2	2004 Q3	2004 Q4	2005 Q1
Gold	0.56	0.60	0.42	0.63	0.78
Copper	0.37	0.48	0.37	0.28	0.65
Zinc	0.28	0.27	0.25	0.38	0.69
Lead	0.35	0.29	0.06	0.24	0.54
GSCI	0.13	0.13	0.03	-0.07	0.30

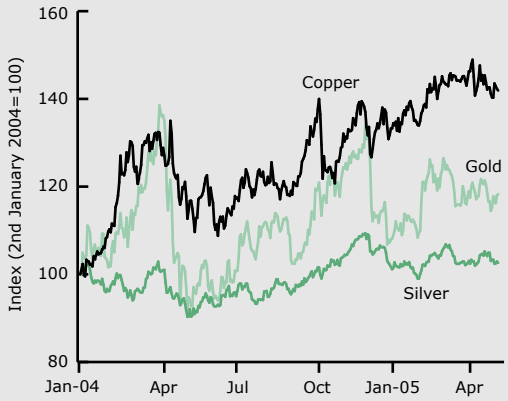
The answer to that is the influence of speculative investors. As has been discussed in previous sections of this *World Silver Survey*, investor activity has recently been the prime driver of changes in the silver price. Indeed given the current trends in the fundamentals, were it not for speculative demand, the silver price would be at lower levels. As a result, silver often trades on the back of changes in the gold price or expectations thereof, which produces this largely self-fulfilling relationship between the two metals' prices.

Similarly, in the absence of strong speculative activity, the correlation between gold and silver prices is markedly lower, at times almost insignificant.

Correlation of Silver and Other Commodity Prices



Gold, Silver and Copper Prices



3. Investment

- ***Investment demand surged in 2004 and was the main factor driving silver prices to a 17-year high.***

Overview

The strength of the silver price since the latter part of 2003 can largely be explained by increased investment demand for the metal. Much of this has been highly speculative in nature but it has nonetheless had an important impact on the underlying physical market. This can partly be seen from the implied net investment number of 42.5 Moz (1,323 t) shown in Table 1 on page 7. In addition, during the course of 2004 there was a considerable rise in activity on both sides of the market that involved physical silver changing hands. This volume is not fully reflected in the net figure quoted above, which therefore understates the scale of activity that took place.

Last year's noteworthy pick-up in investment demand largely came from funds and a small number of high net worth buyers. Retail investors, in aggregate, made a far smaller though positive contribution, with activity from this sector mainly confined to the United States where at times there was good demand, in particular, for 100 oz bars and Eagle coins. In Europe, by contrast, demand from both retail and institutional investors was insignificant, with the partial exception of a surge in interest in warrants during the first quarter, which proved to only be a short-lived one, as the exchange listed structured products universe failed to impress for the best part of the year.

The growth in silver investment demand over the last 18 months or so has been driven by a combination of several factors. First, silver has benefited from a general rise in investor interest in alternatives – such as commodities – to the traditional mainstream investments of stocks, bonds and cash. Although this phenomenon has to-date only involved a minority of investors, even a small diversion of the overall funds available for investment has meant a very large rise in the amount of money going into the commodities complex. (This phenomenon is illustrated by the chart opposite that shows the dollar value of daily open interest in Goldman Sachs Commodities Index - usually referred to as the GSCI - futures on the Chicago Mercantile Exchange.)

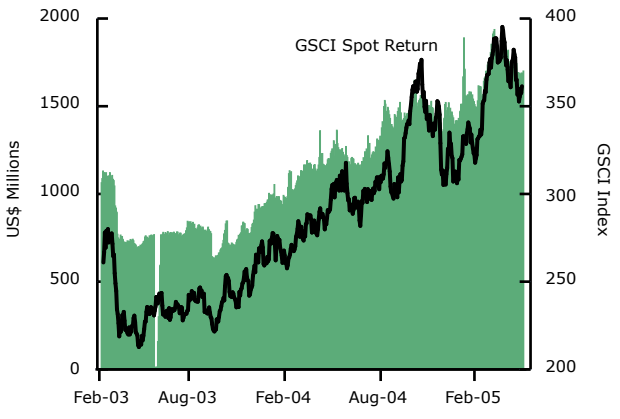
Silver Price and Investment Indicators

	2003 Average	2004 Average	Change y-o-y
Silver Price $/oz	4.879	6.658	36%
Contango (3-mth annualized)	0.95%	1.52%	n/a
US$ Libor (3-mth annualized)	1.21%	1.62%	n/a
S&P 500 Index	965	1,131	17%
CRB Index	258	297	15%
XAU Index	83	96	15%
Advanced Countries Inflation	1.8%	2.0%	n/a
World GDP	4.0%	5.1%	n/a

Within commodities silver is a small market compared to the larger ones such as oil, natural gas, gold and some of the base metals, such as copper, aluminum and zinc. Nevertheless, two of the well-known commodities indices include a small percentage of silver. In the case of the GSCI, silver accounts for only 0.2%, while in the case of the Dow Jones AIG Commodity Index, since January 2005 silver has accounted for 2.0% of the index. To the extent that funds seek to replicate these indices, there will be a requirement to purchase silver (usually via futures). Given the significant flow of money into general commodities funds last year, it is immediately obvious that this would have contributed to some buying of silver.

Second, some funds (and high net worth investors) have been attracted to silver because of the metal's historically greater volatility than, for example, gold. The thinking has been that a general rise in the commodities sector and more particularly in gold (especially given the yellow metal's inverse correlation with the foreign exchange value of the US dollar) would tend to be exaggerated in

Value of GSCI Futures Open Interest on the CME



Source: EcoWin

World's 10 Largest Commodity Trading Advisors

CTA Assets (US$ billion)	2003	2004
Bridgewater Associates	8.1	11.7
Man AHL	6.5	10.5
Campbell & Co., Inc.	6.4	9.4
Graham Capital Management	4.6	5.9
FX Concepts, Inc.	3.0	4.7
Aspect Capital Limited	3.1	4.3
John W. Henry & Co.	2.2	3.6
Transtrend, B.V.	1.7	2.9
Grossman Asset Management	2.8	2.7
Sunrise Capital Partners	1.9	2.6

World's 10 Largest Hedge Funds

Fund Equity (US$ billion)	2003	2004
Orbis Investment Management	8.6	13.0
Fairfield Greenwich Group	5.4	11.7
Vega Asset Management (USA), LLC	8.6	11.6
UBS O'Connor Ltd	3.5	8.6
Credit Agricole Asset Management	4.5	7.6
Gartmore Investment Management Plc	5.0	6.7
Ivy Asset Management,	3.5	6.3
Permal Asset Management, Inc.	2.6	6.1
DB Absolute Return Strategies	5.6	6.0
GAM	4.9	5.9

Source: MARHedge, 2005

All figures refer to end-December. Data is based on entities reporting to the Barclay Trading Group Ltd. database.

the smaller and less liquid silver market. This has indeed been the case, although the scope for larger price moves has of course been shown to work in both directions (e.g. the October-December rise and fall in the price).

Third, the improving supply/demand fundamentals of the silver market appear to have been noticed by some investors. In particular, the decline in above-ground bullion stocks, and perhaps also talk of less supply from Chinese government inventories, taken together with rising industrial demand for the metal has convinced some players that the silver price was likely to remain well above the $5 level and reach $6, if not much higher.

Finally, the increase in the price itself has been an important factor in generating buy-side interest. Silver's move to higher levels has attracted fresh investment from trend-followers. To some extent, the entry of these buyers (at higher prices) facilitated the exit of longs that had invested in silver at an earlier stage of the rally.

Looking at the trend in investment demand during the course of last year and, indeed, into the first quarter of this year, it is clear that investor activity was greatest during two broad periods in 2004: February-April and October-December. In the first of these, speculative buying took silver up from the mid-$6s to a peak in excess of $8/oz. As discussed in more detail elsewhere in this chapter, the evidence is that buying on the Over-The-Counter (OTC) market largely drove this rally. The subsequent collapse in the price to below $6 was also very much related to OTC market activity, although at the time there was also a significant liquidation of long positions held on the Comex. Our information is that the rapid slide in the price forced many longs into liquidating positions, in part due to rising margin calls.

In the October-December period, by contrast, a more important role in price determination seems to have been played by fund activity on the New York exchange, though this observation does not imply that there was no corresponding activity taking place via the OTC market. Nevertheless, it was surely no coincidence that prices and the non-commercial net long position moved in lock step during the period under review. The net long peaked in early December before falling precipitously through to mid-month. Concurrently, the silver price breached the $8 level before dropping over $1.30/oz in the space of just a few days.

After last year's surge, the outlook for investment demand in 2005 is somewhat mixed. For the January to April period investment demand has waned year-on-year and, more notably, compared to the final third of 2004. Nevertheless, for the balance of 2005 we forecast a renewed pick-up in speculative interest. An important plus is that underlying investor interest in commodities continues to grow. On the other hand, a setback to base metals this year, a distinct possibility due to slowing world GDP growth, would be a negative for silver. However, we expect that the relationship with gold should ultimately be more significant than the one with base metals. In

London Bullion Market (LBM) and Comex Turnover

(daily averages)	LBM No. of Transfers	Turnover Moz	Comex Turnover Moz	LBM/ Comex Ratio
1998	504	248	82	3.0:1
1999	405	185	83	2.2:1
2000	256	116	63	1.8:1
2001	241	108	52	2.1:1
2002	241	87	63	1.4:1
2003	233	92	82	1.1:1
2004	326	104	101	1.0:1

this regard it will be important for the development of the silver price whether GFMS' expectation of higher gold prices in the second half of 2005 materializes or not.

Comex

The impressive increase in silver futures turnover on the Comex is a clear illustration of the growth in investor activity in silver in 2004. Total volume for the year stood at just over 5 million contracts (equivalent to 25 billion ounces or 778,540 t), up by 22% on the already high figure recorded in 2003. Open interest at end-year on the other hand, at 100,586 contracts (equivalent to 502.9 Moz or 15,643 t), was down by a shade year-on-year. Having said that, given the volatile nature of the silver investment market, an end-year snapshot is vulnerable to giving a misleading picture. Indeed, the average open interest figure for the year was 9% higher year-on-year.

The main driver of this increase was without doubt speculative activity. CFTC reports on non-commercial net positions in silver futures and options on the Comex are understood to provide a good proxy for fund activity on the exchange. Looking at these, we can see that funds remained net-long throughout the year, with a generally higher involvement on the exchange than during 2003 (the chart below provides an illustration of the percentage of total open interest the speculative net positions took up on a weekly basis). Furthermore, the average net-long position in 2004 was up by 50% on the previous year's figure. Nevertheless, the liquidation in December drove the end-year net long to just 37,706 contracts, 27% lower than the figure of end-2003.

Net "Fund" Position on Comex

		Contracts	Moz	Price
2000		13,162	66	4.97
2001		7,284	36	4.36
2002		27,372	137	4.60
2003		29,153	146	4.90
2004	Q1	53,922	270	6.75
	Q2	30,976	155	6.16
	Q3	35,591	178	6.49
	Q4	53,980	270	7.25
2005	Q1	36,601	183	7.01

(period averages for non-commercial net futures positions, Moz equivalent and settlement price in $/oz)

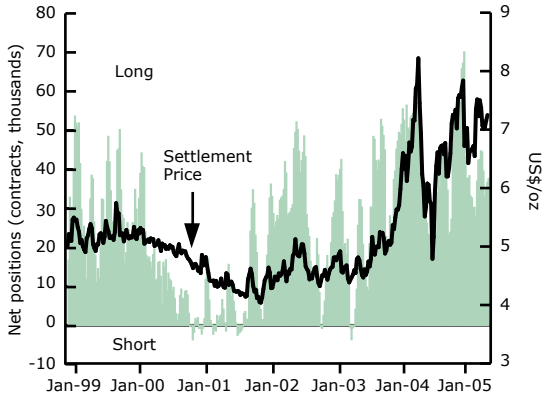
Tocom

In contrast to what was seen for gold, activity in Tocom silver futures grew in 2004, despite the strength in the Japanese currency persisting throughout the year. Total volume for the period reached almost 1.5 million contracts, equivalent to 2.8 billion ounces (88,402 t), 27% up on a year-on-year basis.

The first few months of the year saw daily open interest also grow, to reach its peak of 36,834 contracts on March 10th, as the yen-denominated silver price crossed the ¥250/10g threshold for the first time since August 1998. This was followed by profit taking as the price continued to rise over the following few weeks. The price slides of April and May (as well as December) triggered more selling. These liquidations, combined with further profit taking in late September through to early October, as the silver price soared once again, brought end-year open interest to 17,204 contracts, equivalent to 33.2 Moz (1,032 t), 21% lower than the end-2003 figure.

Comex: Non-commercial Net Positions

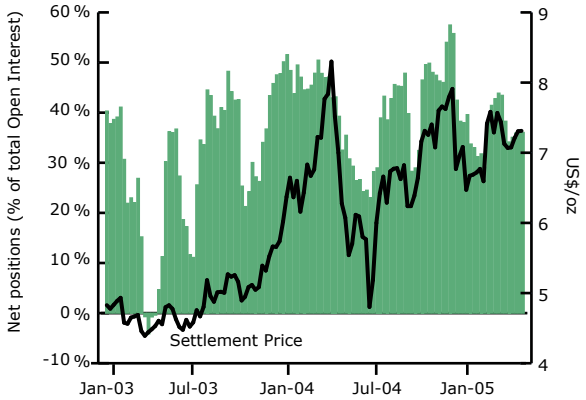
Weekly Net Positions & Settlement Price



Source: CFTC

Comex: Non-commercial Net Positions

Weekly Net-Positions as a Percentage of Total Open Interest



Source: CFTC

OTC Market

Due to the large minimum transaction sizes typical in the Over-The-Counter (OTC) market, it is very much the domain of hedge funds, high net worth/family office investors and proprietary traders. Part of the attraction of the OTC market is its lack of transparency compared to the more visible futures exchanges such as Comex. Yet, although there are no statistics available on OTC market transactions, anecdotal evidence points to activity in this arena (in spot, forwards and options) at times dwarfing purchases and sales made on the futures exchanges. This certainly seems to have been the case in the March/April period last year when much of the buying and selling that drove prices up and then down took place on the OTC market. Indeed, there are strong indications that sizeable positions, mainly in allocated metal and amounting to several tens of millions of ounces were put on and then liquidated by short-term speculators. It should be noted that OTC options activity also surged at the time. Over the rest of the year investment demand via the OTC market was generally less spectacular, although it flared up again during the fourth quarter.

Physical Investment

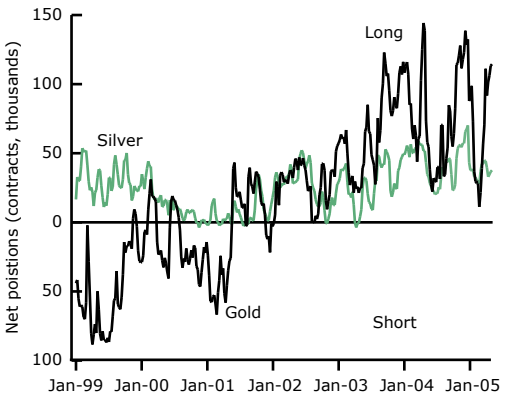
Physical investment in silver is a US tradition that is little known in Europe. Europeans looking for exposure to hard assets traditionally invest in gold and not silver. Furthermore, the latter has the disadvantage of being subject to Value Added Tax (VAT). In Germany, for example, VAT at 16% means that demand for physical silver is non-existent, with the notable exception of commemorative coins that are purchased by collectors.

In the United States, by contrast, there is a fairly active constituency for silver bullion in coin and bar form. As regards the former, demand has remained solid for the best-selling silver coin, the US Eagle. Indeed, demand increased by 5% last year to just over 9.6 Moz (299 t). Sales of the coin have now remained at a good level throughout the 1999-2004 period. However, there is some debate among dealers as to what extent US Eagles are purchased by investors as opposed to collectors.

Demand for US$1,000 face value 90% and 40% coin bags is more clearly investment related as these typically contain 710-800 oz silver. Last year the increase in the price in March led to a bout of selling by holders of bags, with these products temporarily being forced into a discount to spot silver due to the high level of disinvestment at the time. It was the same story for 100 oz bars, the other historically important physical investment product in the United States. However, dealers report that although the volume of bags and 100 oz bars dishoarded was considerable, it was still well below the level seen in 1998. This is significant because it is further evidence of attrition in non-identifiable silver bullion stocks over the years. In addition, the amount of disinvestment that took place during the fourth quarter spike was much reduced from that seen in March/April, with for example smaller lots being offered to dealers. A final point worth making is that even during periods of dishoarding some new demand was reported; business was by no means only one-way. Nevertheless, the sudden, massive fall in the price in April did reduce the appetite for bullion among small investors, especially those who had bought metal on a leveraged basis and who were forced into taking losses on their holdings.

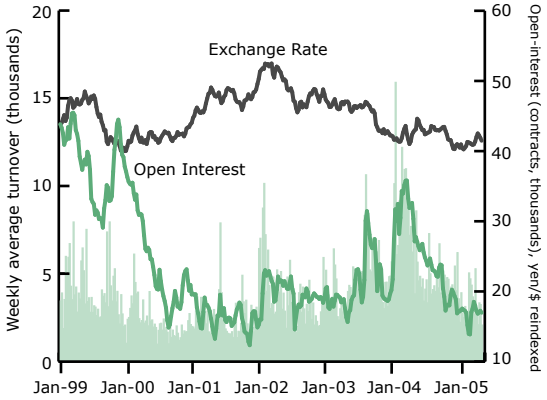
Comex: Non-commercial Net Open Interest

Weekly Net-Positions



Source: CFTC

Tocom Futures Turnover and Open Interest



4. Mine Supply

- ***Mine production registered a 4% increase year-on-year to achieve a record high of 634.4 Moz (19,731 t).***

- ***Higher output at primary silver mines generated a large part of the 23.2 Moz (720 t) rise. Further gains were provided by growth in by-product volumes generated at copper and lead/zinc mines, although this was partly offset by declines in the gold sector.***

- ***Cash costs edged up at the world's primary silver mines to average $2.36/oz. The modest rise coupled with the stronger spot price left year-on-year cash margins much improved.***

- ***Producers increased their hedge cover in 2004 with additions concentrated into forward sales and purchased put options. The low delta against the (modestly higher) volume of sold calls meant that despite a 15.0 Moz (467 t) rise in nominal terms the adjusted book at end-year only registered a 2.0 Moz (62 t) increase year-on-year.***

Mine Production

- ***Mexico, Peru, Australia and China, the world's four biggest silver producers, all registered strong growth in 2004 supporting a 4% rise in global output to 634.4 Moz (19,731 t).***

The world's four largest silver producing countries, namely, Mexico, Peru, Australia and China all posted strong growth in 2004. These gains were magnified by improvements in Russia and to a lesser extent Chile, which left global output up 4% year-on-year at 634.4 Moz (19,731 t). Assessing the results in detail, Peru and Chile both benefited from the restoration of idled capacity in the copper sector with higher throughput at Tintaya and Escondida. In China the acceleration of

Top 20 Silver Producing Countries

Ranking 2004	Ranking 2003		Output (Moz) 2003	Output (Moz) 2004
1	1	Mexico	94.7	99.2
2	2	Peru	93.9	98.4
3	3	Australia	60.2	71.9
4	4	China	58.8	63.8
5	5	Poland	44.2	43.8
6	6	Chile	42.1	42.8
7	7	Canada	41.2	40.6
8	8	United States	39.9	40.2
9	9	Russia	34.3	37.9
10	10	Kazakhstan	23.3	20.6
11	11	Bolivia	15.0	13.1
12	12	Sweden	9.9	9.4
13	13	Indonesia	9.6	8.6
14	14	Morocco	6.3	6.3
15	15	Argentina	4.8	5.0
16	16	Turkey	3.6	3.7
17	17	South Africa	3.5	3.2
18	18	Iran	2.6	2.6
19	19	Japan	2.5	2.4
20	20	India	1.9	2.1

Top 20 Silver Producing Companies

Ranking 2004	Ranking 2003	Company Name	Country	Output (Moz) 2003	Output (Moz) 2004
1	3	BHP Billiton	Australia	42.7	49.7
2	1	Industrias Peñoles	Mexico	48.4	44.5
3	2	KGHM Polska Miedź	Poland	43.7	43.2
4	5	Grupo Mexico	Mexico	19.0	19.4
5	4	Kazakhmys	Kazakhstan	19.5	17.7
6	6	Barrick Gold	Canada	18.6	17.3
7	11	Polymetal	Russia	11.8	17.3
8	7	Rio Tinto	UK	18.3	14.8
9	8	Coeur d'Alene Mines	USA	14.2	14.1
10	10	Cia. de Minas Buenaventura	Peru	11.8	12.8
11	9	Xstrata	Australia	12.0	12.2
12	12	Noranda Inc.	Canada	10.7	11.6
13	16	Volcan Cia. Minera	Peru	9.5	11.3
14	17	Pan American Silver	Canada	8.6	11.2
15	14	Zinifex*	Australia	9.9	11.0
16	18	Codelco**	Chile	8.4	9.6
17	13	Newmont Mining	USA	9.9	8.5
18	23	Cia. Minera Ares	Peru	5.1	7.9
19	19	Boliden AB	Sweden	8.4	7.7
20	20	Comsur**	Bolivia	7.5	7.2

*Listed in April 2004 to house former subsidiaries of Pasminco
** Estimate

Table 2 - World Silver Mine Production (million ounces)

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Europe										
Poland	31.6	30.6	33.8	36.0	35.9	36.7	38.0	38.9	44.2	43.8
Sweden	8.0	7.7	8.5	8.6	8.9	9.5	8.8	9.4	9.9	9.4
Romania	1.4	1.4	1.4	1.2	1.2	1.1	1.2	1.0	0.9	0.9
UK & Ireland	0.5	0.5	0.4	0.3	0.5	0.8	0.6	0.5	0.7	0.9
Portugal	1.2	1.1	1.1	1.0	0.9	0.7	0.7	0.6	0.7	0.8
Bulgaria	1.4	1.1	1.0	0.8	0.7	0.6	0.8	0.8	0.7	0.6
Czech & Slovak Republics	0.3	0.2	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.2
Yugoslavia (former)	1.9	2.9	2.1	1.8	1.0	1.0	0.7	0.6	0.2	0.1
Italy	0.5	0.3	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Greece	1.4	0.5	1.2	1.4	1.3	1.0	2.0	2.4	0.1	0.0
Spain	4.0	3.3	2.1	1.5	3.8	3.7	1.8	0.4	0.1	0.0
France	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Norway	0.2	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Other Countries	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Europe	**52.6**	**50.0**	**52.1**	**53.3**	**54.4**	**55.3**	**55.0**	**55.0**	**57.8**	**56.9**
North America										
Mexico	72.6	81.3	86.8	91.6	75.2	88.3	97.4	101.2	94.7	99.2
Canada	40.0	39.9	39.0	36.4	37.5	37.7	40.7	44.1	41.2	40.6
United States	50.2	50.5	70.1	66.2	62.7	63.7	55.9	43.4	39.9	40.2
Total North America	**162.8**	**171.7**	**195.9**	**194.2**	**175.3**	**189.7**	**194.0**	**188.7**	**175.8**	**180.0**
Latin America										
Peru	61.4	63.3	66.8	65.1	71.7	78.4	86.0	88.8	93.9	98.4
Chile	33.5	36.8	35.1	43.1	44.4	39.9	43.4	38.9	42.1	42.8
Bolivia	13.8	12.3	12.4	13.1	13.6	13.9	13.2	14.8	15.0	13.1
Argentina	1.2	1.0	1.1	2.2	3.3	3.0	5.6	4.3	4.8	5.0
Honduras	1.0	1.2	1.5	1.5	1.6	1.7	1.6	1.8	1.7	1.6
Brazil	0.4	0.3	0.2	0.3	0.2	0.2	0.2	0.2	0.2	0.3
Dominican Republic	0.7	0.5	0.4	0.2	0.1	0.0	0.0	0.0	0.0	0.0
Other Countries	0.3	0.4	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.5
Total Latin America	**112.2**	**115.8**	**117.8**	**125.9**	**135.4**	**137.6**	**150.4**	**149.3**	**158.2**	**161.6**
Asia										
China	38.6	39.0	40.7	43.6	48.0	51.3	55.6	52.9	58.8	63.8
Indonesia	7.7	7.6	8.1	10.0	8.7	10.0	12.0	10.7	9.6	8.6
Turkey	2.1	2.9	2.9	2.8	3.5	3.5	3.7	3.7	3.6	3.7
Iran	2.3	2.2	2.4	2.5	2.5	2.7	2.6	2.6	2.6	2.6
Japan	3.2	2.9	2.8	3.0	3.0	3.3	2.6	2.6	2.5	2.4
India	1.2	1.1	1.6	1.7	1.9	1.8	1.7	1.9	1.9	2.1
Papua New Guinea	2.1	1.9	1.6	1.9	1.9	2.4	2.2	2.1	2.0	1.7
Mongolia	0.9	0.9	1.0	1.1	1.1	1.0	1.2	1.1	1.1	1.2
North Korea	1.7	1.3	1.2	1.0	0.8	0.7	0.6	0.7	0.8	0.8
Thailand	0.2	0.2	0.1	0.1	0.2	0.2	0.2	0.7	0.6	0.5
Saudi Arabia	0.5	0.5	0.5	0.4	0.3	0.3	0.3	0.3	0.6	0.5
Philippines	1.1	0.8	0.6	0.6	0.6	0.7	1.1	0.3	0.2	0.3
Malaysia	0.4	0.3	0.3	0.2	0.1	0.0	0.0	0.0	0.0	0.0
Other Countries	0.2	0.2	0.1	0.2	0.1	0.1	0.1	0.3	0.2	0.3
Total Asia	**62.2**	**61.8**	**63.9**	**69.2**	**72.7**	**78.0**	**83.9**	**79.9**	**84.6**	**88.4**

Table 2 - World Silver Mine Production (million ounces)

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Africa										
Morocco	6.6	6.4	8.4	9.8	8.9	9.3	9.1	8.5	6.3	6.3
South Africa	5.7	5.5	5.2	5.1	4.9	4.6	4.1	3.8	3.5	3.2
Dem. Rep. of the Congo	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	1.2	1.1
Namibia	2.1	2.1	1.2	0.4	0.0	0.5	0.6	0.6	0.9	0.9
Zambia	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Zimbabwe	0.4	0.3	0.3	0.2	0.2	0.1	0.1	0.1	0.1	0.1
Other Countries	0.4	0.4	0.4	0.4	0.4	0.4	0.6	0.6	0.7	0.6
Total Africa	**15.5**	**15.0**	**15.8**	**16.2**	**14.7**	**15.3**	**14.7**	**13.9**	**12.9**	**12.5**
Oceania										
Australia	29.6	32.5	35.6	47.2	55.0	65.1	63.3	66.8	60.2	71.9
New Zealand	1.0	1.0	1.0	0.8	0.8	0.7	0.9	0.9	1.0	1.0
Fiji	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.0	0.0
Total Oceania	**30.6**	**33.5**	**36.7**	**48.1**	**55.8**	**65.8**	**64.3**	**67.8**	**61.2**	**73.0**
CIS										
Russia	23.5	24.4	20.9	19.5	19.8	20.2	20.8	24.8	34.3	37.9
Kazakhstan	20.9	15.5	14.1	13.8	17.0	22.0	25.6	25.1	23.3	20.6
Uzbekistan	2.1	2.2	2.5	2.6	2.0	2.0	1.7	1.6	1.7	1.9
Armenia	0.5	0.9	1.0	1.0	1.1	1.1	1.2	1.3	1.3	1.3
Tajikistan	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Kyrgyzstan	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total CIS	**47.1**	**43.1**	**38.6**	**37.1**	**40.1**	**45.5**	**49.5**	**52.9**	**60.8**	**62.0**
World Total	**483.0**	**491.0**	**520.7**	**544.0**	**548.5**	**587.3**	**611.8**	**607.4**	**611.2**	**634.4**

the development of the silver rich lead/zinc ores in the northeast of the country provided much of the measured growth, while Russia benefited from new capacity commissioned late in 2003 and higher throughput at the giant primary silver mine, Dukat. The largest absolute increase was measured in Australia, in large part due to improved results at Cannington, where higher mining rates and increased throughput led to a 20% rise in silver production. Compensating for part of the growth, there were losses recorded in Kazakhstan, Bolivia and Indonesia. Mine closures accounted for a part of the losses in Bolivia and Indonesia, the latter being aggravated by operational difficulties at the giant Grasberg mine where silver volumes were down by 22% year-on-year.

North America

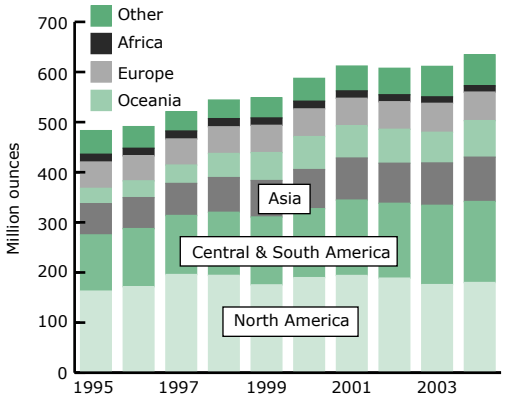
Mexico posted a 5% gain in silver output in 2004, falling short of the record set in 2002 by just 2.0 Moz (61 t), to achieve 99.2 Moz (3,085 t). Despite the rise, the country's largest producer, Industrias Peñoles, reported an 8% drop in volumes to 44.4 Moz (1,382 t). The company's losses were attributed to the combination of the closure of operations at Las Torres due to reserve depletion in 2003 (in that year the mine generated 1.7 Moz, 54 t, of silver), lower grades at Naica and Francisco I. Madero which resulted in a respective 29% and 3% decline in silver output, and lastly a 10-day shutdown of the Fresnillo unit to allow the installation of new equipment as part of a capacity expansion. On a more positive note, the expansion at Fresnillo was completed in September 2004 and is anticipated to raise the mine's silver production from last year's 31.6 Moz (983 t) to an estimated 35.7 Moz (1,110 t) in the current year. Offsetting Peñoles' decline, Grupo Mexico and Grupo Carso both posted better results with output respectively up by 0.6% to 13.8 Moz (428 t) and by 38% to 3.4 Moz (105 t). The latter cited better grades and a 60% rise in throughput at Tayahua to explain the marked improvement. Luismin, which was acquired by Wheaton River in June 2002, and which is now part of a much larger entity following Wheaton's April 2005 merger with Goldcorp, also reported production gains with output up 10% to a record 6.7 Moz (207 t). The result was achieved through plant expansions and processing improvements completed over the last two years

combined with improved ore grades in 2004. Lastly, the ramp up of oxide production at Pan American Silver's La Colorada mine assisted the more than doubling of output at the mine to 2.0 Moz (63 t). The balance of the country's rise was generated within the small to medium scale mining sector.

Following three years of heavy production declines, generating a combined loss of 23.8 Moz (740 t), silver production in the **United States** registered a 1% gain year-on-year to reach 40.2 Moz (1,250 t). The modest improvement was attributed to an increase in by-product silver generated at the country's gold, copper and lead/zinc mines with growth at Kennecott's Bingham Canyon, Teck Cominco's Red Dog mine in Alaska and a 133% surge in output (0.6 Moz, 17 t, in absolute terms) at Apollo Gold's open pit gold mine Montana Tunnels. The latter's impressive result largely reflected the return to commercial production at the mine in April 2003, which prior to this had relied on lower grade development material as its principal ore feed. Lower output, meanwhile, was reported at the country's primary silver operations, where losses were concentrated at the Greens Creek mine in Alaska, a joint venture between Hecla and Kennecott; the 17% or 2.0 Moz (62 t) decline chiefly due to a 15% drop in average silver grades. Elsewhere, year-on-year changes in volume terms were modest. Lower grades at Hecla's Lucky Friday were chiefly responsible for a 0.2 Moz (7 t) year-on-year drop in its output, while production at Coeur d'Alene's Galena posted a decline of 0.2 Moz (7 t). A partial offset to the described losses was provided by a modest 0.1 Moz (3 t) rise at Coeur's Rochester mine.

Canadian silver production slipped back by roughly 2%, or by 0.6 Moz (20 t), to reach 40.6 Moz (1,262 t). Part of the year-on-year losses was explained by the closure in February 2004 of BHP Billiton's Selbaie mine, which in the previous year generated 1.1 Moz (36 t) of silver. A decline of similar magnitude was reported at the country's largest silver producer, Barrick's Eskay Creek gold-silver mine, where in spite of an 8% rise in processed ore, lower grades left silver volumes down 7% year-on-year. A 3% drop in output at Noranda's Brunswick heightened the country's losses; the reported decrease attributable to ore pass availability issues in the fourth quarter and the closure of Bell Allard in October 2004 due to the exhaustion of reserves. Making up for a part of the fall, LaRonde and Kidd Creek both experienced strong year-on-year production gains. The improvement at the latter was partly due to the commissioning of a silver recovery circuit in the mine's refinery to treat silver-bearing zinc concentrates. LaRonde, meanwhile, posted record silver output at 5.7 Moz (177 t), the 1.7 Moz (54 t) increase due to higher throughput and a 16% rise in the average grade.

World Silver Mine Production



Central and South America

For a second consecutive year **Peru** threatened to overtake Mexico as the world's largest silver producer with output climbing 5% to reach 98.4 Moz (3,060 t). Minera Ares, up 2.7 Moz (87 t) reported one of the biggest gains having been assisted by higher throughput at Arcata, while a 30% rise in output at Cerro de Pasco provided the bulk of the 1.8 Moz (55 t) increase posted by Minera Volcan. Growth was augmented by the restoration of full capacity at BHP Billiton's Tintaya mine in August 2003 and a return to the normal mine plan at Antamina with the completion of the removal of lakebed sediments in May 2004. Silver output at Antamina totaled 8.0 Moz (250 t) in 2004, representing a 19%, or 1.3 Moz (39 t) improvement from the previous year. Lastly, Buenaventura's primary Uchucchacua mine and its part-owned in Colquijirca, both registered higher output, the latter up by an impressive 17% year-on-year to reach 3.4 Moz (106 t). Partly offsetting the gains, there was a sharp decline reported by Minera Corona chiefly as a result of the closure of its Carolina N°1. mining unit.

Chilean silver production made modest gains in 2004 with output up by 2% to 42.8 Moz (1,330 t). Cerro Bayo, Coeur d'Alene's primary silver mine, benefited from additional high-grade ounces from the Javiera and

Cerro Bayo systems, while Meridian's El Peñon, located close to Antofagasta in the north of the country, recorded a 12% rise in output, mainly due to a 19% increase in throughput at the mill. BHP Billiton's part-owned Escondida copper mine further contributed to the rise, with higher throughput responsible for a significant 22% increase in silver output to 5.7 Moz (179 t). Losses at Placer Dome's 50%-owned La Coipa gold mine cancelled out some of the noted gains.

The completion of mining at Newmont's Kori Kollo mine in October 2003, coupled with a drop in the small scale informal mining sector, made up the bulk of the 1.9 Moz (59 t) fall recorded in **Bolivia**, where, as a result, output fell back to a six year low at 13.1 Moz (407 t). Its southern neighbor, **Argentina**, meanwhile, posted a modest 0.2 Moz (6 t) gain year-on-year to achieve 5.0 Moz (156 t). Production edged up at Coeur d'Alene's high grade Martha mine, which transports ore some 270 miles for processing at the company's Cerro Bayo plant in Chile, while gold-copper mine Alumbrera reported record throughput, primarily as a result of ongoing productivity improvements and the commissioning of a flotation plant expansion early last year.

Asia

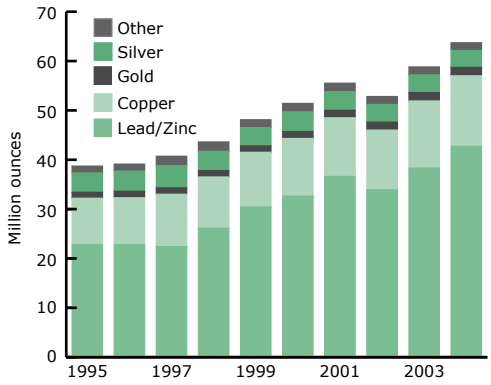
In the light of new data made available to GFMS, the **Chinese** silver mine production series for this edition of the *World Silver Survey* has been revised upwards. One of the past difficulties in establishing an accurate level of silver output in China is that the industry is highly fragmented, with many hundreds of mines and ore dressing plants, few of which are directly under the control of the central authorities. As the bulk of the operators have no obligation to report production directly to the Statistical Agency in Beijing, data is generally collected on a provincial level. This had led to inconsistencies, chiefly resulting from the different methods used to collect and process production figures.

The revised series hinges on identifying as much lead, zinc, copper, gold and primary production as possible on a mine-by-mine basis and by deducing the silver output at each operation from knowledge of ore grades, milling rates and metal in concentrate production. A caveat that should be added here is, while the level of confidence with the series is now much higher, as the data capture improves, further amendments cannot be ruled out.

Based on the new series, silver output in China in 2004 stood at a provisional 63.8 Moz (1,985 t), a 9% increase on the figure for 2003 of 58.8 Moz (1,828 t). The bulk of the output was generated as a by-product of mining copper, lead and zinc with lesser amounts sourced from primary sources and gold operations. Assessing the largest component of the split first, the acceleration of the development of the silver rich lead/zinc ores in northeast China in recent years, principally the northern half of Inner Mongolia, is thought to have made a major contribution to last year's overall 5.0 Moz (157 t) growth in output. Silver from copper mines (the degree of confidence is greater in the figures reported here because almost 75% of reported copper production can be identified to specific operations) also registered an increase in 2004, with estimates putting the rise from this category at roughly 5% year-on-year.

In **Indonesia**, silver production declined by 1.0 Moz (31 t) to reach 8.6 Moz (266 t). Losses at the giant copper-gold mine Grasberg stemmed from a landslide in October 2003 and a later debris flow in December, which disrupted operations for a period of roughly six months. Restricted access to the higher-grade ore sections, coupled with months of pit stabilization works left gold, copper and silver output respectively 51%, 28% and 22% lower year-on-year. Decreased output at Rio Tinto's Kelian gold mine, where residual mining was finally completed in February 2005, compounded the decline although this was partially compensated by the start of operations at Newcrest's Toguraci mine in February 2004. Elsewhere, the biggest absolute change in the region was recorded in **Papua New Guinea**, where a 0.3 Moz (9 t) drop was primarily attributed to the closure of the Misima mine in May 2004.

Chinese Silver Mine Production



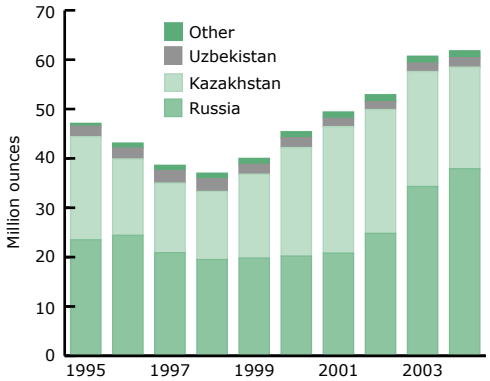
Oceania

Australia's Cannington mine, which generated roughly two-thirds of the country's total output in 2004, posted impressive gains last year with mining rates and throughput respectively up by 22% and 27% year-on-year. The benefits, while partially offset by a 5% fall in the average silver grade, were reflected in higher production, which (based on BHP Billiton's figures for payable silver) totalled 45.9 Moz (1,428 t), a significant 20% or 7.7 Moz (239 t) increase from the previous year. Australia's other major silver producers, namely base metal mines, Mount Isa, Century and Rosebury, also reported production improvements with respective year-on-year gains of 0.2 Moz (8 t), 0.9 Moz (29 t) and 0.7 Moz (22 t). Combined with the additional volumes at Cannington, and despite an 8% fall at McArthur River and the negligible impact of a handful of mine closures in the gold sector, Australia's silver output increased by 19% year-on-year, achieving a record 71.9 Moz (2,237 t).

CIS

St. Petersburg-based Polymetal provided a large part of the 10% year-on-year rise recorded in **Russian** mine supply, which last year stood at an estimated 37.9 Moz (1,180 t). Founded in 1998, Polymetal launched production at its primary Lunnoye deposit in 2001 and a year later at the giant Dukat mine. Growth at both these units in 2004, a respective 19% and 33% year-on-year, combined with a further 1.5 Moz (47 t) of silver generated at its new gold-silver Khakanjinskoye deposit, lifted the company's total output by 47% to 17.3 Moz (537 t). On the corporate front, Polymetal acquired the outstanding 20% of ZAO Magadan Silver (Dukat deposit) from Pan American Silver in November 2004 consolidating its ownership of the mine.

CIS Silver Mine Production



Kazakhstan generated an estimated 20.6 Moz (642 t) of silver in 2004, an 11% or 2.7 Moz (82 t) decline from the previous year. By-product silver from both copper, lead and zinc production fell, the cut in the former chiefly attributed to a 9% decline in silver output at Kazakhmys, the country's largest copper and the world's fifth biggest silver producer. The balance of the decline was explained by an estimated 22% drop in silver production at the Glencore-owned Kazzinc facilities, although the losses would not have been on a one-for-one basis, as the implied Kazzinc production figures (Glencore do not report production data) also include concentrates sourced from overseas.

Europe

Poland's KGHM Polska Miedź generates the lion's share of European silver production, and last year accounted for 76% of the region's total (and 99% of domestic output) at 43.2 Moz (1,344 t), representing a modest 0.5 Moz (14 t) drop from the previous year. During 2004, the company received a license for the extraction of copper ore from the Głogów Głęboki Przemysłowy (Deep Industrial Głogów) deposit, which should ensure the longer-term development of the area. Currently, KGHM generates silver as a by-product of mining copper at Lubin, Polkowice-Sieroszowice and Rudna. In **Sweden**, Europe's only other significant silver producer, supply dropped back by 5% or by 0.5 Moz (15 t), to reach 9.4 Moz (292 t). Lundin Mining, operators of the Zinkgruvan mine, which it acquired in June 2004 from Rio Tinto, reported silver volumes on a like-for-like basis some 11% higher at 2.0 Moz (63 t). However, the gains here were cancelled out by events at Boliden, operators of the Aitik, Boliden Area and Garpenberg mines, which saw an 8% reduction in silver output.

Africa

The primary Imiter mine, operated by Société Métallurgique d'Imiter, a subsidiary of the ONA Group, is the single largest producer of silver in Africa and the dominant source of supply in **Morocco**. Estimates for the full year put production at the mine at roughly 5.0 Moz (154 t), while country-wide production is thought to have remained unchanged year-on-year at 6.3 Moz (196 t). Elsewhere, there were declines in **South Africa**, where by-product output fell by an estimated 0.3 Moz

(7 t) to reach 3.2 Moz (101 t), due to the effects of falls in national copper, lead, zinc and gold production. Additional losses in **Namibia** and the **Democratic Republic of Congo** were related to lower silver by-product generated at the countries' respective copper operations at the Tsumbe smelter and Anvil's Dikulushi mine.

Outlook

• ***Further rises in mine supply in 2005 are largely expected to be provided by improvements at existing operations.***

Expectations for mine supply in 2005 are for an increase of between 1% and 2%, or between 6.3 Moz to 12.7 Moz (200 t to 400 t). Key factors behind this estimate include Pan American Silver's recent announcement that it had decided to fast-track the expansion project at the San Vicente mine in Bolivia, the completed capacity expansion at Peñoles' Fresnillo designed to raise output in 2005 by 4.1 Moz (127 t) and Kazakhmys' target to lift silver output by 40% year-on-year to 23.6 Moz (733 t). Furthermore, Cannington reported record results in the first quarter of 2005 and, if mining rates are maintained, output at the world's biggest silver producing mine could increase by an estimated 3.8 Moz (119 t).

In Chile, silver volumes generated at the Escondida mine should benefit from the development of the Escondida Norte pit, which is reported to be on track to meet first ore delivery to the crusher in the fourth quarter of 2005. Meanwhile, Russia's Polymetal is anticipating a 12% increase in silver production, in part due to an increase in throughput at Dukat. A modest boost should also be provided by Barrick's new gold mines, Lagunas Norte and Veladero, which are respectively due to start production in the second and fourth quarters of 2005. At full capacity, combined silver output at these mines is expected to be around 7.0 Moz (218 t) per annum.

The strong base metal demand growth in China continues to support sharp gains in refined production for copper, lead and zinc. In turn, this is fueling increases in domestic mine production as well as sustaining high levels of raw material imports. Chinese copper and zinc concentrate output in the first quarter of this year registered double-digit gains (initial data for lead suggests a flat production profile). High domestic metal prices and a tight concentrate market should encourage higher Chinese concentrate production in 2005 for the three metals and hence a rise in associated silver by-product is anticipated.

Looking slightly further ahead, a number of important new mines timetabled to come on stream in 2006 and 2007 should ensure that in the medium-term, mine supply continues to trend upward. Construction is currently underway at Coeur d'Alene's 8.0 Moz (249 t) per annum San Bartolome silver project in Bolivia and at Pan American Silver's 5.0 Moz (156 t) per annum Alamo Dorado mine in Mexico. First production at both projects is expected to begin in late 2006. Apex Silver Mines, meanwhile, reported that it had placed orders for major equipment for the processing plant in anticipation of the development of its San Cristobal mine, stating that the project is firmly on track to commence production in the second half of 2007. Bolivia's San Cristobal is one of the world's largest open-pit silver-lead-zinc deposits and is expected to produce roughly 22.3 Moz (693 t) of silver per year in its first five full years of production.

By-Product Analysis

• ***Silver generated at primary mines increased by a significant 9% year-on-year to reach 188.5 Moz (5,863 t), representing 30% of world silver production.***

• ***By-product output attributed to copper and lead/zinc mining increased by 2% and 3% respectively, while gold's contribution slipped by 2%.***

Primary mines made an increased contribution to global mine supply in 2004, generating an additional 15.3 Moz (476 t) of silver. The rise took the primary sector's share of world production to an estimated 30%, with the balance originating from copper (26%), gold (12%) and lead/zinc (32%) mining. The table on page 26 shows the production split by source metal, which for the purpose of this analysis is defined on a revenue basis. So, for example, the polymetallic Antamina mine in Peru is classified as a copper mine, while Cannington in Australia falls into the primary producers group.

The above-mentioned increase in primary output was a key factor behind last year's growth in global output, accounting for just over two-thirds of the total measured rise. Gains at Cannington, Dukat and the

Average Prices of Source Metals

	2000	2001	2002	2003	2004	Change y-o-y
Lead ($/t)	454	476	453	516	888	72%
Zinc ($/t)	1128	886	779	828	1048	27%
Copper ($/t)	1814	1581	1558	1780	2868	61%
Gold ($/oz)	279	271	310	363	409	13%

Source: LME, GFMS

World Mine Production of Source Metals

(Thousand tons)

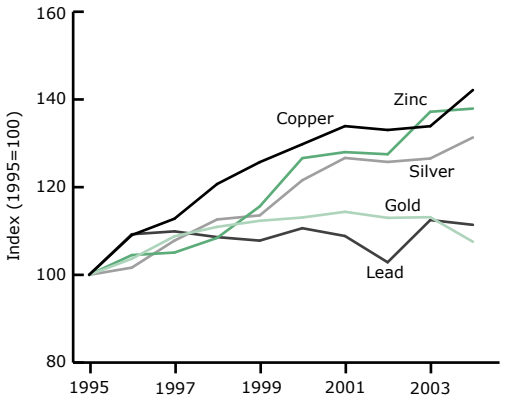
	2000	2001	2002	2003	2004	Change y-o-y
Lead	3046	2997	2832	3097	3067	-1%
Zinc	8839	8935	8901	9577	9628	1%
Copper	13212	13632	13543	13631	14470	6%
Gold (tons)	2591	2621	2589	2593	2464	-5%

Source: ILZSG, WBMS, GFMS

start in November 2003 of operations at Khakanjinskoye generated much of the category's year-on-year improvement. Assessing the largest silver-producing category, by-product output attributed to lead and zinc mines increased 3% to reach 204.6 Moz (6,364 t), with growth in Australia and China only partly offset by declines in Peru and Bolivia. Lastly, the modest increase in silver generated at copper operations was concentrated in Latin America with Escondida in Chile and Antamina in Peru providing a large part of the continent's growth. Gold was the only source metal to register a decline in associated silver volumes in 2004 with output down by an estimated 2% to 74.4 Moz (2,314 t).

A number of factors combined to fuel the base metals bull market over the last twelve months, with producers enjoying a period of above-trend demand growth on the back of the fastest global economic expansion in over 30 years. Growth in many of the emerging economies was metals-intensive, while the mature economies, notably the United States, experienced a restocking cycle. However, given the low levels of investment earlier in the decade, the base metal producers were not well placed to meet this surge in demand and bottlenecks began to emerge at the concentrate stage, which saw treatment and refining charges move in the favor of the mining companies.

Mine Production



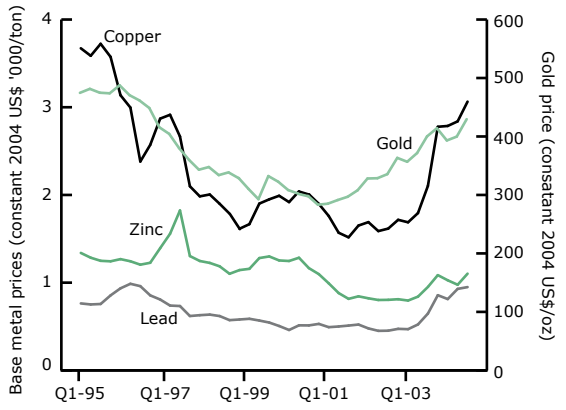
Source: ILZSG, ICSG, GFMS Metals Consulting, GFMS

For **lead**, tightness at the concentrate stage has been a feature of the market for some time. The only area of significant growth has been China, where production in 2004 was 43% higher than at the beginning of the decade. Excluding China, mine output last year was 11.1% lower than in 2000. This decline in production has been structural rather than cyclical reflecting the exhaustion of a number of well-established mines such as Los Frailes in Spain and Polaris and Sullivan in Canada. There are signs however, that lead mine production is about to reverse its long-term decline. The largest single development is the commissioning of the Magellan lead mine in Western Australia by Ivernia. The project should be commissioned during the second quarter of 2005 and output is targeted at 60,000 tons for the year with production rising to 100,000 tons in 2006. Importantly, however, the mine will not yield any silver.

The tight concentrate position has accelerated the restructuring of the lead refining sector, which has centered on Europe, with the closure of three smelters (Avonmouth, Noyelles Godault and Porto Vesme). Lead concentrate freed up by these closures (and others in the United States and Australia) has been shipped to China. The country imported 430,000 tons of lead in concentrate in 2004, up from 337,000 tons the previous year and just 153,000 tons at the beginning of the decade.

Copper has been at the forefront of the bull market as mine output has struggled to keep pace with end-demand. However the reactivation of idled capacity, brownfield expansion and, in the latter part of 2004, the return to normal operations at the giant Grasberg mine in Indonesia, have now led to a sharp rise in concentrate

Source Metal Prices (real terms)



production. Trends in spot treatment charges highlight how the concentrate market has changed. In the summer of 2004, spot treatment charges were close to zero, just nine months later they were above $200/ton. Global mine production increased by 6.2% in 2004. In the current year, Grasberg will be a major contributor to higher output in 2005, with additional gains expected on the back of completed expansions at Escondida in Chile. Elsewhere, high prices will encourage increased output in a number of areas including the African copper-belt, Mexico and the United States. As a consequence, GFMS Metals Consulting forecasts 8% growth in global concentrate output in 2005.

The pattern of mine production and prices for **zinc** in the bull market have been different to copper and lead, in that zinc prices rallied much later. This reflected in the fact that concentrate output rose sharply earlier in the decade, primarily due to the commissioning of Antamina (Peru), Skorpion (Namibia), Storliden (Sweden) and the restart of Tara (Ireland). There was also a sharp increase in Chinese zinc concentrate production, following increased output at a myriad of small and medium-sized mines. As such, global mine output rose by 7.6% to 9.577 M tons in 2003. These developments have now been absorbed by the zinc market and in 2004 global mine output grew by just 0.6% to 9.631 M tons, compared to a 3.1% increase in refined zinc production. Therefore, treatment charges have moved sharply in favor of the mining companies. Annual contracts this year were set at $126/ton (using $1,000/ton as a basis price) compared to $148/ton in 2004 and since then, spot treatment terms have fallen further still.

There are few large-scale projects on the immediate

Silver Output by Source Metal

	2003 output	% of total	2004 output	% of total	Change y-o-y
Primary	173.2	28%	188.5	30%	9%
Lead/Zinc	198.9	33%	204.6	32%	3%
Copper	158.8	26%	162.2	26%	2%
Gold	75.6	12%	74.4	12%	-2%
Other	3.3	1%	3.5	1%	6%

horizon, apart from the brownfield expansion at Hindustan Zinc, which will lift capacity from 230,000 tpa to 400,000 tpa. Teck Cominco commissioned the Pend Oreille mine in the third quarter of last year and output in 2005 is likely to be 50,000 tons of zinc in concentrate. The company also owns the Lennard Shelf mine, which it closed immediately after its purchase in October 2003. Despite much more favorable conditions, the company has yet to decide whether to restart the mine. Importantly, none of these projects are relevant for the silver market.

Production Costs

• ***Higher fuel, steel and transportation charges contributed to the modest increase in unit cash costs at primary silver mines.***

Cash costs at the sub-set of primary mines where data is available edged up by 24 cents per ounce, or 11%, year-on-year to post a weighted average of $2.36/oz. Importantly, the 36.5% increase in the silver price meant that margins (measured in US dollar terms) widened substantially, with the average up 58% compared to 2003's level.

Simple cash margins (average annual silver price less cash costs) stood at a healthy $4.29/oz – a five-year high while not a single mine in the sub-set reported cash costs higher than the annual average spot price. To put these impressive figures above into perspective however, it is worth pointing out that the presence of Peñoles' low cost Fresnillo mine lends significant weight to the group's average cash costs. The exclusion of the Mexican giant results in a 25% hike in average cash costs, while average margins are cut by 14%.

Finally, it is worth highlighting that while the group's range of cash costs deteriorated in 2004 - the lowest and

Silver Mine Production Costs				
		2002	2003	2004
Cash costs:	highest	$5.15	$5.01	$6.23
	lowest	$0.38	($0.25)	$0.21
	weighted average	$2.32	$2.12	$2.36
Average spot price		$4.60	$4.88	$6.66
% output with costs > spot price		3.10%	3.10%	0.00%
Sample size (million ounces)		81.3	81.6	82.4

the highest cost operations in 2003 both reported a hike in unit cash costs - the modest scale of the overall rise in the face of rising labor, steel, fuel and transportation costs was an impressive achievement.

Total production costs (including depreciation, depletion and amortization) were measured at $3.40/oz and ranged from a low of $2.11/oz to a high of $8.12/oz.

Producer Hedging

• ***The delta-adjusted silver hedge book at end-2004 was measured at 53.5 Moz (1,665 t), equivalent to roughly 8% of global mine supply and representing a year-on-year increase of 2.0 Moz (62 t).***

Producer hedging activities generated an estimated 2.0 Moz (62 t) of supply in the 12 months to December 2004. The addition left the total outstanding delta-adjusted book at end-2004 at a provisional 53.5 Moz (1,665 t), representing roughly 8% of global mine production. A relevant comparison here is of one against the gold book, which at end-2004 stood at 57.2 Moz (1,779 t) or 72% of annual gold output. A further point worth making, and one which illustrates the different approach taken by producers towards hedging of the two metals, is that despite the cross-commodity price rally (gold enjoyed year-on-year gains of 12.6%, while silver posted a 36.5% rise), the gold book in both nominal and delta-adjusted volumes (and chiefly in response to the improved price outlook and consequent de-hedging) declined for a fifth consecutive year. The response of the silver hedge book to changes in the silver price is less straightforward.

An important distinction between the two metals is that while the bulk of gold is generated as a primary product, 70% of global silver production is generated as a by-product of mining other metals, chiefly, gold, copper, lead and zinc. As such, silver is often regarded as a "non-strategic" metal and is therefore, a less sensitive issue when it comes to making hedging decisions (especially with regards to shareholder approval). In the gold sector, for example, and despite the current cycle of de-hedging, fueled in part by a strong anti-hedging sentiment held by many shareholders, a number of producers actually increased their silver cover in 2004.

Turning back to last year's modest rise in the silver book, it is worth highlighting that while outstanding positions increased, this came from a low base. Indeed, the longer-term picture shows nominal hedge positions have fallen by an estimated 124.1 Moz (3,860 t) since the measured peak in the book in 1997. One of the factors behind this trend is the decrease in silver generated at gold mines, which has seen by-product volumes decline from 89.8 Moz (2,793 t) in 1999 to last year's 74.4 Moz (2,314 t). This, in turn, is chiefly a result of the protracted period of reduced exploration in the late 1990s and early 2000s, which has left pipeline gold mine supply (and associated silver) much reduced. Put another way, there is simply less metal in the ground available to hedge. Secondly, many of the larger diversified base metal producers, by their very nature, generate a variety of metal products and commonly take the view that this in itself is an adequate "natural" hedge against adverse price moves in any one commodity. Thirdly, hedging has fallen out of favor with many shareholders and there is pressure on corporates to adopt a non-hedging philosophy. Lastly, and again with regards to the base metal producers, the rally in copper, lead and zinc prices meant that silver probably attracted less attention from a risk management perspective than perhaps would have been the case under a more difficult environment.

Before going into the detail of the make up of the silver hedge book at end-2004, it is worth mentioning that the companies included in this study accounted for over half of global silver production, or with the elimination of China and Russia, close to two-thirds of output. In other words, while it is more than likely that the data used to calculate the global position does not reflect all silver transactions, it is believed that the reported positions are sufficient to provide more than just a proxy for global hedging activity.

The composition of the nominal book at end-2004 consisted of 38% forwards (compared to a 36% share at end-2003), 31% sold calls (36% at end-2003) and

32% bought puts (28% at end-2003). In nominal terms, volumes increased across all three categories, although the rise in sold calls (up 0.86 Moz, 27 t) was dwarfed by sharp increases in both forwards (up by 7.0 Moz, 217 t) and purchased puts (up 7.4 Moz, 231 t). However, in spite of the impressive growth in nominal terms, the increase in delta-adjusted volumes, and hence the physical market impact, was somewhat less dramatic.

Using the Brady Trinity™ integrated trading and risk management system to calculate accurate deltas on a contract-by-contract basis for the total 61.2 Moz (1,903 t) of nominal options contracts, the delta adjusted position at end-2004 stood at 16.8 Moz (522 t). The principal factor behind the muted response measured in the translation of gains in nominal volumes to gains in delta-adjusted volumes was the fall in the delta measured against the sold call position, which declined from 0.59 in 2003 to 0.35 in 2004. The lower delta was largely a function of the interplay between the silver price at end-2004 (used to value the options) and the strike price against the individual contracts. Consider, for example, that roughly two-thirds of the volume of sold calls reported strike prices above $7.25/oz against the end-year valuation price of $6.81/oz (in other words the contracts were out-of-the-money and hence the measured delta was relatively small).

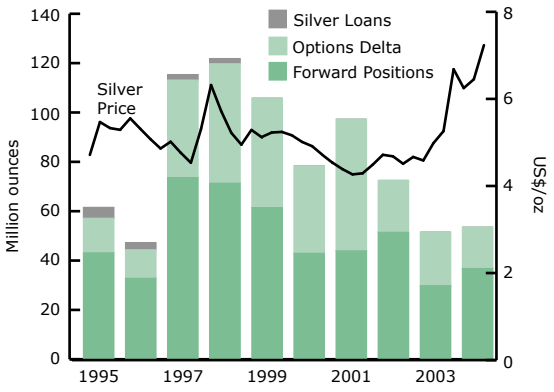
The graph below further illustrates the relationship between the valuation price and the delta against options contracts. The delta-adjusted position has been charted against changes in the spot price, the responsiveness of which is solely the result of changes in the delta of the options contracts. As the silver price increases from the end-2004 figure of $6.81/oz, the profile is driven by the interplay of the rising delta against the sold calls and the falling delta against the purchased puts *(ceteris paribus)*. Every dollar added to the spot price adds roughly 5.0 Moz (155 t) of silver to the delta hedge sold call position (as the options move further into-the-money), while the delta hedge against the purchased puts steadily declines (as the options move further out-of-the-money). In contrast, just a two dollar fall from the end-2004 price of $6.81/oz results in a reduction in the delta hedge against the volume of sold calls from 10.7 Moz (333 t) to a miserly 1.4 Moz (43 t), while the delta hedge against the volume of purchased puts increases from 6.2 Moz (193 t) to 27.4 Moz (852 t).

Twelve-month Hedge Conditions*

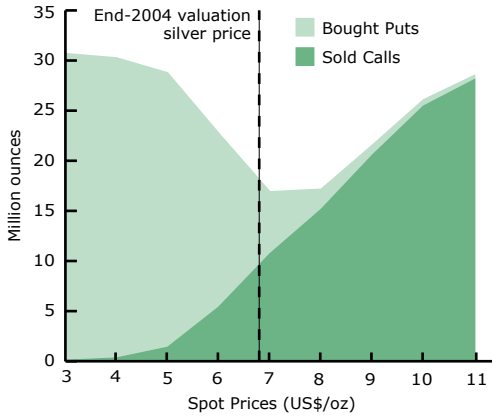
	2002	2003	2004
Spot Price	$4.60	$4.88	$6.66
Libor	2.2%	1.4%	2.1%
Lease Rate	1.2%	0.7%	0.9%
Contango	1.0%	0.7%	1.2%
Forward Price	$4.64	$4.91	$6.74
Premium	$0.04	$0.03	$0.08

*12-month averages

Producer Hedging: Outstanding Positions



End-2004 Delta Adjusted Options Position



5. Supply from Above-ground Stocks

- ***2004 saw supply from above-ground stocks fall by 39.8 Moz (1,240 t) to reach a total of 202.3 Moz (6,292 t).***

- ***The decline was primarily driven by a 33.9 Moz (1,053 t) increase in implied net investment.***

- ***The, mainly driven by China, 30% decrease in government sales, which reached 61.7 Moz (1,920 t) in 2004 also contributed to the fall.***

- ***The year saw scrap supply fall at the margin in spite of the higher price, this outcome being mainly driven by the secular decline in photographic fabrication and the associated fall in recycling.***

Overview

The different streams of supply of silver to the market can be divided into two basic categories: supply from newly mined production and supply from above-ground stocks. The latter essentially consists of scrapped fabricated products and the dishoarding of privately held and government owned silver bullion stocks. Mine production, which is extensively discussed in Chapter 4 of this *World Silver Survey*, stood at 634.4 Moz (19,731 t) in 2004, taking up 76% of the total silver supply to the market. This compares with a 72% share seen in 2003. The balancing 24% (28% in 2003) came from above-ground stocks of silver. Here it is important to note that in our analysis, GFMS net out producer de-hedging and implied net investment, which are essentially inflows into above-ground silver stocks.

Supply from Above-ground Stocks

(Million ounces)

	2003	2004
Implied Net Disinvestment	-8.7	-42.5
Producer Hedging	-21.0	2.0
Net Government Sales	88.2	61.7
Sub-total Bullion	58.5	21.2
Scrap	183.6	181.1
Total	**242.1**	**202.3**

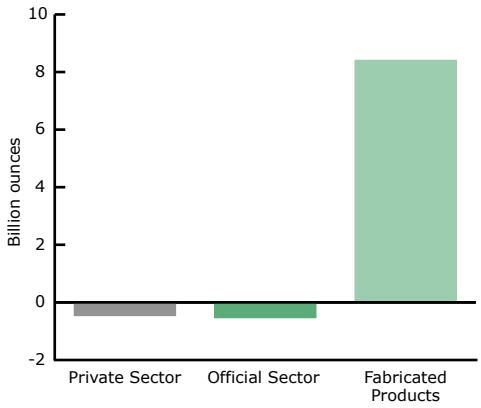
The accompanying table illustrates the net contribution to supply from each of the components included in above-ground stocks, namely the impact of changes in the producer hedge book, implied net investment, sales of government silver stocks and supply from the recycling of scrapped fabricated products.

In the case of silver, the metal involved in producer hedging transactions is mainly provided from private sector stocks (in contrast to gold, where most of the bullion is sourced from central bank holdings). Taking into account the figure for producer hedging in 2004 - a mere 2.0 Moz (62 t) for the year - the 40.5 Moz (1,261 t) increase in overall private sector bullion stocks was entirely driven by implied net investment of 42.5 Moz (1,323 t).

Net sales from government silver stocks declined by 30% year-on-year in 2004, to reach 61.7 Moz (1,920 t). As a result, the share of total supply accounted for by government sales fell from 10% in 2003 to 7% last year. As a point of reference, it is interesting to note that this compares with official sector sales providing over 12% of total gold supply in 2004.

The fall in government silver sales was almost exclusively driven by a decline in the amount of silver released from Chinese official stocks. As is explained in later sections of this chapter, ever since the start of Chinese sales in 1998, these have tended to take up the bulk of total government sales. Given indications that the country's stockpiles have been markedly run down, probably

Changes in Above-ground Stocks (1995-2004)



signaling a slow-down in future sales, it is possible that in years to come the impact of government sales on the silver market will decline, to potentially reach pre-1998 levels.

Combining changes in private and official stocks, the overall decline in bullion stocks is estimated to have reached 21.2 Moz (659 t) in 2004, down by 37.4 Moz (1,163 t) from the revised figure for 2003. As is discussed above, this fall was driven by an increase in implied net investment coupled with a decline in government sales, and is believed have been largely responsible for the 36% increase in the average silver price for the year.

Scrap supply is the other component of silver supply from above-ground stocks. The majority of scrap comes from the recycling of photographic materials, with a smaller contribution from recycled electronic and other industrial products as well as scrapped jewelry and silverware. Total scrap supply is estimated to have provided the market with 181.1 Moz (5,633 t) of silver in 2004.

This figure marks a marginal decline from 2003's level. Here it should be noted that, in contrast to gold, silver scrap supply is by and large relatively price inelastic (India and some of the Middle Eastern markets being the exception). This is due to the bulk of scrap supply coming from the recycling of products and semi-manufactured components, such as electronic products and photographic film, whose price is significantly higher than the value of their silver content, and where non-price factors determine the volume of silver bearing material that is scrapped and returned to the market.

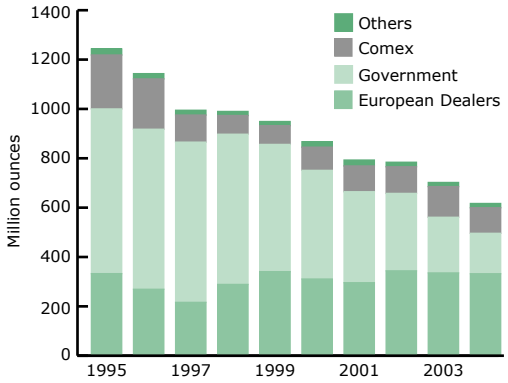
The volume of scrap is thus chiefly driven by a number of exogenous factors, namely the performance of the photographic market, environmental legislation and trends in industrial output; prices near last year's levels would only affect the overall picture at the margin. In 2004, in particular, the main trend that drove the just over 1% decline in silver scrap supply was the continued fall in photographic use of silver (itself mainly due to the impact of digital photography on film sales), which was partly offset by tighter environmental legislation and a reaction to high prices in the price elastic markets.

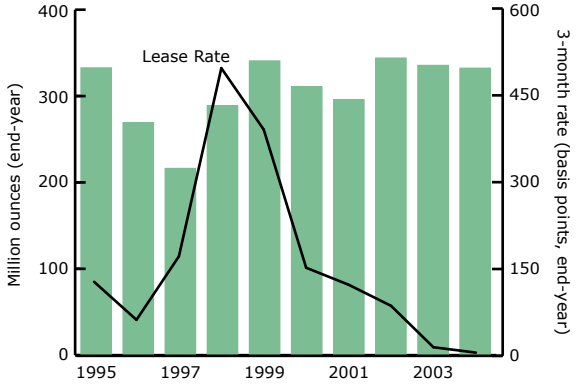
Identifiable Bullion Stocks

In our analysis of identifiable bullion stocks, GFMS include inventories for which we have sufficient evidence to form a statistical picture. As such, this does not include the large amount of bullion held by many private individuals or in non-recognized depositories, which by its nature is impossible to quantify on a fully scientific basis. The table on page 32 as well as the chart below show the levels at which identifiable bullion stocks stood at end-year. It is immediately clear that such stocks have maintained a declining trend for at least the last decade.

In 2004, total identifiable silver bullion stocks fell by 85.2 Moz (2,649 t). This compares with the 21.2 Moz (659 t) supply from bullion number derived by implication, which is presented in the table on page 30. The significant difference between the two, amounting to 64.0 Moz (1,989 t), can only partly be explained by the increase in silver borrowing that we believe took place in 2004. It would seem, therefore, that much of the bullion made available by identified sources found its way into

Identifiable Bullion Stocks | **Bullion Stocks in Dealers' Vaults in Europe**





Identifiable Bullion Stocks

(Million ounces)

	end-2003	end-2004
European Dealers	335	332
Comex	124	104
Government	226	164
Other Stocks	17	17
Total	**702**	**617**

Comex Silver Stocks (end period)

(Million ounces)

	Q1	Q2	Q3	Q4
2003	108.7	107.2	105.9	124.3
2004	122.1	118.4	107.8	103.6
2005	103.6			

non-identifiable stocks, mainly those held by private individuals and non-reporting institutions. In the context of increased investment activity throughout the year - discussed extensively in Chapter 3 - such a possibility would not seem illogical.

European Dealers' Stocks

GFMS have for many years conducted a proprietary and confidential survey of bullion stocks held in European dealers' vaults. Given the participation in this survey, we are confident that the numbers generated for near market bullion stocks held in Europe are fairly representative. Looking at the overall figure, European dealers' stocks fell at the margin. The intra-year picture shows that the decline was the net product of quarterly increases as well as (larger) decreases in total stocks. Finally, looking at the breakdown into individual players - information on which cannot be provided due to obvious confidentiality issues - it would seem that some "changing of hands" could have occurred over the year, as some dealers' stocks actually increased, while the gross declines in stocks of others certainly exceeded the aggregate total.

Comex Stocks

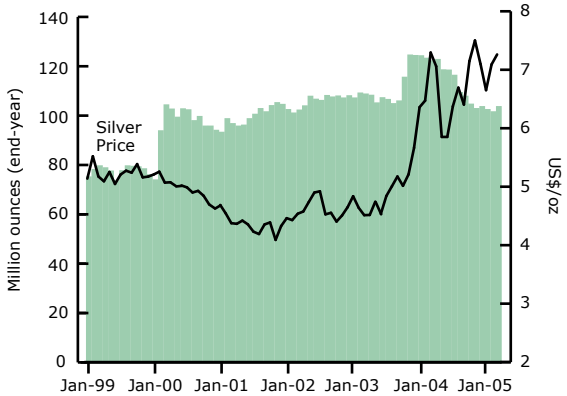
At the end of 2004, registered and eligible silver stocks held at Comex depositories stood at 103.6 Moz (3,222 t), down by 20.7 Moz (643 t) on the end-2003 level. The decline could have been partly driven by strong industrial demand, both within the United States and abroad. What seems counter-intuitive though is that much of the decline took place in the second half of the year, whereas fabrication demand was notably stronger in the first.

As in the case of European near-market stocks, some shifting of ownership seems to have taken place between the different depositories. For instance, stocks held at the Brinks depository alone declined by over 24 Moz (759 t), while HSBC's holdings rose by about 12.3 Moz (384 t).

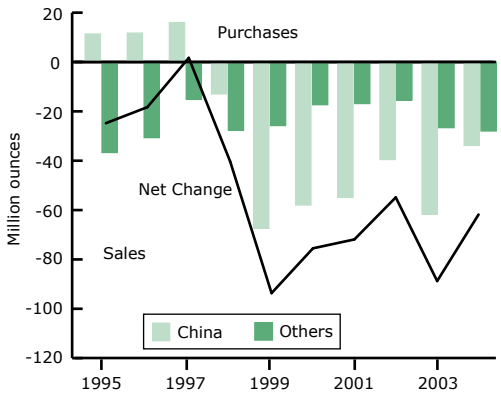
Government Stocks

GFMS estimate that, at the end of 2004, government bullion stocks totaled approximately 164 Moz (5,100 t), compared to 226 Moz (7,000 t) at the end of the previous year. The 61.7 Moz (1,920 t) decline in government

Comex Warehouse Stocks



Changes in Government Stocks



Silver Borrowing

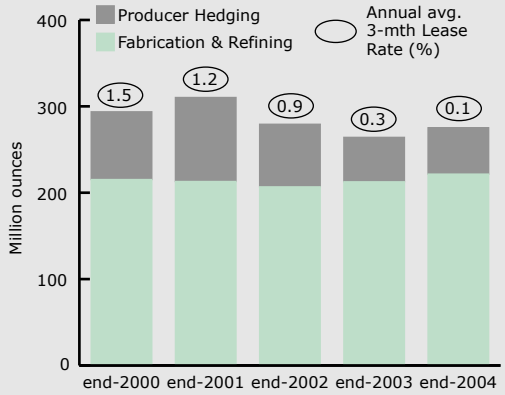
GFMS estimate that the silver leasing market increased in size last year. At year-end, the total lent/borrowed is thought to have reached approximately 275 Moz (8,560 t). There have been two main and related factors at work behind this increase: low leasing rates and increased borrowing by industrial users.

Silver leasing rates have generally been on a declining trend since mid-2002 and last year dropped to negligible levels. Average 3-month rates fell to 0.10% in 2004 compared to an already low 0.26% the previous year. At the margin, the slide in leasing rates has encouraged and allowed manufacturers to increase their borrowings, although for the less credit worthy, this has partly been offset by the impact of higher silver prices on available credit lines. The credit issue is less significant when it comes to large industrial borrowers of silver. Furthermore, in recent years intermediaries have aggressively targeted such manufacturing companies that use high volumes of silver. A number of these users were arguably "under-borrowed" and their silver leases have seen an important growth over recent years. In addition, as this *World Silver Survey* shows, industrial demand for silver has increased sharply over the last couple of years. Borrowing therefore from the industrial sector has risen considerably over the 2002-04 period.

The impact of the above has been mitigated in the last two years by lower demand from other borrowers. In 2003, producer de-hedging of 21.0 Moz (653 t) was the culprit, whereas last year the offset came from the jewelry & silverware sector – specifically a reduced call on the market from India, where consignment stocks tended to shrink.

That the pick-up in borrowing demand has had little or no effect on leasing rates owes much to the surge in available liquidity from investors' long positions in silver. An illustration of this is that the average non-commercial net long in Comex futures stood at 51,905 contracts last year compared to just 27,372 contracts in 2002. The existence of substantial long positions has provided additional liquidity to the market, especially at the short end. This can be seen from the steeper fall in short-term silver leasing rates than those at longer maturities.

Silver Borrowing



stocks last year accounted for some 7% of total silver supply versus 10% in 2003.

In 2004, once again, the largest source of government stock supply was China. We estimate that Chinese official sales came to just under 34 Moz or around 1,050 t last year, this representing a considerable reduction from the (revised) 61.7 Moz (1,918 t) calculated for 2003. The fact that Chinese sales declined this much (and continue to be a good deal lower this year-to-date) in spite of the higher silver price has been interpreted as indicating that government stockpiles are no longer abundant.

The other major source of official sales in 2004 was Russia. Our evidence is that Russian stock sales were considerable, especially at the time of the price spike in March. For the year as a whole we estimate that Russian stock sales exceeded 26 Moz (over 800 t), which, if correct, means they were not far short of the level recorded by GFMS for 1998, when there was last a very large outflow of bullion stocks from the country.

Stock sales from Europe – mostly in the form of demonetized coin – dropped significantly last year compared to the high level of such disposals seen in 2003. Our understanding is that remaining stocks are likely now to be limited in size.

Finally, last year India announced that it would commence sales of government silver stocks in 2005. The country is understood to hold some 67.5 Moz (2,100 t), although a good portion of this is in the form of low grade material. The variable quality of these stocks and the fact that silver below 50% purity is subject to 12.5% VAT explains why, after a strong start, sales have recently stalled.

Other Stocks

The balance of identifiable silver bullion stocks, consist of stocks registered on the Tokyo Commodities Exchange, the Chicago Board of Trade as well as Japanese trade stocks as these are reported by the Ministry of Trade and Industry. Due to their very small volume, these other

Chinese Bullion Stocks

An important feature of the silver market over the past decade has been the build-up and run-down of Chinese above-ground silver bullion stocks. China has a long history of using silver as money; indeed the country operated a silver monetary standard through to 1935. In the light of this, it is not surprising that China held large above-ground stocks of silver bullion that were swollen by the build up of excess silver mine production, which began in earnest in the latter part of the last century. As we have pointed out in previous *World Silver Surveys*, silver mining in China only really expanded in the late 1970s, when it was realized by the governing authority that, in order to support the nation's push to industrialize and become self sufficient, it would need to actively promote industry sectors such as silver mining. From the early 1980s production expanded rapidly, so that by the end of the same decade mined output had substantially surpassed local demand. All silver produced was officially required to be sold to the People's Bank of China (PBOC) and it is believed that, despite a sizeable volume being sold unofficially by producers and subsequently exported, much of the excess supply was simply stockpiled. This situation was obviously not sustainable in the long run and in 2000, as part of various market reform measures, the silver market began to be liberalized and silver exports rose quickly.

There is no question that the vast quantity of silver suddenly entering the global market from China had an important impact on the metal's price, perhaps especially from 2000 to 2003. For example, while the gold price rose from $279/oz per ounce in 2000 to $363/oz in 2003, silver moved sideways from $4.95 to $4.88/oz over the same period. In contrast, the reduction of supply from Chinese silver stocks in 2004, compared to the previous half decade, was not lost on investors and speculators. Combined with the actual reduction in the volume of metal entering the market, this influenced the price accordingly.

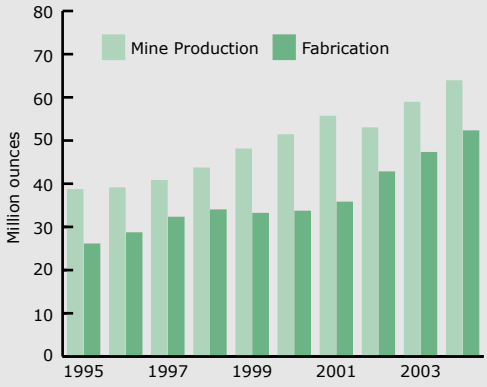
The conclusion that a noticeable fall in the volume of silver mobilized from Chinese above-ground stocks occurred in 2004 was reached by GFMS after carefully analyzing the other elements of the Chinese silver supply/demand equation and is supported by anecdotal evidence from market sources involved at all levels in the supply chain. This is an important conclusion to draw as, in the face of a sharply higher silver price, it suggests that Chinese above-ground bullion stocks (both official and quasi-official) must be greatly reduced and now more difficult to mobilize.

Looking firstly at supply in 2004, we estimate that Chinese silver mine production, either from primary operations or recovered as a by-product of Chinese lead, copper or other mining activities rose by nearly 10% last year, while silver recovered from imported concentrates is thought to have increased by at least a sixth. Combined, these two sources of silver rose to around 97.7 Moz (3,038 t) in 2004. In addition, a further 7.7 Moz (240 t) of scrap entered the local market last year. This total supply of 105.4 Moz (3,278 t) compares to Chinese fabrication demand of 52.2 Moz (1,624 t), which was less than half of the total supplied from mining, smelting or scrap recovery.

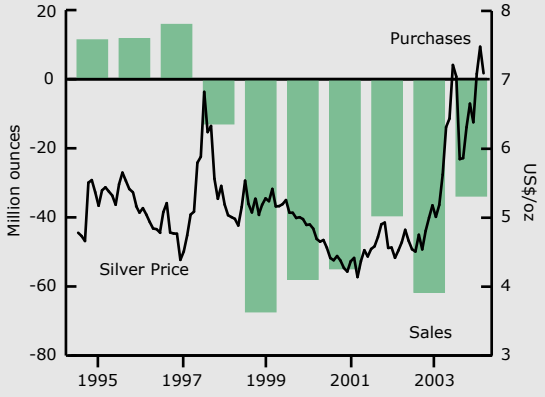
The excess silver thus available in China last year was exported, primarily via Hong Kong into the international market. A cursory examination of Chinese official trade data shows that exports rose by 21% to 112.6 Moz (3,501 t). However, there is evidence to suggest that this impressive volume over-states reality. This may be partly to do with the customs' data capture methods as well as reflecting the round-tripping of silver from the mainland to Hong Kong and back again. Our understanding is that the quantity of silver involved in this round-tripping business, which we discuss in greater detail in Chapter 6, may have been as much as 20 Moz (625 t). Nevertheless, we conclude that net Chinese exports were in the vicinity of 77 Moz (2,400 t), implying a run-down in loco-China above-ground bullion stocks of around 24 Moz (750 t).

One final point to be made regarding supply to the international market from Chinese government bullion inventories is that in the 2002-04 period, the quantity was swollen by sales out of bullion stocks held overseas. We believe that this was the case again last year, with at least part of the reduction in such stocks due to the exercise of call options that had come into the money following the pronounced rise in silver prices.

Chinese Mine Production and Fabrication Demand



Chinese Government Purchases and Sales



stocks appear in the table on page 32 as well as in the chart of page 31 aggregated under the "Others" category. During 2004, these stocks registered a 0.5 Moz (16 t) increase, to reach the end-year total of 17.3 Moz (538 t).

Scrap

- ***Total scrap supply fell by 1.3% to 181.1 Moz (5,633 t) in 2004, primarily due to the decline in recovery from photographic sources.***

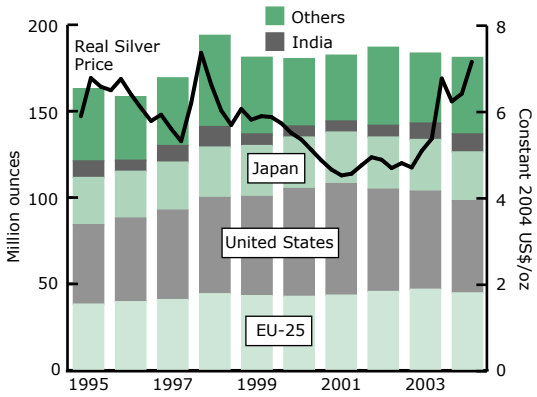
All other things being equal, the expectation would be that scrap volumes would rise every year, particularly in the developed world. The most obvious driver of this trend would be the mounting above-ground stock of finished products that can/will eventually come back to the market to be scrapped, coupled with environmental legislation that is encouraging ever higher levels of recycling (for example the European Union's Waste Electrical and Electronic Equipment Directive, which makes manufacturers of electrical and electronic equipment responsible for taking such products back at the end of their useful economic lives and recycling them). As is so often the case in the silver market, however, matters are never that simple.

Specific market conditions can and do distort trends in scrap generation. For example, last year saw modest volumes of inventory remelt in Italy (of silverware), which temporarily boosted scrap volumes there. And in price sensitive markets like India and the Yemen, scrapping can and does respond to changes in the price. In the case of the Yemen, there were significant flows of old coin on price spikes in 2004.

In terms of changes in trends, developments in the photographic market on the back of digital technologies are beginning to have a marked impact on scrap volumes. This is, of course, counteracting the impact on supply of the growth in the above-ground stock of fabricated products that is mentioned above. What will be interesting to observe over the next few years is whether the fall in scrap from photographic sources will be sufficiently large to reduce the absolute level of recovery of silver from secondary sources. It is certainly not a *fait accompli* that scrap volumes in the developed world will continue to rise in the near future.

An interesting case in this context is the **Japanese** market, where GFMS estimate scrap volumes fell by over

World Scrap Supply



5% to 28.3 Moz (880 t) in 2004, the second year in a row that it has declined. The reason for this is simple; basis our data, scrap recovery from photographic sources fell by around 10% offsetting growth in other areas.

A similar picture was seen in the **United States**, where scrap supply declined by a little over 6%. Much of the fall can be attributed to reduced volumes coming from the photographic sector, the result of lower camera and, more importantly, film sales. The other major category to see low volumes was in the ethylene oxide (EO) market. During 2004, in order to take advantage of high glycol prices, the expected change over of many EO catalysts was postponed, thereby reducing the downtime of a number of plants. Nevertheless, in spite of the fall in supply last year, the increase in volume from this sector since 1995 has been impressive. Ten years ago, old scrap supply from the catalyst industry was a third the size of that originating from photography. By last year, however, it had risen above 50%, the result of falling supply from the photographic market combined with significant growth in the EO industry.

Although the GFMS data series for silver scrap in **India** shows a year-on-year increase in 2004 (from 9.5 Moz (294 t) to around 10.4 Moz (324 t)), this is not a universally accepted view. Indeed, some estimates point to a sharp fall in volumes in spite of the more than 30% increase in the local price (and the fact that the price regularly scaled record highs throughout the year). Our view, at the time of writing, is that it is unlikely scrap fell in 2004 in the presence of such high prices.

The arguments in favor of the view that scrap fell centers around the banking role played by silver in the rural

Table 3 - Supply of Silver from the Recycling of Old Scrap (million ounces)

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Europe										
Germany	14.8	15.4	16.1	16.4	16.1	16.7	16.8	16.7	19.0	18.3
UK & Ireland	7.4	7.6	8.4	10.8	11.5	10.9	11.1	13.6	13.0	12.2
France	4.7	4.5	4.3	4.1	4.0	3.5	3.9	3.9	4.1	3.8
Italy	3.2	3.5	3.4	4.7	3.4	3.4	3.5	3.6	3.6	3.3
Austria	2.0	1.8	1.8	1.8	1.7	1.6	2.0	1.9	1.5	1.6
Netherlands	1.1	1.3	1.3	1.3	1.3	1.4	1.4	1.4	1.4	1.4
Sweden	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.0	1.0	1.0
Belgium	0.6	0.6	0.6	0.6	0.6	0.6	0.7	0.6	0.6	0.6
Denmark	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.5	0.5	0.6
Portugal	0.4	0.4	0.5	0.5	0.5	0.5	0.4	0.5	0.5	0.5
Czech & Slovak Republics	0.7	0.9	0.8	0.7	0.6	0.6	0.5	0.4	0.4	0.4
Spain	0.4	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4
Finland	0.5	0.5	0.5	0.5	0.5	0.4	0.4	0.4	0.4	0.4
Switzerland	1.6	1.7	0.8	0.4	0.3	0.3	0.3	0.3	0.3	0.3
Norway	0.8	1.0	1.0	0.8	0.9	1.1	0.7	0.7	0.5	0.3
Other Countries	1.1	1.2	1.2	1.2	1.2	1.1	1.1	1.2	1.1	1.1
Total Europe	**41.1**	**42.5**	**42.7**	**45.9**	**44.6**	**44.2**	**44.8**	**47.1**	**48.4**	**46.4**
North America										
United States	46.0	48.4	51.8	55.7	57.4	62.4	64.5	59.2	56.8	53.3
Mexico	4.8	2.4	4.3	10.6	2.3	1.5	1.4	1.5	1.8	1.9
Canada	1.7	1.8	1.6	1.9	1.6	1.4	1.4	1.4	1.5	1.4
Total North America	**52.5**	**52.6**	**57.7**	**68.3**	**61.3**	**65.4**	**67.3**	**62.2**	**60.1**	**56.7**
Latin America										
Brazil	1.9	1.9	1.6	1.6	1.8	1.5	1.6	1.0	1.2	1.0
Argentina	0.6	0.6	0.6	0.6	0.6	0.6	0.7	0.6	0.6	0.6
Chile	0.5	0.5	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.4
Other Countries	0.7	0.7	0.7	0.9	0.9	0.8	0.8	0.8	0.8	0.8
Total Latin America	**3.8**	**3.8**	**3.4**	**3.7**	**3.7**	**3.4**	**3.5**	**2.8**	**3.0**	**2.8**
Middle East										
Turkey	2.3	1.9	1.6	1.7	1.4	1.3	1.3	1.4	1.8	1.9
Egypt	0.8	0.7	0.3	0.4	0.3	0.9	1.1	1.3	1.1	1.4
Saudi Arabia & Yemen	3.0	1.3	3.2	2.1	7.5	2.3	0.8	7.2	0.7	1.3
Oman	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Other Countries	0.3	0.4	0.4	0.4	0.4	0.3	0.4	0.3	0.4	0.5
Total Middle East	**6.6**	**4.4**	**5.7**	**4.7**	**9.7**	**4.9**	**3.7**	**10.4**	**4.2**	**5.2**
Indian Sub-Continent										
India	9.6	6.4	9.6	11.9	6.7	6.4	6.4	6.8	9.5	10.4
Other Countries	0.3	0.2	0.3	0.5	0.4	0.4	0.5	0.5	0.5	0.5
Total Indian Sub-Continent	**9.9**	**6.6**	**10.0**	**12.4**	**7.0**	**6.8**	**6.9**	**7.2**	**9.9**	**10.9**
East Asia										
Japan	27.3	27.1	27.8	29.2	29.5	29.8	29.9	30.2	29.9	28.3
China	4.3	4.5	4.6	5.8	5.9	6.0	6.2	6.3	6.6	7.7
South Korea	3.3	3.4	3.6	7.8	5.3	5.3	5.5	5.8	6.1	6.3
Taiwan	0.7	0.7	0.8	0.8	0.9	0.9	0.9	0.9	1.0	1.0
Thailand	0.3	0.4	0.8	1.0	0.4	0.3	0.4	0.5	0.5	0.5
Singapore	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
Hong Kong	0.3	0.3	0.4	0.5	0.4	0.4	0.4	0.4	0.4	0.4
Indonesia	0.3	0.3	0.4	0.4	0.4	0.5	0.4	0.3	0.3	0.4

Table 3 - Supply of Silver from the Recycling of Old Scrap (million ounces)

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Vietnam	0.4	0.4	0.4	0.4	0.4	0.4	0.3	0.3	0.3	0.3
Philippines	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Malaysia	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Total East Asia	**37.6**	**37.7**	**39.3**	**46.6**	**43.7**	**44.2**	**44.6**	**45.4**	**45.8**	**45.6**
Africa										
Morocco	0.4	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	1.3
Other Countries	0.7	0.7	0.5	0.6	0.6	0.6	0.5	0.5	0.5	0.6
Total Africa	**1.2**	**1.1**	**1.1**	**1.1**	**1.1**	**1.1**	**1.1**	**1.0**	**1.1**	**1.8**
Oceania										
Australia	2.5	2.3	2.3	2.4	2.4	2.4	2.4	2.3	2.1	2.0
Total Oceania	**2.5**	**2.3**	**2.3**	**2.4**	**2.4**	**2.4**	**2.4**	**2.3**	**2.1**	**2.0**
CIS										
CIS	7.7	7.4	7.1	8.8	7.7	7.9	8.1	8.5	9.0	9.5
Total CIS	**7.7**	**7.4**	**7.1**	**8.8**	**7.7**	**7.9**	**8.1**	**8.5**	**9.0**	**9.5**
World Total	**162.9**	**158.3**	**169.3**	**193.9**	**181.2**	**180.4**	**182.4**	**187.1**	**183.6**	**181.1**

market place. In effect, gold and silver act as a vehicle for monetary savings and purchases. Thus, after a good crop, farmers typically buy silver and will sell this back when he/she needs cash for seeds (among other things) to plant the new crop. 2003 was a very good year for the Indian rural economy with, for example, food grain production growing by over 22%. This stood in stark contrast to a disastrous 2002 which saw food grain production fall by close to 20% (and precipitated large sales of silver to sustain the family and buy new seed).

The contention of this school of thought is that even though the silver price scaled new peaks in the first quarter of last year, farmers had enough revenue from their production the previous year so that there was hardly any need to sell silver. Most importantly, as the sowing season neared (May and June) the silver price dipped below Rs.10,000 per kg making the sale of scrap less attractive. It was only in the last quarter of the year, when the average silver price was over Rs.11,500 per kg, that most of the silver scrap flowed into the market place, leaving the total volume down year-on-year, according to this contrarian view.

The supply of old scrap in **Europe** fell by a modest 4% to 46.4 Moz (1,443 t) in 2004. Some may have been expecting an increase given the substantial 24% rise in the euro silver price but levels would have to be notably higher still to trigger a surge in scrap. On the other hand, the fall might sound too modest given the rapid decline in silver halide photography. However, the drop in photographic scrap is not thought that large, partly as a result of enhanced recovery rates in some countries as tighter environmental controls took effect.

The absolute levels for Europe remain quite high in historical terms, largely as a function of the elevated level of old coin melt in **Germany**. The latter, however, is still best viewed as price neutral due to the resultant supply essentially all going to the greater volume of new coin fabrication called for by the Bundeswertpapierverwaltung. Old coin melt elsewhere on the continent, in contrast, is understood to have fallen in 2004.

Other areas of scrap, such as jewelry, were broadly flat or showed a modest increase, the case for unsold silverware inventories and industrial scrap. Significant volumes of relatively high yield electronic scrap of eastern European origin are still being imported and refined in western Europe, principally Germany. This, however, is (mainly) counted as CIS, not EU, scrap as GFMS invariably allocate scrap to the country of its generation, which helps explain the comparatively high scrap figure for the CIS.

The surging silver price in the early part of 2004 led to a rise in scrap supply (mainly in the form of Maria Theresa Taler coins) in **Saudi Arabia**, **Yemen** and north Africa. While the trade spoke of significant volumes, these paled against those seen in 2002 and it was perhaps the concentrated nature of the flurry of activity that led to some exaggeration regarding annual quantities supplied.

6. Silver Bullion Trade

- ***Russia joined China last year in becoming a major exporter of silver into the international market. Much of this metal found its way into East Asia and European vaults***

- ***A substantial fall in Indian demand resulted in lower exports from China and Europe to the Sub-Continent.***

- ***Elsewhere, North American imports fell by 9% while exports rose substantially year-on-year.***

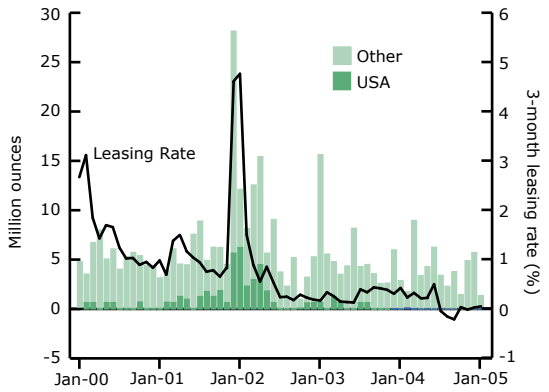
Europe

Europe is one of the world's most important bullion importing regions. Much of this is a product of its large structural deficit; European fabrication demand in 2004 totalled 219.6 Moz (6,829 t), yet the combined supply from mine production at 56.9 Moz (1,770 t), scrap at 46.4 Moz (1,443 t) and some dishoarding was far lower. One important feature (and a differentiator from gold) is that imports of scrap from price sensitive regions are rarely substantial. However, 2004 looks to have been a little unusual, with fair sized volumes said to have been received from Asia. The four largest importing countries are Italy, Germany, Switzerland and the United Kingdom.

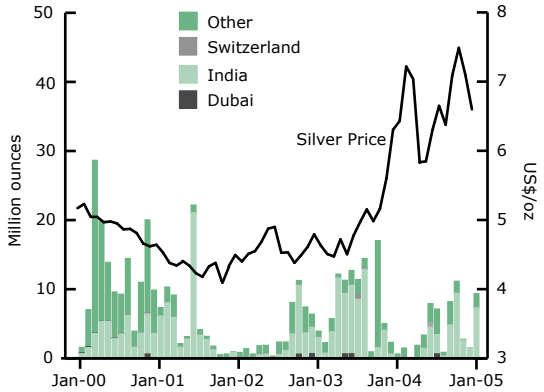
Despite the above structural deficit, silver bullion exports from Europe are substantial, with Switzerland and the United Kingdom dominating such shipments, particularly on an extra-EU basis. This stems partly from the fact of London and Zurich being major physical bullion trading centers. Switzerland's role is also boosted by it being home to some of the largest refineries, taking in mine production from elsewhere in the world and turning out bullion bars and other products. (This area is now less important for the United Kingdom, following the closure of a major refinery there last year.)

Silver bullion imports into the **United Kingdom** fell sharply in 2004 to 49.0 Moz (1,523 t), an eleven year low. However, were it not for a one-off shipment from Spain in 2003, the year-on-year fall would have been far more modest. Aside from this, a further part of the decline was in response to the European Union's (EU) duties, which were imposed in March 2003 on a range of precious metal imports from the United States. As a result, from a recent high of 19.7 Moz (612 t) in 2002, imports of bullion from the United States fell to a paltry 0.1 Moz (3 t) last year. Other notable declines were seen for inflows from Uzbekistan, Sweden, Belgium and Peru. Against this, there were sharp increases in material originating from Hong Kong, Poland and Russia, the latter partly due to higher domestic mine production in 2004 as well as outright government sales (see Chapter 5 for more on this).

UK Bullion Imports



UK Bullion Exports



The decline in UK exports was even more dramatic, with a year-on-year fall of more than 50%. Even so, at 46.7 Moz (1,454 t) the 2004 total only represented a two-year low. Much of the explanation for this lies in the United Kingdom's single most important destination, namely India, with which trade has increased significantly over the past decade. In 1995, India accounted for just 5% of UK exports, but by 2004 this had grown to nearly 60% (although in fact it peaked in 2001 with an 82% share of the total). As a result, trends in Indian silver offtake have directly impacted on UK shipments, so it should be no surprise that the sharp fall in Indian fabrication last year resulted in lower trade with the United Kingdom. In addition, 2003 had seen a sharp rise in exports to the United States, in response to an arbitrage opportunity (see last year's *Silver Survey* for more on this), of which there was no repeat last year.

German bullion exports can be substantial and in 2004 stood at a weighty 60.0 Moz (1,867 t), up 4%. That this could be achieved with a smaller volume of bullion imports, 52.5 Moz (1,634 t), and fabrication of 38.1 Moz (1,184 t) is mainly due to the addition to supply from imported concentrates and scrap. A key difference between Germany and the other two major European exporters is that the former's trade is overwhelmingly intra-EU.

The customs data on official **Italian** bullion imports show a rise of 4% to 52.9 Moz (1,645 t). An increase, even this modestly sized one, does not square with either fabricators' talk on bullion use or commentary from origin. This discrepancy is not resolved by a review of the net import figures as these also show a small rise (once adjusted for an apparent error in the 2003 official export series). Nor is it resolved by changes for unofficial imports as these are thought to have remained at insignificant levels (having fallen sharply in 2000 and 2001 due to revisions to the tax regime).

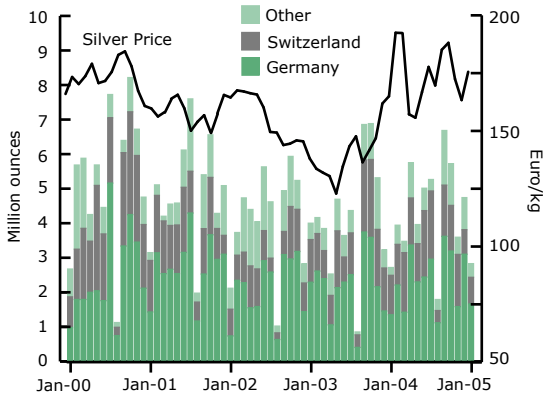
It may well be the case that errors have crept into the official numbers or, alternatively, not all the bullion entering was truly for fabrication purposes (as is normally the case) and may not have stayed long in the country. As such and given that few, if any, fabricators would have built stocks, it is estimated that the true volume of imports going to fabricators would have fallen by a modest amount.

North America

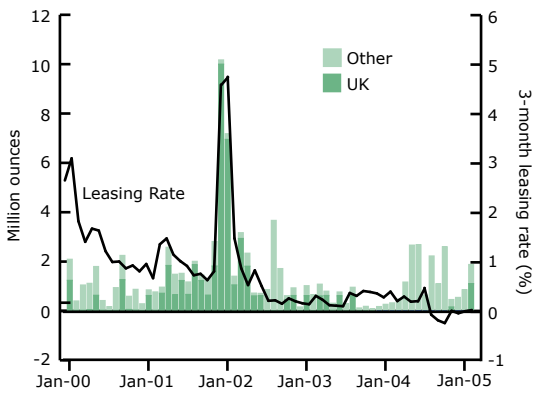
Just three countries now account for more 90% of the **United States'** bullion imports, namely Mexico, Canada and Peru. (Chile was an important trading partner in the mid-1990s but in recent years these shipments have fallen back considerably.) Last year, imports from all three countries edged lower with the largest fall in both volume (down 3.2 Moz or 99 t) and percentage terms (-7%) coming from Canada. Overall, bullion imports were down a little over 9% to 131.7 Moz (4,096 t), a three-year low.

With regards to US exports, the year-on-year picture was far more dramatic with a 135% increase. However, this owed more to the collapse in exports the year before (to

Official Italian Bullion Imports



US Bullion Exports



an historic low of just 6.4 Moz or 200 t). Furthermore, exports in 2004 from the United States remained well below the levels recorded in the mid-1990s, during which time there had been considerable flows of metal to the United Kingdom. (During 1995-99, total exports averaged 83.3 Moz or 2,591 t compared with just 16.8 Moz or 523 t over the past five years.) As discussed above, the decline in exports to the United Kingdom accelerated in 2003-04 in response to the EU's retaliatory tariffs. These punitive tariffs may also have contributed to the increase in exports to Switzerland last year although total shipments remained modest. But the main reason for the more than doubling of US bullion exports was due to the sharp increase in trade with Canada, which not only rose to 8.4 Moz (261 t), but assumed the role as the leading destination for US bullion exports in 2004. This can partly be attributed to sharply higher coin minting and a rise in loco-Canadian silver stocks.

Middle East and Indian Sub-Continent

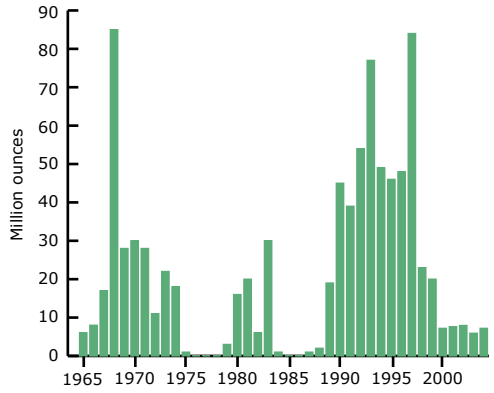
The resumption of significant bullion imports into **Egypt** in 2003 proved to be short lived, as shipments last year fell back to the level seen in 2002. This may appear surprising, given that local fabrication increased in both jewelry and silverware, but it appears as though both unofficial bullion and scrap imports were notably higher in 2004, the latter including Maria Theresa Taler coins originating from the Yemen.

Turkish silver bullion imports, through the Istanbul Gold Exchange, rose to their highest level since imports began through the Exchange in March 1999. In fact, with the exception of 2001 (due to the banking and financial crisis that year), shipments have been on a rising trend culminating in the one-third rise in 2004. Although Turkish mine production was modestly higher last year, it was unable to meet the requirements of the local jewelry industry, which saw a sharp rise in fabrication last year. The resulting short fall was therefore satisfied by the large increase in imports from overseas markets.

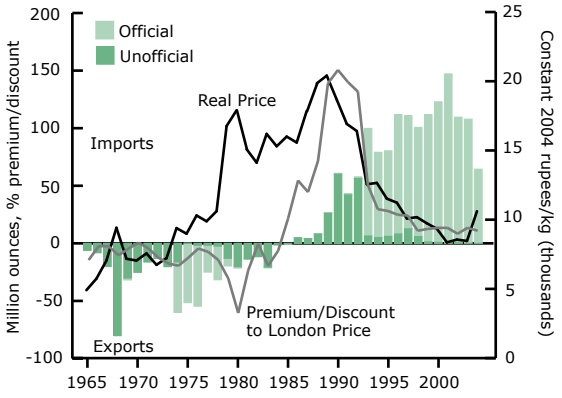
Bullion imports into the **United Arab Emirates** rose last year, notwithstanding the large decline in Indian fabrication demand. The Emirates' rapid loss of market share in India in the late 1990s has meant that its imports are now quite small and can oscillate substantially in percentage terms without really reflecting overall regional demand. In 2004, shipments from East Asia rose nearly three-fold while imports from Europe were down slightly.

GFMS estimates point to **Indian** silver imports having fallen precipitously in 2004, by around 40% to just 64.3 Moz (2,000 t). To put this figure into historical context, 2004's imports stood at only 44% of the record level seen in 2001. Perhaps more dramatically, the last time imports were lower than this was as far back as 1992, a period when the Indian market was heavily regulated. The reasons for the sharp decline in imports are discussed in more detail in Chapter 7, suffice to note here that the high price (the average price rose by over 30% in 2004 to above Rs. 10,000 per kilogram), a relatively poor monsoon and an apparent de-coupling of the gold and silver markets appear to have underpinned this.

Dubai Bullion Imports



Net Indian Bullion Imports and Exports



Not only was there a dramatic reduction in the flow of silver into India in 2004, the sources of the metal changed substantially too. As regular readers of these *Surveys* will know, China/Hong Kong have been major suppliers of silver to the Indian market since the latter stages of 1998. Indeed, by 2001 China/Hong Kong was supplying over 50% of India's requirements. This changed last year, with China/Hong Kong no longer being the dominant suppliers of silver to India. Basis GFMS estimates, we believe that in 2004 shipments of metal from the United Kingdom exceeded those from China (a sign that stock flows from China are declining; see Chapter 5 for more on this).

One consistent feature of the Indian market in 2004 was the ports into which most of the silver was shipped. This is primarily related to the tax competition between states that has been a constant feature of the market since liberalization. Most importantly, the attempt to enforce uniform Value Added Tax (VAT) throughout India has met with only partial success. As reported in last year's *Survey*, the federal government has been trying to impose uniform VAT across India for many years. Last year finally saw some movement on this front, with most of the states in India introducing a 1% sales tax on gold and silver (as a precursor to the final introduction of uniform VAT).

The change of government in May gave this initiative a boost, and in the budget of July 2004 a road map for the introduction of uniform VAT was clearly laid out. According to this, VAT was to be introduced from April 1st 2005, and at the time this seemed to be assured as all the states had agreed to put the legislative framework in place before the deadline.

As is so often the case in India, however, things were not that simple. In fact, the road map was seen by some states as an opportunity to revert back to their old (low tax) bullion import schemes. First into the fray was Jaipur which re-introduced its `green channel' system whereby some categories of importers were paying just 0.06% sales tax (versus the 1% charged by others). Ahmedabad soon followed suit, introducing a 0.25% sales tax. Soon thereafter Delhi too joined the fray (in December), reducing its tax rates. As a result, these centers once again became the major importing ports for silver (and gold).

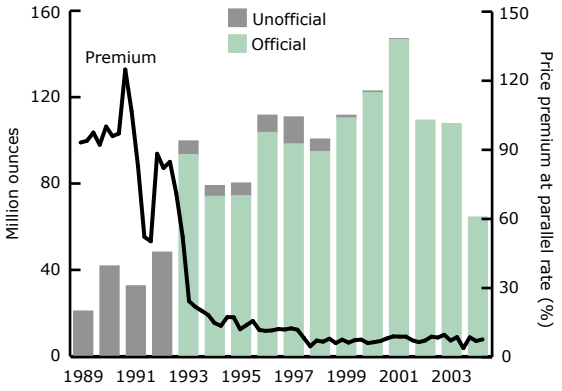
Moving into 2005, the approach of the April 1st deadline only served to spur greater activity from these three

Indian Bullion Imports

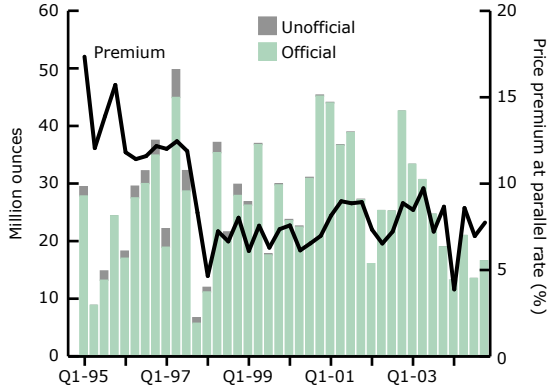
(Moz)	2000	2001	2002	2003	2004
OGL^	121.9	145.5	109.1	107.7	60.3
NRI ^	0.1	1.1	0.1	0.1	0.1
SIL^	0.1	0.0	0.0	0.0	0.0
Replenishment**	0.9	1.7	4.8	2.9	4.0
Sub-total	123.0	148.3	114.1	110.6	64.4
Unofficial	0.8	0.4	0.0	0.0	0.0
Total Imports	123.8	148.7	114.1	110.6	64.4
Local premium*	12%	12%	7%	12%	10%

*percent above London price at the official exchange rate
** imports of silver bullion for manufacture and re-export
^ Open General Licence, Non-resident Indian, Special Import Licence

Indian Bullion Imports

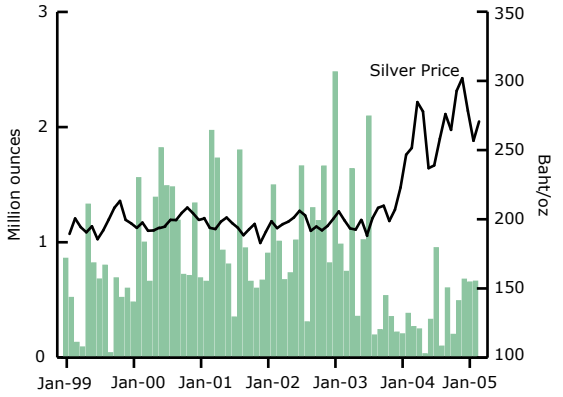


Indian Bullion Imports



centers, with import volumes rising sharply. On April 1st, uniform VAT was formally introduced and adopted by more than 20 states. However, any hopes of the rationalization of bullion imports into the manufacturing or consumption centers was scuppered as a few major bullion importing states like Rajasthan (Jaipur), Gujarat (Ahmedabad) and Tamil Nadu decided at the last minute to opt out of the uniform VAT regime. Needless to say, with these states still maintaining lower import duties than others, silver imports have continued to flow to them (and in particular into the cities of Jaipur and Ahmedabad). Moreover, the fact that octrois and entry taxes are still being applied in some states (over and above VAT) has simply further diluted the impact of the uniform VAT system.

Singapore Bullion and Semis Imports



Returning to what happened in 2004, GFMS estimate that over 50% of silver shipments into India were landed in Delhi first (although much was simply moved directly to Jaipur) and then moved unofficially to the major fabrication centers elsewhere in the country. Ahmedabad Chennai, Kolkata and Jaipur accounted for much of the rest.

East Asia

Since the Chinese government essentially relinquished direct control over the domestic silver market in 2000, **China** has been one of the largest exporters of silver into the international market. In 2004, according to official statistics, the nation's silver industry exported 112.6 Moz (3,501 t) of silver bullion, worth over US$700 million, which was up a staggering 64% in value terms over the previous year. The Chinese government had raised the export quota for last year, from 80 Moz (2,500 t) in 2003 to 98 Moz (3,050 t) in 2004 with 60% of the total granted to producers and 40% to traders.

In order to assess the sustainability of ever-increasing Chinese silver exports, it is important to first understand the changes that are occurring in the supply of Chinese silver. Over the past few years, silver output from imported concentrates has been growing faster than that originating from local mines, partly because there have been no big silver mine discoveries in recent times. Accordingly, output at existing mines rose only slightly last year. Moreover, the upgrading of recycling technology by Chinese smelters and refiners has improved their competitiveness and resulted in higher silver recovery rates from base metal concentrates. In addition, silver recovery from industrial scrap and base metal slags has also risen significantly in the past two years.

There is one important allowance to make when assessing the large volume of Chinese silver exports in 2003 and 2004. Chinese silver producers and traders holding official export quotas enjoy a 13% VAT rebate based on the value of the silver exported as per the shipping documentation. This incentive has been exploited by entities that have been shipping silver to Hong Kong in order to claim the VAT refund, only for the silver to then be smuggled back to the mainland. Over the past two years, GFMS estimate that as much as 15-20 Moz (470 – 620 t) has been used in this activity which has thus resulted in an overstating of the true size of Chinese silver exports.

Official shipments from the mainland to end-consuming markets such as Thailand, Taiwan and Japan increased marginally last year. However, according to Chinese trade statistics, exports to India, South Korea, Singapore, the United Kingdom and Australia fell sharply. While we broadly agree with these trends, information received during a recent GFMS field visit highlighted that there are still supplies of silver leaving China directly for India that do not appear to be captured by the official data, although the volume is not thought to be significant.

Silver imports into **Hong Kong** rose by 14% to 56.2 Moz (1,748 t) in 2004. Noticeably, silver shipped from South Korea and Australia rose by 2.3 Moz (71 t) whilst shipments from Europe were lower. Of course, imports

from China dominate and, according to Hong Kong official data, shipments from the mainland reached 48.9 Moz (1,521 t). By way of contrast, Chinese data shows exports to Hong Kong totaling 84.6 Moz (2,630 t) suggesting inconsistent treatment by the relevant customs departments as well as inaccurate record keeping, combined with silver leaving China 'officially' but not actually being shipped and/or perhaps entering Hong Kong unofficially.

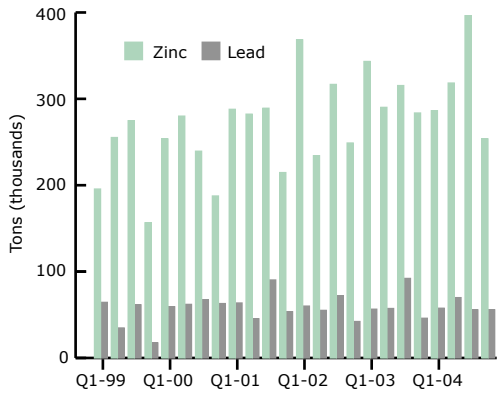
Japanese bullion imports rose sharply in 2004, up by over 38% to 51.1 Moz (1,591 t). The rise in imports was due to notable falls in recoveries of silver from imported concentrates (down over 8%), local mine production (down by close to 4%) and scrap (recovery from photographic sources fell markedly in 2004; see Chapter 5 for more on this). Another reason for the rise in imports of bullion (of high purity) was the production problem at one of the largest producers of silver in Japan during the year (which saw loco-Japan premiums on high grade silver rising from around 10 cents to as high as 35 cents).

South Korean bullion imports were flat year-on-year at 4.4 Moz (138 t) while exports surged by just under a third to reach 28.7 Moz (893 t). The large increase in exports followed a commensurate rise in silver recovery from the imported concentrates processed by the two main smelters based on the peninsular. While local demand for silver was stronger last year, it still accounted for less than half of the total available supply, meaning that South Korea has been and will remain an important source of silver for the international market.

Unlike the afore-mentioned East Asian markets, silver imports into **Singapore** fell precipitously year-on-year. The biggest falls were recorded during the first half of the year as the rising silver price and a struggling tourist market curtailed demand from the Indonesian silver jewelry sector. Paradoxically, imports recovered somewhat in the second half, at a time when Indonesia introduced a ban on the silver exports to encourage the local jewelry industry to buy from local suppliers rather than source from outside the country.

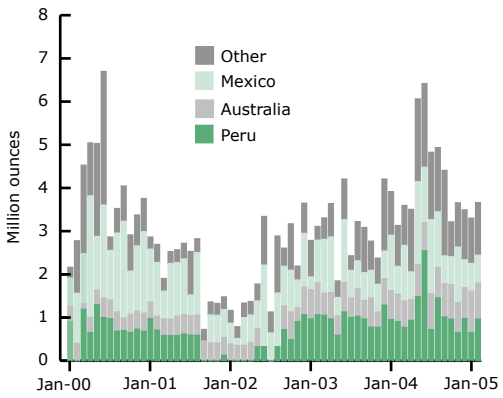
The positive effect that zero or low import taxes can have on trade liberalization is no more apparent than in **Thailand**. Official Thai silver bullion imports were static at around 23 Moz (400 t) per annum in the two years preceding a change to the VAT regulations pertaining to silver imports, introduced during 2003. The jewelry industry actually required more than double the officially imported quantity and so the remaining bullion was imported unofficially. In 2003, however, official imports rose to around 40 Moz (1,255 t) based on our own calculations, and in 2004 another 12% increase was recorded, taking total imports to over 45 Moz (1,400 t). In addition, Thai bullion exports fell by nearly a third to 3.1 Moz (100 t).

Korean Lead and Zinc Concentrate Imports



Source: WBMS

Japanese Bullion Imports



7. Fabrication Demand

- ***World silver fabrication slipped by only 2% last year to 836.7 Moz (26,023 t), a six-year low, inspite of the silver price rising by over 36%.***

- ***Total fabrication, excluding India, actually rose last year by nearly 4%.***

- ***The more than one-third decline in total Indian fabrication was due to a collapse in the country's jewelry & silverware demand.***

- ***Global industrial demand rose by 5% last year, although electrical and electronics fabrication was up a more substantial 14% in 2004.***

- ***The slump in traditional photographic demand continued, with fabrication last year falling to 181.0 Moz (5,629 t), a loss of 46.9 Moz (1,458 t) from its 1999 peak.***

- ***Jewelry & silverware posted a 10% fall in 2004, but excluding the 42% fall in India, the total registered a 3% year-on-year rise.***

- ***Higher commemorative coin minting was largely responsible for the 15% rise in coins & medal fabrication to a ten year high of 41.1 Moz (1,277 t).***

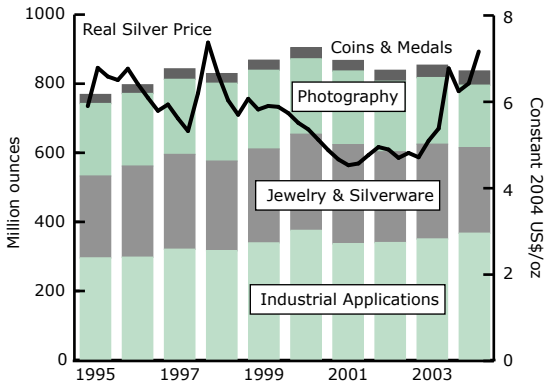
The sharply higher silver price more than offset the benefits of a healthy macro-economic picture in 2004, with global silver fabrication falling by 2% year-on-year to 836.7 Moz (26,023 t). While industrial demand grew by a solid 4.7%, photographic and jewelry & silverware fabrication fell by 6.2% and 9.7% respectively.

Industrial demand rose in most regions with the important exception of the Indian Sub-continent, as construction activity continued at a fast pace in China, North America and parts of Europe, while the electrical and electronics industries, particularly in East Asia, continued to benefit from the boom in global consumer spending.

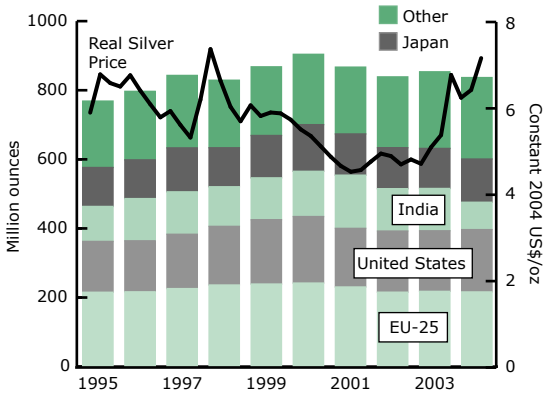
It was not really a surprise that photographic demand fell in 2004 given the accelerated inroads that digital photography has made in recent years. In fact, last year's drop marked the fifth consecutive year of annual declines. The one anomaly for the photographic sector was in China where demand grew by 6% year-on-year.

The single biggest culprit responsible for the fall in global fabrication demand was India. Not only did industrial demand fall by 24%, the rather more substantial decline in the country's jewelry & silverware demand was even more damaging. Indian jewelry & silverware offtake actually plummeted by 42% or 32.7 Moz (1,017 t), with this quantity equal to 13% of global jewelry & silverware demand in 2004.

World Silver Fabrication (by category)



World Silver Fabrication (by region)



Industrial Applications

• ***Global industrial fabrication rose by 5% to 367.1 Moz (11,419 t), a four-year high, chiefly as a result of high growth in world GDP and industrial production.***

• ***Japan accounted for much of the increase, which together with a stronger US figure, more than countered the slump in Indian fabrication.***

Europe

German industrial fabrication rose by a strong 8% in 2004 to 23.5 Moz (730 t). Most segments of this category grew, though the increase was most marked for the electrical component. Contacts fabrication, for example, was markedly higher in 2004. However, little of this was related to local sales as these were roughly flat. Instead, it was higher exports within Europe (chiefly to France, Italy and Spain) plus an increase in shipments to China and, to a lesser extent, the United States that drove the increase. By sector, overall offtake from the automotive industry grew, while sales to the construction industry and white goods producers were steady locally but rose in export markets.

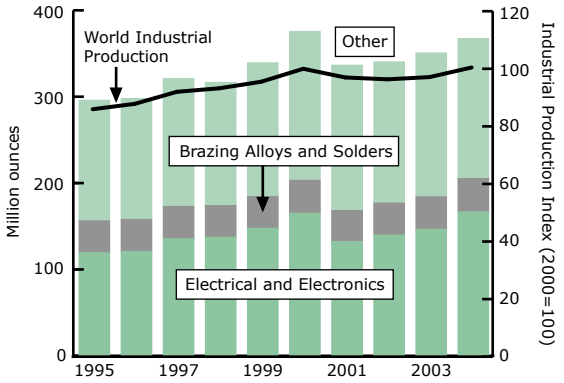
Brazing alloy fabrication also rose, by a fairly healthy 4%. Again, sales within Germany were broadly stable but exports to the rest of Europe and East Asia increased. By sector, automotive, tooling and heating/ventilation/cooling enjoyed increases, while the construction industry's end-use was patchy. Lastly, there was some demand growth in the small area of sputter targets.

Industrial offtake in **Italy** increased by a robust 13% to 11.5 Moz (357 t). This was primarily driven by a sharp slump in imports of silver salts, which gave room for local fabrication to rise. Domestic end-use of such salts in 2004 is thought broadly steady or perhaps down a little. Sales of contacts in contrast grew strongly, perhaps by a double-digit amount, with such areas as car relays and circuit breakers leading the gains. Local fabrication only benefited modestly from this, however, as much of the rise in end-use was met by imports. Brazing alloys were steady in terms of both local sales and fabrication.

Industrial fabrication in **France** slumped heavily by around 28% to 9.8 Moz (304 t). This change was almost exclusively the result of corporate restructuring, with capacity being closed and transferred elsewhere (typically within western Europe). Actual consumption of fabricated pieces tended to be steady (the case for contacts, for example) though, in some specialist areas such as the nuclear industry, it rose significantly.

Industrial fabrication in the **United Kingdom** continued to grow last year but remained some way off the peak achieved in 2000. Part of the recovery was offset by the ongoing shift to offshore manufacturing, particularly in favor of East Asia and central and eastern Europe although in some cases this resulted in higher exports, which offset falling home sales. However, there were some notable exceptions. For example, plating for the base station market has largely moved to East Asia with little of the manufacturing process (involving silver) remaining in the United Kingdom. Furthermore, some base stations have moved away from silver based

Components of Industrial Applications



EU Industrial Fabrication

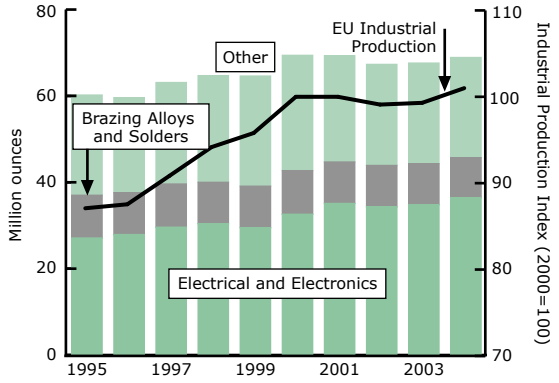


Table 4 - World Silver Fabrication (including the use of scrap - million ounces)

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Europe										
Italy	50.1	52.2	56.5	56.3	62.1	65.4	58.5	56.0	55.0	54.9
UK & Ireland	32.3	34.4	35.5	39.2	39.9	43.2	46.4	43.6	44.6	52.7
Germany	47.6	47.2	47.6	48.4	42.1	40.6	40.4	35.4	39.7	41.0
Belgium	23.4	25.3	27.2	33.8	37.5	35.3	32.1	30.8	29.3	27.6
France	31.1	27.2	28.7	28.7	26.9	29.1	29.1	27.6	26.1	12.5
Spain	9.9	9.3	8.7	8.8	7.5	6.7	5.5	5.2	4.8	6.3
Poland	3.1	3.0	3.4	3.6	3.7	3.9	3.4	3.2	3.8	4.3
Portugal	2.4	2.8	2.9	3.1	3.2	3.5	2.6	1.7	2.7	4.1
Switzerland	7.3	7.8	9.6	10.7	11.1	9.0	3.5	3.4	3.0	3.1
Greece	3.8	4.3	4.5	4.1	4.1	3.3	3.0	2.8	2.9	2.9
Netherlands	3.0	2.5	2.4	2.2	2.8	1.9	1.8	2.1	1.9	2.5
Norway	1.6	1.4	1.5	1.5	3.0	2.9	2.3	1.9	1.9	2.1
Austria	1.6	1.5	1.3	1.4	1.2	1.1	1.1	1.2	1.2	1.3
Sweden	1.4	1.5	1.7	1.4	1.4	1.3	1.0	1.0	1.2	1.2
Denmark	1.0	1.0	1.1	1.0	1.0	1.0	0.9	0.8	0.7	0.7
Czech & Slovak Republics	0.8	0.7	0.8	0.9	0.8	0.8	1.0	0.7	0.7	0.7
Hungary	0.5	0.5	0.5	0.4	0.4	0.5	0.4	0.4	0.4	0.4
Romania	0.3	0.4	0.4	0.5	0.4	0.4	0.4	0.4	0.4	0.4
Finland	0.9	1.0	0.9	0.7	0.7	0.6	0.5	0.5	0.4	0.4
Cyprus & Malta	0.4	0.4	0.4	0.4	0.4	0.4	0.3	0.3	0.3	0.3
Yugoslavia (former)	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3
Other Countries	0.4	0.4	0.3	0.4	0.4	0.4	0.3	0.3	0.3	0.4
Total Europe	**222.9**	**224.7**	**235.7**	**247.3**	**250.5**	**251.1**	**234.5**	**219.3**	**221.4**	**219.6**
North America										
United States	147.1	147.6	157.2	169.7	185.9	192.5	169.6	176.9	175.3	180.3
Mexico	17.5	20.8	23.5	21.9	21.7	17.3	17.1	18.1	19.8	19.4
Canada	2.7	2.7	2.8	3.4	3.5	3.0	2.9	3.1	2.5	3.4
Total North America	**167.3**	**171.1**	**183.5**	**195.0**	**211.1**	**212.8**	**189.6**	**198.1**	**197.6**	**203.1**
Latin America										
Brazil	9.4	8.4	8.4	8.1	7.7	6.8	6.6	6.4	6.6	6.5
Argentina	3.9	3.8	3.8	3.1	2.7	2.3	1.8	1.9	2.3	2.3
Colombia	1.1	1.1	1.1	1.1	0.9	0.8	0.7	0.7	0.7	0.7
Peru	1.0	1.1	1.1	1.1	1.0	1.0	1.0	1.0	0.7	0.7
Chile	0.5	0.5	0.5	0.5	0.5	0.4	0.4	0.4	0.4	0.4
Ecuador	0.7	0.7	0.7	0.7	0.5	0.5	0.5	0.5	0.4	0.4
Other Countries	0.6	0.9	1.3	1.6	1.8	1.1	0.9	0.7	1.0	1.0
Total Latin America	**17.1**	**16.4**	**16.8**	**16.2**	**15.1**	**12.8**	**11.8**	**11.6**	**12.0**	**12.0**
Middle East										
Turkey	6.4	6.7	6.9	6.6	6.0	7.4	5.5	6.8	7.6	8.2
Israel	3.4	3.7	4.0	3.9	3.9	3.6	3.3	3.3	3.2	3.3
Egypt	2.2	2.3	2.1	1.9	2.0	2.0	1.8	1.6	1.8	2.0
Iran	1.6	1.7	1.6	1.3	1.4	1.4	1.5	1.4	1.5	1.5
Other Countries	1.3	1.4	1.6	1.7	1.8	1.7	1.7	1.7	1.7	1.7
Total Middle East	**14.9**	**15.8**	**16.3**	**15.4**	**15.1**	**16.4**	**13.9**	**14.9**	**15.9**	**16.9**
Indian Sub-Continent										
India	101.3	122.2	122.9	114.7	121.5	131.0	154.0	122.5	122.5	79.2
Bangladesh & Nepal	5.2	5.8	6.4	5.1	5.8	6.0	6.0	4.8	4.5	4.3
Other Countries	3.8	2.7	4.1	2.8	3.4	3.2	2.1	2.1	2.1	2.2
Total Indian Sub-Continent	**110.2**	**130.7**	**133.5**	**122.6**	**130.6**	**140.2**	**162.1**	**129.4**	**129.1**	**85.7**

Table 4 - World Silver Fabrication (including the use of scrap - million ounces)

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
East Asia										
Japan	112.7	112.1	127.2	112.8	122.5	135.0	119.3	118.7	115.9	125.1
China	26.0	28.6	32.2	33.9	33.1	33.6	35.7	42.7	47.2	52.2
Thailand	27.7	27.6	27.1	24.2	25.1	28.5	30.9	32.6	37.1	40.5
South Korea	18.6	18.5	18.6	13.8	16.7	19.6	17.1	17.8	19.2	19.8
Taiwan	5.7	6.4	6.9	6.8	6.7	9.4	8.5	9.0	10.3	11.3
Indonesia	3.1	3.4	4.1	2.7	3.2	3.9	4.3	4.8	4.9	5.4
Hong Kong	3.4	3.7	4.4	3.6	3.9	4.4	3.2	3.4	3.2	3.4
Vietnam	0.6	0.7	0.7	0.6	0.7	0.7	0.7	0.8	0.9	1.0
Myanmar, Laos & Cambodia	1.1	1.1	1.0	0.8	0.9	0.8	0.9	1.0	1.0	0.9
Malaysia	0.4	0.4	0.4	0.4	0.5	0.6	0.6	0.6	0.7	0.7
Other Countries	0.4	0.3	0.3	0.3	0.4	0.4	0.5	0.5	0.5	0.5
Total East Asia	**199.9**	**202.9**	**222.9**	**199.9**	**213.7**	**237.1**	**221.6**	**231.9**	**240.9**	**261.0**
Africa										
Morocco	0.5	0.6	0.6	0.6	0.5	0.6	0.6	0.6	0.6	0.6
Tunisia	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.4
South Africa	0.5	0.3	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.3
Algeria	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Libya	0.3	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Other Countries	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Total Africa	**2.0**	**1.8**	**1.8**	**1.7**	**1.7**	**1.8**	**1.7**	**1.7**	**1.7**	**1.8**
Oceania										
Australia	5.3	5.2	5.2	5.6	5.8	7.0	5.9	5.8	6.2	5.7
Total Oceania	**5.3**	**5.2**	**5.2**	**5.7**	**5.8**	**7.0**	**6.0**	**5.8**	**6.3**	**5.7**
CIS										
CIS	29.0	28.2	27.2	25.4	24.3	24.9	25.8	26.0	28.5	31.0
Total CIS	**29.0**	**28.2**	**27.2**	**25.4**	**24.3**	**24.9**	**25.8**	**26.0**	**28.5**	**31.0**
World Total	**768.6**	**796.8**	**842.9**	**829.1**	**867.9**	**904.0**	**867.0**	**838.7**	**853.4**	**836.7**

alloys to those containing gallium arsenide, or copper in combination with aluminum.

Technological developments also played a role in the UK brazing alloy and soldering markets. The former, which accounts for the greater portion of this sector, has been adversely affected by substitution in favor of the production of lower silver containing alloys, whereas the solder market has received a modest boost from the shift towards cadmium free products. This trend, in particular moving from silver cadmium to silver tin, as well as higher electronics demand, contributed to increased demand for silver in contact applications. Although legislation has been in place for some years to allow for this transition, the replacement has been accelerating over the past twelve months.

The relocation of end-user industries from western Europe has been a concern to many. However, those that shifted to the new EU countries or elsewhere in central/eastern Europe often still source (and should continue doing so for the near future) from fabricators in western Europe. There is a greater risk of a supplier switch from those moving to East Asia. At present, however, even these often still use European semis. The German fuse making industry, for example, has now almost all relocated to China, yet the fuses are still typically made with German wire due to exacting quality standards.

North America

By the end of 2004, industrial fabrication in the United States had all but wiped out the losses, which occurred following the sharp decline in 2001. Two

EU Industrial Production

(Index 2000=100)

2000	2001	2002	2003	2004
100.0	100.0	99.1	99.3	101.0

Source: OECD

United States Industrial Production

(Index 2000=100)

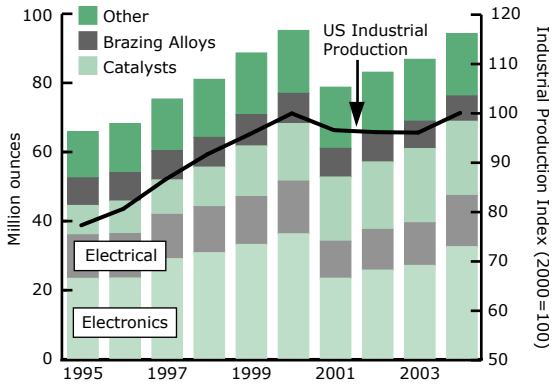
2000	2001	2002	2003	2004
100.0	96.6	96.2	96.1	100.1

Source: OECD

years of somewhat modest gains gave way to a robust performance in 2004, with a close to 9% rise across the industrial sector. Of course, this covers a myriad of applications and the overall increase hides some varying performances. The main development in 2004 was the performance of the electrical and electronics sector which accounted for most of the growth. In contrast, the ethylene oxide (EO) catalyst market remained broadly unchanged on a year earlier, while the manufacture of solder and brazing alloys fell back.

There can be no doubt that the main story in the domestic industrial silver market was the gains achieved in the electrical and electronics sector. In this regard, it is worth bearing in mind the impact of the 2001 collapse. Up until then, electrical and electronics applications had accounted for more than half of US industrial output (peaking at nearly 56% in 1997). In 2001, the one-third decline at a stroke wiped out 17.4 Moz (541 t) of manufacturing demand for silver, in the process taking its share to a low of 43%. Last year however, the one-fifth increase in this sector took its share back above 50%. Although the 20% growth looks substantial it does not tell the entire story of last year. In fact, the growth in this sector started to accelerate in the fourth quarter of 2003 (accounting for much of the rise that year after a stop-start first nine months). Moving into 2004 saw this trend gather pace and, in fact, the momentum showed little sign of slowing down during the first half of last year. Despite the high level of demand, which resembled the heady days of 2000, there were widespread concerns that there would be a repeat of the major downturn which had then followed. These fears were apparently realized when a noteworthy slowdown emerged in the third quarter. However, with the exception of the multi-layer ceramic capacitor (MLCC) industry, silver usage in many industrial categories leveled off and remained broadly stable until the end of the year.

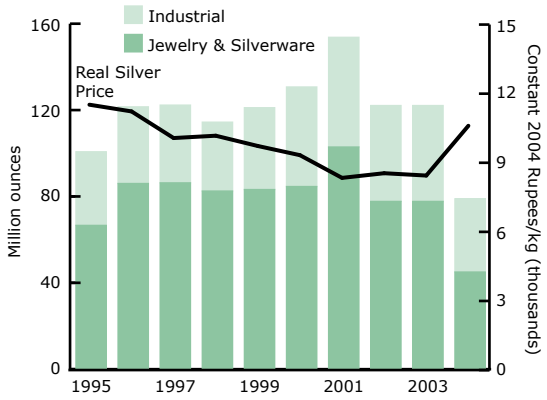
US Industrial Fabrication



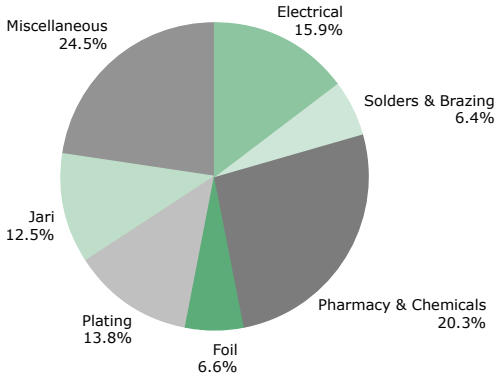
As noted above, the MLCC sector experienced varying fortunes in 2004; a notably strong first half followed by a very poor year-end. Much of the growth was driven by buoyant sales in the cell phone and consumer electronics industries, including computers and mechanized toys. In the past five years, this market has faced growing competition from base metal (copper-nickel) alloys, at the expense of silver-palladium blends. More recently, this trend has stabilized as the majority of companies who could, for example, finance a new furnace (to accommodate the base metal capacitors) have already made the transition. Those retaining precious metal alloys have instead looked to shift to higher silver containing MLCCs. In addition, some applications, which have strongly favored silver over base metal components, have seen technological advances which may make this redundant. Furthermore, offshore relocations have continued although, in broad measure, this has simply led to higher exports from the United States.

Other areas of the electrical and electronics industry, such as semi-conductor packaging, have also benefited from strong growth in a range of consumer applications, such as cell phones, as well as some new appliances. Elsewhere, production of contacts received a boost from the auto and telecommunications sectors. Despite, the lack of growth in the US auto market, the diverse range of electrical uses (such as memory switches and back lights) continued to take more silver in 2004. Staying

Indian Fabrication



Indian Industrial Fabrication, 2004



with the contact industry, a more established use, namely telephone switch gear, saw higher demand last year.

The "Main Uses of Silver" focus box on page 54 reflects the myriad of uses for which silver is employed in the industrial sector. Looking at some of the far smaller consuming industries, some of these experienced varying fortunes last year. For example, water purification and medical industries saw rising demand, albeit from a very low base. The former benefited from concerns over chlorine levels in swimming pools, for which silver can be used to reduce concentrations of this agent (including collidial silver and silver suspended on alumina). Silver usage has also benefited (albeit modestly) from a diverse range of medical applications, including skin patches, which can automatically dispense the correct dose of medicine to a patient.

In contrast to the growth seen in these two areas, silver demand from the mirror industry fell back again last year as a result of ongoing import competition, notably from East Asia. This trend also accounted for the decline in the (far larger) solder and brazing alloy sector, which registered an 8% fall in 2004. Interestingly, silver consumption in the EO sector remained broadly flat year–on-year. It appears as though no new plants were commissioned in 2004, in contrast to the year before. That said, this is expected to change in 2005, as new facilities are expected to come on-stream during the course of the year.

India

GFMS estimate that **Indian** industrial demand fell very sharply in 2004, dropping from 44.4 Moz (1,382 t) the previous year to just under 34 Moz (1,053 t). The fall is all the more stark when contrasted with the high of close to 51 Moz (1,579 t) recorded in 2001. However, the drop in the total masks very different performances among the various categories of demand in the industrial sector.

For example, the "true" industrial categories of electrical and electronics and brazing alloys and solders both recorded year-on-year increases, while the "less industrial" areas of jari, jewelry plating and pharmacy all fell markedly. The former's growth is of course linked most closely to what is happening in the non-agricultural sector, which has been growing strongly over the past few years (for example, growth in manufacturing accelerated from 8.0% in the first quarter of the 2004/05 financial year to 9.3% in the second quarter, the highest in any quarter since 1997-98). By contrast, the latter areas of demand (and jewelry & silverware; see the jewelry section below) are heavily dependent on the agricultural sector, which had a poor year in 2004 (again, see the jewelry section below, suffice to say that a poor and erratic monsoon saw agricultural output fall last year).

Some of the most rapid growth in India over the past few years has been in the electronics sector. It is worth noting that electronics companies benefited from the economic liberalization policies of the 1980s, including the loosening of restrictions on technology and component imports, delicensing, foreign investment, and a reduction of excise duties, but it has only been in the last three to four years that these policies have really paid dividends in terms of production (most of the expansion has taken place in the production of computers and consumer electronics). Of particular importance for the purposes of this *World Silver Survey's* statistics, in the early years the industry was dependent on imported components

Table 5 - Silver Fabrication: Industrial Applications (including the use of scrap - million ounces)

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Europe										
Germany	18.5	17.2	17.8	18.4	18.3	20.8	21.4	21.2	21.7	23.5
UK & Ireland	11.9	12.2	12.5	16.3	15.2	17.6	15.4	15.0	16.0	16.7
Italy	10.6	11.2	11.4	10.6	10.6	10.9	10.4	10.4	10.2	11.5
France	12.0	11.7	13.4	11.2	11.6	12.3	15.8	14.5	13.6	9.8
Switzerland	6.6	6.9	8.6	10.0	10.4	8.3	2.7	2.7	2.3	2.4
Spain	1.8	2.0	2.9	3.1	2.7	2.0	1.3	1.3	1.2	2.1
Netherlands	1.7	1.7	1.7	1.7	1.7	1.7	1.5	1.5	1.5	1.6
Norway	0.4	0.4	0.4	0.4	1.4	1.2	0.7	0.6	0.6	0.8
Poland	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Austria	0.7	0.6	0.6	0.5	0.5	0.5	0.5	0.5	0.5	0.6
Sweden	0.3	0.3	0.3	0.3	0.4	0.4	0.3	0.3	0.3	0.3
Czech & Slovak Republics	0.5	0.5	0.4	0.4	0.5	0.3	0.3	0.3	0.3	0.3
Belgium	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Other Countries	0.7	0.7	0.7	0.8	0.7	0.7	0.7	0.7	0.7	0.7
Total Europe	**67.0**	**66.6**	**71.9**	**74.6**	**75.2**	**77.7**	**72.2**	**70.0**	**69.9**	**71.1**
North America										
United States	65.9	68.2	75.3	81.0	88.6	95.1	78.7	83.1	86.8	94.2
Mexico	2.5	2.6	2.7	3.0	3.3	3.4	3.0	3.0	3.1	3.0
Canada	0.7	0.6	0.6	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Total North America	**69.2**	**71.4**	**78.7**	**84.5**	**92.5**	**99.1**	**82.3**	**86.6**	**90.4**	**97.7**
Latin America										
Brazil	3.5	3.3	3.4	3.5	3.2	3.2	3.2	3.2	3.0	3.0
Argentina	1.2	1.2	1.2	1.2	1.0	0.8	0.6	0.6	0.6	0.6
Colombia	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2
Ecuador	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Other Countries	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
Total Latin America	**5.4**	**5.2**	**5.3**	**5.4**	**4.8**	**4.6**	**4.5**	**4.5**	**4.3**	**4.3**
Middle East										
Turkey	1.2	1.2	1.4	1.3	1.2	1.4	1.1	1.2	1.5	1.6
Israel	1.0	1.0	1.0	1.0	0.9	1.0	0.8	0.8	0.8	0.8
Egypt	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Other Countries	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Total Middle East	**2.4**	**2.4**	**2.6**	**2.5**	**2.3**	**2.6**	**2.1**	**2.2**	**2.5**	**2.6**
Indian Sub-Continent										
India	34.1	35.5	36.0	31.9	37.9	46.1	50.8	44.4	44.4	33.9
Pakistan	0.6	0.5	0.7	0.5	0.6	0.5	0.3	0.3	0.3	0.3
Total Indian Sub-Continent	**34.8**	**36.0**	**36.7**	**32.4**	**38.5**	**46.7**	**51.1**	**44.7**	**44.7**	**34.1**
East Asia										
Japan	53.6	52.1	59.4	52.8	60.8	72.1	55.4	59.1	60.3	73.7
China	18.2	19.1	20.3	20.7	20.9	21.9	22.3	25.6	27.6	30.1
South Korea	11.9	11.9	12.3	11.2	12.2	14.8	12.4	13.4	14.5	15.2
Taiwan	5.2	5.8	6.3	6.2	6.3	8.8	8.0	8.7	9.9	10.9
Hong Kong	2.5	2.8	3.4	3.0	3.3	3.9	2.7	3.0	2.9	3.1
Indonesia	0.4	0.4	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.6
Total East Asia	**91.8**	**92.2**	**102.3**	**94.5**	**103.9**	**122.0**	**101.4**	**110.2**	**115.8**	**133.5**
Africa										
Morocco	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.2	0.2	0.3
South Africa	0.3	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1

Table 5 - Silver Fabrication: Industrial Applications (including the use of scrap - million ounces)

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Other Countries	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Total Africa	**0.7**	**0.6**	**0.6**	**0.6**	**0.6**	**0.6**	**0.5**	**0.5**	**0.5**	**0.6**
Oceania										
Australia	2.4	2.3	2.1	2.3	2.4	2.5	2.1	2.1	2.2	2.2
Total Oceania	**2.4**	**2.3**	**2.1**	**2.3**	**2.4**	**2.5**	**2.1**	**2.1**	**2.2**	**2.2**
CIS										
CIS	21.9	21.1	20.6	19.6	18.8	19.6	20.1	19.3	20.3	20.9
Total CIS	**21.9**	**21.1**	**20.6**	**19.6**	**18.8**	**19.6**	**20.1**	**19.3**	**20.3**	**20.9**
World Total	**295.7**	**297.7**	**320.8**	**316.4**	**339.2**	**375.4**	**336.3**	**340.1**	**350.5**	**367.1**

and much of the "manufacturing" was really assembly. Consequently, the demand for silver associated with the assembly of these products was captured elsewhere (i.e. in the country where the component was originally made, for example Korea). More recently, however, India has begun to fabricate much further back down the value chain, with products like silver nitrate and plating salts being manufactured to a high (electronics) specification for local use. Indeed, GFMS data suggests that silver nitrate production for non-photographic applications rose sharply last year.

It is also worth bearing in mind that India does actually have some world class fabricators of electronics products. For instance, Moser Baer, an Indian company, is one of the largest manufacturers of CDs and DVDs in the world (with an estimated market share of around 20%). In addition to this, a number of mainly Korean electronics companies have in recent years shifted an increasing proportion of their production for the Indian market to the sub-continent, for a variety of reasons (including costs and tax breaks). For example, Samsung India has set up manufacturing facilities for color televisions, microwave ovens, washing machines, airconditioners, color monitors and more recently, refrigerators in the country, most of which require silver containing intermediary products like brazing alloys, contacts and plating salts.

Indian Vehicle Production

('000s)

2000	2001	2002	2003	2004
808	767	834	1,033	1,335

Source: Global Insights

Another area that has seen tremendous growth in recent years is the automotive sector. As the mini-table shows, motor vehicle production in India rose by close to 30% in 2004, to 1.335 million units. Recent trends belie what was happening in the 1980s when the government considered automobiles an unnecessary luxury and discouraged their production and use. Although production levels are still relatively low in absolute terms (compared to say China), they are on an upward trend, and most of the components are domestically produced, fuelling demand for items like contacts (which in this sector grew strongly last year).

Global Billings

(semi-conductor shipments per year, millions)

	World	Americas	Europe	Japan	Asia
2003	166.4	32.3	32.3	38.9	62.8
2004	213.0	39.1	39.4	45.8	88.8
Change	46.6	6.7	7.1	6.8	25.9
Change %	28	21	22	17	41

Source: SIA

As already noted above, the "less-industrial" uses of silver in this category are believed to have fallen sharply in 2004. The primary drivers of these declines are discussed in more detail later in this chapter, suffice to note that a combination of higher silver prices (with the average having pushed above Rs. 10,000 per kilogram, a record) and a poorer monsoon appear to have adversely affected offtake.

GFMS estimates are that the use of silver in decorative applications like jari (the thread used in saris) and costume jewelry fell particularly sharply last year, interestingly as consumers appeared to move to gold

Japanese Industrial Production

(Index 2000=100)

2000	2001	2002	2003	2004
100.0	93.7	92.6	95.4	100.5

Source: OECD

Japanese Non-Photographic Nitrate and Contact Production

Million ounces

	2001	2002	2003	2004
non-photo nitrates	12.0	14.0	15.3	19.9
contacts	7.9	8.6	8.5	10.5

in spite of its high price (the linkages between gold and silver in the jewelry space are discussed in the relevant section). Pharmacy uses of silver are estimated to have fallen year-on-year but not by as much as the other categories of demand mentioned immediately above, this being a reflection of the relative price inelasticity of ayurvedic (traditional Indian medicine) applications of silver. Surprisingly one area that grew last year was the production of foil. This was partly due to gutkha (chewing tobacco that uses silver) making something of a comeback (after being banned in certain states; some tobacco companies have begun to produce their own foil).

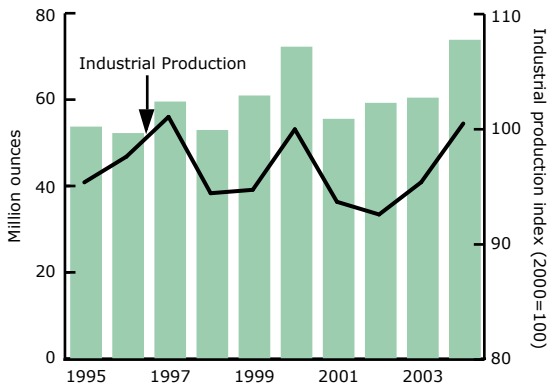
East Asia

GFMS estimate that **Japanese** industrial uses of silver rose very sharply last year, up around 22% to 73.7 Moz (2,292 t). Our analysis of offtake in Japan over the past few years has indicated two countervailing trends in the market. One is the inexorable push to use more silver in a variety of industrial (mainly electronic) applications while the other is the drive to shift production offshore to take advantage of lower costs (e.g. to China). We have written at length about the latter phenomenon in previous *World Silver Surveys* and it essentially revolves around the relocation of Japanese manufacturing of (usually) lower tech products to cheaper centers such as China (originally much of this took place in Korea, but as costs there have risen in recent years, China has become the most popular destination). It is important to stress that a large part of this relocation is of lower tech products such as brazing alloys and lower specification contacts, salts and powders. It is no coincidence that much of the relocation has been in the broadly defined "electrical" heavier current as opposed to "electronics" or light current applications.

The latter stages of 2003 and the first three quarters of 2004 saw quite phenomenal levels of offtake in specifically the electronics sector in Japan. All of the precious metals saw elevated demand in 2004, but silver was particularly strong, with offtake surpassing the record set in 2000 (at the time of the technology bubble). Much of the growth was seen in the non-photographic nitrate market, where GFMS estimate demand increased by around 30% year-on-year. There were a number of reasons for this.

For instance, 2004 witnessed phenomenal growth in the market for Plasma Display Panels (PDPs) in which Japan is a market leader. The data points to production having risen substantially in 2004 (for example, Panasonic and Toray announced plans to build the world's largest PDP plant in Japan early last year which expanded Panasonic's total capacity to 4.5 million units per year), boosting demand for silver (for example, a typical 32 inch PDP will use anywhere between 30 and 40 grams of silver i.e. over an ounce of silver). Yet another area that saw tremendous growth in 2004 was in nano-powders for use in solar panels (the silicon wafers used in solar panels are usually screen printed with a grid of silver paste), an area that is set to see strong growth in demand over the next few years. Although absolute volumes are still relatively small, they have grown substantially in the past two years; we estimate the total demand in this area would stand at around 3-4 tons net per month at a minimum.

Japanese Industrial Fabrication



Notwithstanding these new growth areas, offtake has surged in traditional end-use applications too. For example, silver use in chip registers rose sharply in 2004 (with total Japanese offtake in this application alone of around 0.32 Moz or 10 tons per month) and hybrid integrated circuits (with country wide offtake totaling anything up to 0.03 Moz or 1 ton per month). Elsewhere, production of contacts rose markedly last year for use in a variety of applications, mostly electronics related. Modest growth was recorded in the automotive sector where vehicle output rose by just under 2% in 2004, and production of contacts for use in vending machines appears to have risen quite sharply. Production of silver containing MLCCs also rose last year.

It is important to end this section with a caveat. Although offtake in 2004 rose sharply, there is little doubt in our minds that a large portion of this growth was attributable to stocking effects through the electronics value chain. Consequently, we saw a sharp drop in silver demand in the latter stages of 2004 and 2005 to date has seen very weak offtake of the metal in industrial uses.

Chinese industrial silver demand kept pace with the country's rapid economic growth in 2004, rising by an estimated 9% year-on-year to reach 30.1 Moz (936 t). While doubts are often cast on the veracity of official Chinese statistics, there can be no denying the extent to which the construction, auto manufacturing and electronics industries, to name a few, have been expanding. This has meant that all categories of industrial silver demand in China rose in 2004.

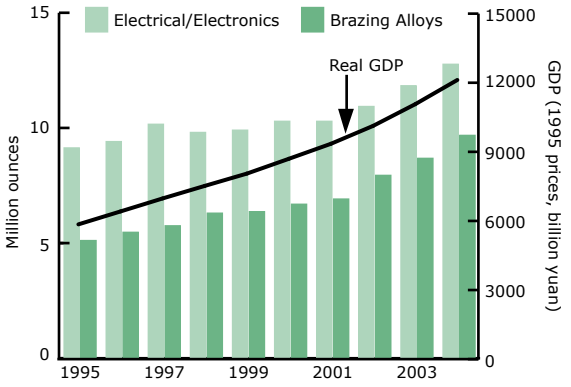
Brazing alloy and solder demand grew robustly last year, rising to over 9.7 Moz (301 t) of silver in 2004, which was an increase of 11% over the previous year. With many domestic producers now implementing more advanced technology, China is rapidly expanding as a production base for brazing alloys and solders, to the point now where local production meets nearly all of domestic demand, coming from various industries ranging from the property construction sector to shipbuilding. Cadmium based alloys are still used in some areas of Chinese industry but are gradually being phased out and, in some instances, have been replaced by imported cadmium-free products.

Turning to electrical and electronics silver demand, a rise of 8% to 12.8 Moz (397 t) was recorded last year, as the manufacturing of electronic parts and end-products in China boomed. Other industrial demand for silver accounted for a further 7.6 Moz (238 t) which was an 8% year-on-year rise. When looking through various key data on sectors and markets within the Chinese economy it is easy to see why silver industrial demand rose by as much as it did last year. For example, GFMS' research on the autocatalyst market (which is discussed in GFMS' *Platinum and Palladium Survey 2005*) highlighted that Chinese light vehicle production rose by 12% to 4.5 million units in 2004. Data from National Bureau of Statistics shows that in 2004, production of household refrigerators rose by 15% year-on-year, while production of air-conditioning units jumped by an impressive 30%. Importantly, these growth rates will continue as more and more Chinese are able to afford goods that are no longer considered simply luxury items for an exclusive few.

In tandem with increased demand for Chinese made products, both domestically and internationally, many Chinese companies are gradually looking to source more components locally rather than importing. High specification silver components, bi-strip metal contacts for example, have typically been imported in the past because of the lack of high quality locally made products coupled with the fact that some foreign owned factories located on the mainland favor sourcing such silver based products from the same suppliers servicing their factories in other countries. These reasons are gradually weakening in the face of competitive pressures and improving Chinese expertise.

Hong Kong's industrial uses of silver grew by 8% to 3.1 Moz (97 t) last year as its manufacturing industries,

Chinese Industrial Uses of Silver



The Main Uses of Silver

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 in most applications, particularly in high-tech uses in which reliability, precision and safety are paramount.

Industrial

Silver is the best electrical and thermal conductor of all metals and is hence used in many electrical applications, particularly in conductors, switches, contacts and fuses. 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 most significant uses of silver in electronics are in the preparation of thick-film pastes, typically silver-palladium for use as silk-screened circuit paths, in the manufacture of membrane switches, silvered film in electrically heated automobile windshields and in conductive adhesives. Silver inks are now also being used in smart cards and radio frequency identification (RFID) tags.

The ease of electro-deposition of silver from a double-alkali metal cyanide, such as potassium silver cyanide, or by using silver anodes accounts for its widespread use in coating. Silver solutions are made up of a cyanide, a carbonate, silver and a brightener. The silver is usually added as the single salt, silver cyanide, or the double salt, potassium silver cyanide. Various forms of silver are used as anodes and may be in the form of plates, bars, rods, grain or in custom-designed shapes. Silver is also used as a coating material for compact disks and digital video disks.

The unique optical reflectivity of silver, and its property of being virtually 100% reflective after polishing, allows it to be used both in mirrors and glass coatings, cellophane or metals. Many batteries, both rechargeable and non-rechargeable, are manufactured with silver alloys as the cathode. Although expensive, silver cells have superior power-to-weight characteristics than their competitors. The most common of these batteries is the small button shaped silver oxide cell (approximately 35% silver by weight) used in watches, cameras and similar electrical products.

Silver, usually in the form of mesh screens but also as crystals, is used as a catalyst in numerous chemical reactions. For example, silver is used in formaldehyde catalysts for the manufacture of plastics and, to an even greater extent, in ethylene oxide catalysts for the petrochemical industry.

Silver is employed as a bactericide and algicide in an ever increasing number of applications, including water purification systems, surface treatments and disinfectants.

The joining of materials (called brazing if done at temperatures above 600º Celsius and soldering when below) is facilitated by silver's fluidity and strength. Silver brazing alloys are used widely in applications ranging from air-conditioning and refrigeration equipment to power distribution equipment in the electrical engineering sector. It is also used in the automobile and aerospace industries. Bearings electroplated with high purity silver have greater fatigue strength and load carrying capacity than any other type and are used in various high-tech and heavy-duty applications.

Photography

The traditional 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 or potassium bromide. These grains are then suspended in the unexposed film. The effect of light on the silver halide disturbs the structure of this compound, rendering it selectively reducible to metallic silver by reducing agents called developers. The resulting negative image is converted to the positive by repeating the process under specific conditions. Photographic film is used in radiography, the graphic arts and in consumer photography. Photographic film manufacturers demand very high purity silver.

Jewelry and Silverware

Silver possesses working qualities similar to gold, enjoys greater reflectivity and can achieve the most brilliant polish of any metal. Consequently, the silversmith's objective has always been to enhance the play of light on silver's already bright surface. 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 been the standard of silverware since the 14th century, particularly in the manufacture of "hollow-ware" and "flatware". Plated silverware usually has a coating of 20-30 microns, while jewelry plating is only 3-5 microns.

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 still exists in some circulating coins. However, the most important application today is in bullion and commemorative pieces.

particularly the electronics sector, benefited from economic expansion on the mainland. In conjunction with the implementation of the "Mainland and Hong Kong Closer Economic Partnership Arrangement" (CEPA) aimed at liberalizing trade and removing trade tariffs, Hong Kong was included in the strategic development plan for the "Pearl River" delta in the coastal area of southern China (e.g. Shenzhen, Guangzhou and Zhuhai) as a key hub for electronics manufacturers. Its success in this role is illustrated by the fact that the electronics industry is Hong Kong's biggest exporting sector and grew by around a quarter in 2004.

South Korean industrial demand rose by 4.4% to reach 15.2 Moz (472 t). Before discussing the main themes of 2004, we should point out that a review of our data series has resulted in a slight downward revision of South Korean industrial offtake over the past six years. Nevertheless, the annual growth trends previously recognized remain intact with 2004's increase of 0.6 Moz (20.0 t) around two-thirds of that recorded in 2003.

The mild slow down was unexpected given the reasonably healthy shape of the Korean electronics sector, which had increased by 5.8% to 8.8 Moz (275 t). However, weakness in other areas of the economy, particularly the construction sector, dragged down silver use in other industrial categories such as brazing alloys and plating chemicals.

Electronics demand for silver started last year where it left off in 2003, growing by a healthy rate of around 10%, but as the year progressed the growth rate began to fall. Korean contacts manufacturers felt the brunt of the turndown in the broader electronics market that came towards the end of 2004 more so than companies based in other countries because of the fact that the Korean industry is home to large electronic manufacturing service (EMS) providers and original design manufacturers (ODMs). These companies typically have more production rate variability than original equipment manufacturers (OEMs) who will cut outsourced production before their own in-house output.

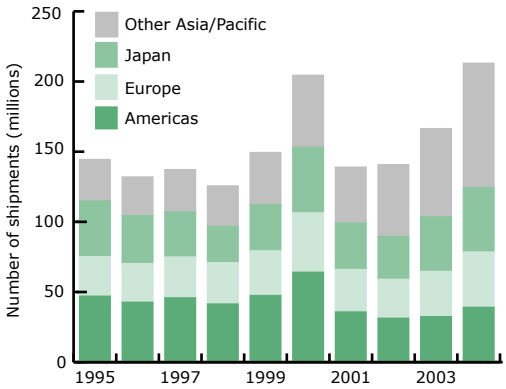
Korean Industrial Production

(Index 2000=100)

2000	2001	2002	2003	2004
100.0	100.7	108.8	114.2	126.1

Source: OECD

Global Semiconductor Billings



Source: SIA

Other industrial demand was rather weak only rising by a nominal 2.6% year-on-year to reach 6.3 Moz (197 t), with slowing economic activity caused by negative private consumption growth, particularly for durables such as vehicles and computers, and a slowing construction sector weighing on demand for silver plating solutions and brazing alloys.

Industrial silver demand in **Taiwan** expanded by 10% last year, slightly lower than the 14% rate achieved in 2003. Nonetheless, the 2004 total was still impressive, particularly when considering that the country's industrial demand for silver last year was more than a third larger than in 2001 and was a quarter bigger than recorded at the height of the "tech boom" in 2000. It is salient to note that electronic uses of silver accounted for 85% of total Taiwanese industrial demand, hence the reason why such growth over the past few years has been achieved. Looking forward, however, the outlook is not as rosy. Firstly, Taiwanese companies at this stage still manufacture many silver based products locally even though much production and assembly capacity has been moved to mainland China. This year will probably see more production shifted from Taiwan, including the manufacture of silver plating chemicals and contacts. This, combined, with a slowing of world economic activity, will probably result in the country's industrial silver demand flattening out and perhaps even falling.

Table 5a - Silver Fabrication: Electrical and Electronics (including the use of scrap - million ounces)

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
United States	36.0	36.3	41.9	44.1	47.1	51.5	34.1	37.6	39.5	47.4
Japan	23.9	22.7	25.8	23.7	30.0	36.7	26.6	29.4	30.2	38.0
Germany	11.9	11.6	11.9	12.2	12.2	14.3	15.7	15.6	16.2	17.7
China	9.1	9.4	10.2	9.8	9.9	10.3	10.3	10.9	11.8	12.8
Taiwan	3.6	4.2	4.7	4.8	4.8	7.0	6.5	7.2	8.4	9.2
South Korea	6.4	6.4	6.5	6.0	6.6	8.2	7.2	7.6	8.4	8.8
France	6.1	6.3	7.7	6.7	6.8	7.3	11.0	9.9	9.5	8.1
UK & Ireland	4.7	5.0	5.1	6.8	5.7	6.8	4.9	5.3	5.5	5.8
India	3.0	3.2	4.2	4.2	4.5	4.8	4.7	4.9	5.1	5.4
Italy	2.7	3.3	3.2	2.9	3.0	3.1	2.8	2.8	2.9	3.8
Hong Kong	1.9	2.2	2.7	2.5	2.9	3.5	2.5	2.8	2.7	3.0
Mexico	1.1	1.1	1.2	1.3	1.9	2.1	1.8	1.8	1.9	1.8
Brazil	1.6	1.4	1.4	1.4	1.3	1.3	1.3	1.3	1.2	1.2
Turkey	0.9	0.9	1.0	0.9	0.8	0.9	0.7	0.8	1.0	1.1
Australia	0.5	0.5	0.5	0.5	0.6	0.6	0.6	0.6	0.7	0.7
Netherlands	0.6	0.6	0.6	0.6	0.6	0.6	0.5	0.5	0.5	0.5
Switzerland	3.8	4.1	5.5	7.3	7.5	5.3	0.4	0.4	0.5	0.5
Spain	0.9	0.9	0.9	1.0	1.0	0.3	0.0	0.0	0.0	0.3
Austria	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Romania	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Egypt	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
World Total	**119.2**	**120.5**	**135.4**	**137.2**	**147.5**	**165.0**	**132.0**	**139.7**	**146.4**	**166.5**

Table 5b - Silver Fabrication: Brazing Alloys and Solders (including the use of scrap - million ounces)

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
China	5.1	5.5	5.8	6.3	6.4	6.7	6.9	7.9	8.7	9.7
United States	8.0	8.2	8.4	8.6	9.0	8.7	8.3	8.4	7.9	7.3
Japan	4.8	5.1	5.0	4.2	4.2	4.4	3.5	3.3	3.3	3.7
Germany	3.5	2.9	3.1	3.1	3.0	3.2	2.8	3.0	3.1	3.2
UK & Ireland	2.3	2.3	2.3	2.4	2.2	2.3	2.6	2.3	2.6	2.8
India	1.9	2.1	1.6	1.5	1.6	1.8	1.8	1.9	2.1	2.2
Italy	2.1	2.1	1.9	1.7	2.0	2.1	2.0	2.1	2.0	2.0
South Korea	1.2	1.2	1.1	0.8	0.8	1.0	1.2	1.4	1.4	1.4
Switzerland	1.8	1.7	1.7	1.6	1.5	1.6	1.3	1.3	1.4	1.4
Taiwan	1.0	1.1	1.1	1.0	1.0	1.2	0.9	1.0	1.1	1.1
Spain	0.3	0.6	0.9	1.0	1.1	1.1	1.0	1.0	0.9	0.8
Brazil	0.9	0.9	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7
Australia	0.7	0.7	0.6	0.7	0.7	0.8	0.6	0.6	0.6	0.6
Mexico	0.9	0.9	0.9	1.0	0.6	0.6	0.5	0.5	0.5	0.5
Canada	0.5	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Netherlands	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.2
France	1.3	1.4	1.4	1.0	0.9	1.0	0.9	0.9	0.6	0.2
Austria	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Israel	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
World Total	**36.9**	**37.3**	**37.4**	**36.6**	**36.7**	**38.0**	**36.0**	**37.0**	**37.6**	**38.5**

New Developments in Silver

From the perspective of assessing the how and where silver demand in the future will come from, the past year or so has been quite important. Several promising applications were able to progress from the laboratory to the marketplace, while several more R&D based fields of inquiry were embarked upon. The most interesting developments that have taken place during the past year were in many diverse areas involving the use of silver as a biocide. There was also an important improvement in the design of silver containing superconductor wires used for transmitting electricity.

The anti-bacterial properties of silver have been well documented, but it is only recently that improvements in nano-particle research and production techniques have enabled more widespread use of silver as a biocide and anti-bacterial agent. New products to incorporate silver have now been successfully commercialized, ranging from products that add silver as an integral part of the manufactured item to others that distribute or emit silver particles to achieve their germ eliminating purpose.

For example, washing machines are now available that release silver nano-particles during the washing cycle to sterilize clothing. Bandages that release silver ions and result in faster healing times and less frequent bandage changes are now being made by three of the largest wound dressing manufacturers, signaling that they have moved beyond a niche position. Clothing is now being manufactured and targeted towards the sporting world that is made with a fabric embedded with silver ions that helps regulate body heat as well as reduce body odor. Also, silver-based surface disinfectants are now passing regulatory hurdles, opening the way for their more widespread use in sensitive areas such as food processing facilities, care centers and households.

Progress also continues to be made in seeing silver developed as a biocide. While cost plays an important part in getting the currently more expensive silver based biocides adopted over other cheaper but perhaps less environmentally friendly alternatives, biocide manufacturers report that they are increasingly seeing their products trialed in new areas. The biggest potential use of silver biocides has been identified as coming from the building sector, where they can be used in preventing mildew and other forms of bacterial damage to building structures. The most obvious materials in need of treatment are those that are wood based and further research is currently being undertaken to clinically determine the effectiveness of silver biocides in deterring various types of fungi, insects and other organisms in or on wood. The importance of this research is heightened by the fact that the United States and Canada have now phased out the use of the now proven to be toxic wood protection agent, chromated copper arsenate.

One other development that has taken place in the past year has been in the field of high temperature superconductor wires. These wires, which combine a ceramic core with a silver sheath, have been developed for use in new generation power plants and distribution grids. Second generation wires (G2) now being developed have substantially increased electrical carrying capacity, making them more cost effective and broadening their use. Thus while these new wires will use less silver per meter in comparison to G1 wires, their adoption across a wider range of uses could boost the quantity of silver used in their production.

Photography

- ***Global photographic output fell by over 6% or 11.9 Moz (370 t) to 181.0 Moz (5,629 t).***

- ***Silver nitrate production was lower in every major fabricating region, although the most significant decline, in both absolute and percentage terms was seen in East Asia.***

Photographic fabrication demand in the **United States** is estimated to have fallen in 2004 by just over 6% to 55.2 Moz (1,716 t). Last year's number represents a decline of 18.3 Moz (569 t) from the peak level of offtake (73.5 Moz or 2,285 t) registered in 1999. Demand was forced lower by weak sales of products, especially consumer film, this largely a result of competition from digital technologies. An illustration of this is the fact that US sales of digital cameras last year reached 21.6 million units, up no less than 41% year-on-year (source: Lyra Research). Meanwhile, according to Photofinishing News Inc., in 2004 US film and color negative paper sales plunged by nearly 14% and 10% in volume respectively.

There are two main reasons why a reported decline of this order of magnitude did not translate into a sharper fall in our headline fabrication number for the United States. First, it would appear that there was some build-up in pipeline and finished product inventory last year. (Conversely, reductions in such inventories have further lowered fabrication demand in 2005-to date.) Second, the picture has been more mixed or at least far less negative when it comes to demand for photographic products other than, in particular, consumer film. Kodak, for example, stated in its annual report that origination and print films for the motion picture industry saw value increases of 12% in 2004 and that volume growth was higher still. Furthermore, its graphic

Table 6 - Silver Fabrication: Photographic Use (including the use of scrap - million ounces)

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Europe										
European Union-25	70.3	70.0	72.8	76.7	76.8	71.9	70.9	66.6	64.6	61.1
Other Countries	0.8	0.7	0.7	0.7	0.4	0.7	0.8	0.5	0.6	0.7
Total Europe	**71.1**	**70.7**	**73.5**	**77.4**	**77.2**	**72.6**	**71.7**	**67.1**	**65.2**	**61.8**
North America										
United States	59.7	59.9	62.9	69.0	73.5	70.2	65.5	64.8	58.9	55.2
Mexico	3.3	3.4	4.1	3.4	2.9	0.0	0.0	0.0	0.0	0.0
Total North America	**63.0**	**63.3**	**66.9**	**72.5**	**76.4**	**70.2**	**65.5**	**64.8**	**58.9**	**55.2**
Latin America										
Brazil	4.0	3.4	3.4	3.2	3.2	2.4	2.3	2.1	2.2	2.2
Argentina	1.8	1.8	1.8	1.8	1.6	1.3	1.0	1.1	1.5	1.5
Total Latin America	**5.8**	**5.2**	**5.2**	**5.0**	**4.8**	**3.7**	**3.3**	**3.2**	**3.7**	**3.7**
Indian Sub-Continent										
India	0.6	0.6	0.6	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Sri Lanka	0.3	0.3	0.3	0.4	0.4	0.4	0.1	0.1	0.1	0.1
Total Indian Sub-Continent	**0.9**	**0.9**	**1.0**	**0.7**	**0.7**	**0.7**	**0.5**	**0.5**	**0.5**	**0.5**
East Asia										
Japan	56.9	57.9	58.6	58.2	59.9	61.2	62.2	57.8	53.9	49.6
China	5.6	5.8	6.0	6.1	3.7	3.9	4.5	5.7	5.8	6.1
Taiwan	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total East Asia	**62.5**	**63.7**	**64.6**	**64.3**	**63.6**	**65.0**	**66.7**	**63.5**	**59.7**	**55.7**
Oceania										
Australia	1.6	1.6	1.6	1.6	1.7	2.7	2.4	2.3	2.1	1.5
Total Oceania	**1.6**	**1.6**	**1.6**	**1.6**	**1.7**	**2.7**	**2.4**	**2.3**	**2.1**	**1.5**
CIS										
CIS	5.0	4.7	4.5	3.8	3.4	3.2	3.1	3.0	2.8	2.7
Total CIS	**5.0**	**4.7**	**4.5**	**3.8**	**3.4**	**3.2**	**3.1**	**3.0**	**2.8**	**2.7**
World Total	**209.9**	**210.1**	**217.4**	**225.4**	**227.9**	**218.3**	**213.1**	**204.3**	**192.9**	**181.0**

arts business actually saw some growth in output. And, while the Rochester-based company revealed that last year volumes fell in its color negative paper, health and commercial imaging segments, declines here were uniformly much lower than those seen in consumer film.

We expect fabrication demand to remain under pressure in 2005, with a good chance that US offtake of silver nitrate for photographic end-uses will drop at an accelerated rate. Certainly, data on first quarter consumer film sales reveals a noteworthy year-on-year fall, with the impact of this likely to have been magnified by last year's inventory build, referred to above. In addition, with the important exception of motion picture film, other market segments are also expected to struggle this year, even if the loss of volume here will likely be relatively slight compared to consumer film, which is more exposed to the onward march of digital technology.

European photographic production declined for the sixth year in a row to 61.8 Moz (1,921 t). Furthermore, from its peak in 1998, silver demand has fallen by a total of 15.7 Moz (487 t). Interestingly, the decline, at a little over 5%, was still lower than that observed in the other two main silver consuming regions (North America and East Asia). This was partly related to a stronger performance in the manufacture of paper products; whereas North America and East Asia saw double-digit falls, European paper manufacture was effectively flat year-on-year. Turning to the healthcare sector, the impact of digital technologies on traditional silver applications has been mixed. For example, as Agfa-Gevaert noted in its 2004 annual report, although the developed markets have seen an erosion in the use of silver-based products, demand in developing countries has continued to rise.

GFMS estimate that **Japanese** silver offtake in photographic applications fell sharply in 2004, by 8% to 49.6 Moz (1,543 t), the third year in succession that demand has declined. The sole driver of this trend has been the impact of digital technologies on the traditional silver halide market (indeed, as is discussed below, demand from export markets for traditional photographic products has been growing).

Film & Paper Consumption & Photographic Fabrication

	2000	2001	2002	2003	2004
Film**	4,515	4,494	4,263	3,192	2,883
Paper^	1,760	1,750	1,700	1,630	1,580
Fabrication*	218	213	204	193	181

**Million of rolls, ^millions square meters, *Moz
Source: Photofinishing News, GFMS

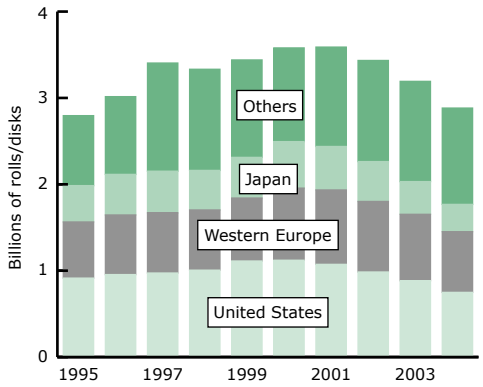
As has been discussed in past *World Silver Surveys*, the most immediate impact of digital technologies was seen in the amateur market (for example, digital camera sales in Japan have grown at double digit rates from the late 1990s). Although the impact on silver demand was reasonably muted in the early years, as the costs of the digital infrastructure fell (higher pixel cameras, cheaper computers and printers and so on) so digital's influence has grown. It is also interesting to note that the growth in digital camera sales in Japan has slowed. The latest data for the period January to November 2004 indicates that 7.7 million digital cameras were sold, up only 2% on the same period in 2003. This stands in stark contrast to the export market, where exports over this period were 47.6 million units, up 151% year-on-year. This may be a sign that the amateur digital market in Japan is maturing.

Needless to say, digital technologies have also begun to have an impact in other areas like medical applications and the graphic arts, but to a lesser degree than in the case of the amateur market. In the case of medical applications (think radiography), new technologies like MRI and CAT scanning have obviously contributed to lower silver offtake (or may have simply slowed the growth in traditional technologies) but their impact has not been as dramatic as might have been expected. Two factors have ensured that this is the case, firstly, there has been the issue of cost (these new technologies are expensive), and secondly, there have been shifts in the way the older technologies are used which has improved their competitiveness (the most obvious example of this has been the move to "dry" X-ray processing).

In the case of graphics arts, digital penetration in Japan has been relatively slow, mainly due to the legacy effects within the industry itself (primarily related to the costs of changing to new technologies). Compared to Europe and the United States, digital take up in the graphics arts area has been very slow indeed. For example, in the case of Computer to Plate (CTP), Japanese companies have been very sluggish on the uptake. In 2003, for instance, GFMS estimate that only around 25% of the printing market was using CTP compared to around 60% in the US and European markets. In the case of newspapers, it has been suggested to us that as little as 15% were being produced via CTP at the end of 2003 in Japan.

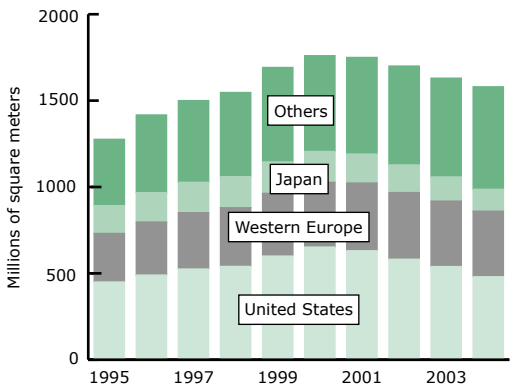
This changed dramatically in 2004, with many companies in the newspaper industry shifting to CTP, with a resultant sharp fall in demand for silver. Indeed, GFMS' view is that most of the fall in demand in Japan last year was due to the move to CTP by the newspaper industry (although

World Consumer Film Sales



Source: Photofinishing News Inc.

World Color Photographic Paper Consumption



Source: Photofinishing News Inc.

Digital Technology and the Photographic Market

The declining trend in silver fabrication demand for photographic use seen in recent years continued in 2004. Since 2000, the year when this trend began, global silver photographic demand has fallen by a cumulative 47 Moz (1,458 t). The principal driver of this downward trajectory is without doubt the penetration of digital photography, which has put the conventional silver-intensive technology under pressure, mainly through a decline in consumer film demand. For instance, whereas in 2004 global digital camera sales grew by 36%, total film sales for the year fell by 10%.

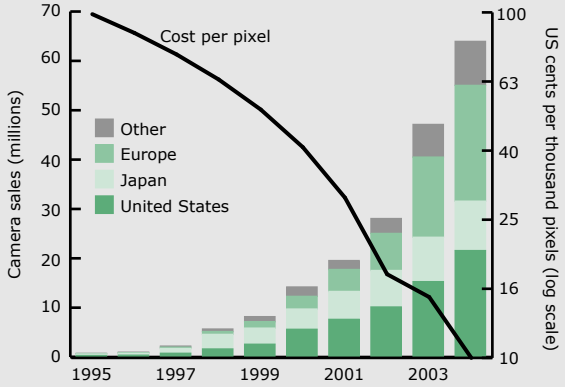
The impact of the digital imaging revolution on demand for photographic paper - which also contains silver - is less straightforward. Digital technology has essentially eliminated the marginal cost of taking more pictures, due to the lack of film usage and the relatively low cost of storage media. This has driven an increase in the number of pictures taken, creating the theoretical potential of an increase in paper use. However, the ability to view pictures without printing tends to lead to many users keeping part of their collection only in electronic form. Furthermore, the ability to print pictures at home with the use of relatively low cost inkjet printers is another factor adversely influencing photographic paper consumption.

The reaction of the photographic industry to these developments provides perhaps the best reality check on this discussion. Indeed, looking at all the major companies in the market, there is a clear shift of interest to the digital sector, be that through focusing on the production of digital camera units or through entering the inkjet printer market. In addition, photographic paper producers have been aggressively promoting the printing of digital pictures through major advertising campaigns, as well as the installation of printing stations, which facilitate printing of digital pictures on photographic paper in many retail locations.

One sector where silver photographic demand has not declined due to digital penetration is radiographic film, where growth of conventional technology in the developing world has offset any losses in developed countries. Motion picture film, on the other hand, is an area of photographic silver demand that has seen some growth in offtake in recent years. In large measure this is because of the heavy investment that has already taken place in theaters designed for conventional motion picture film.

Finally, one should not ignore the impact on silver photographic demand of integrated camera functions in products which are not dedicated to photographic use. Camera phones, camcorders, PDAs and other hand held devices with built in digital cameras are increasingly capable of producing output comparable to that of lower and even medium-end digital consumer cameras. In March 2005, the development of the first ever seven mega pixel camera phone was announced, six months after the first ever five mega pixel one was released. This trend could theoretically even put the currently very strong dedicated digital stand-alone camera sector under pressure.

Digital Cameras: Sales and Cost per Pixel



*Includes toy cameras.
Source: Lyra Research, Inc., GFMS

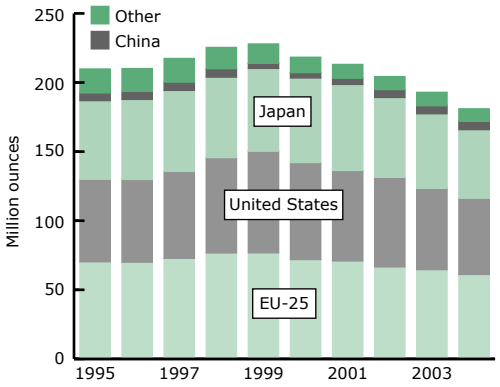
ongoing digital penetration in the amateur and medical markets did contribute to the fall as well).

As already mentioned above, the fall in Japanese demand would almost certainly have been higher were it not for the fact that export markets in Asia have been growing strongly over the past few years. For instance, basis GFMS calculations, Asian export markets now account for around 20-25% of Japanese photographic demand, measured on a fine silver basis. This is up from a figure of around 5% in the late 1990s. One other offsetting issue in 2004 was the rise in printing from digital image capture to silver halide paper. Most of the photographic companies have run aggressive campaigns encouraging consumers to print more images, and this appears to have boosted (marginally) silver demand in this area.

Chinese photographic demand rose 6% year-on-year to reach 6.1 Moz (190 t), a modest increase compared to Chinese industrial or jewelry & silverware demand but still higher than the 2% growth rate seen in 2003. Despite the penetration of digital cameras, the consumption of traditional film in China has actually grown because of an expansion of the total photographic market.

Digital cameras are selling primarily to young urban dwellers whose incomes are rising along with their knowledge of electronics and information technology.

World Photographic Fabrication



Although the prices of digital cameras are falling, they are still expensive for low-income families. Personal incomes in rural areas have increased enough to encourage the purchasing of discretionary items, putting low cost film cameras within the budgets of many consumers, but digital cameras by and large remain out of reach. However, this is not just a story about affordability. It should be highlighted that the preference for film cameras is also driven by the fact that they are easier to use in terms of obtaining and sharing the output, i.e. the photograph. A digital camera presupposes some understanding of the technology involved in the camera (e.g. pixel density) as well as knowledge of and access to the supporting technologies such as personal computers, email, etc. This of course will change rapidly as information technology and telecommunications penetrate all corners of China.

Data made available from a survey conducted by the National Bureau of Statistics supports the above views. In 2004, around 10% of those living in urban areas owned a digital camera, while more than 40% had a film camera. However in rural areas the ownership percentages were 1.5% and 5% respectively. Moreover, the Bureau published data showing that sales of digital cameras rose by 29% in 2004 as compared to the growth rate of 33% in film consumption. And there is no sign that such high growth rates cannot continue given that the average Chinese now buys 0.3 rolls of film a year (a number that has doubled in the space of a few years) but which is still just one tenth of that in the United States.

Another important component of Chinese photographic demand is the production of X-ray film. China now has more than six film manufacturers of which at least two are producing X-ray film. Although precise production data is not available, we estimate that the demand for silver from this sector comprises around one quarter of total silver nitrate production. It will be of no surprise to the reader to learn that the Chinese health sector is also growing rapidly as living standards improve, more Chinese opt for private health insurance and demand better care and more focus is given to looking after one's health, particularly after the SARS and bird flu epidemics. China now imports around $2 billion in medical equipment annually as state-owned hospitals are modernized or sold to private investors who also commit large sums to bring care levels in line with international standards.

Jewelry & silverware

- ***Jewelry & silverware demand fell by a sizeable 10% to a nine year low of 247.5 Moz (7,698 t).***

- ***The drop was largely due to a 42% slump in India, chiefly in response to higher prices; indeed, world fabrication excluding India rose by 3%.***

- ***East Asia accounted for much of any gains, with Thailand up 10% thanks to strong jewelry exports.***

- ***Europe saw a 5% drop in offtake, chiefly due to import penetration and silverware's secular slide.***

Europe

Silver jewelry & silverware fabrication fell across a broad range of European countries in 2004 such that the region as a whole registered a fourth consecutive year of decline, slipping almost 5% to 67.8 Moz (2,108 t). This occurred despite buoyant jewelry consumption largely as imports' market share rose. Much of the higher inflows came from East Asia, in part due to the swing to gemset. Another significant factor was a continuation of the secular decline in consumption of traditional silverware.

A good starting point for a review of jewelry & silverware fabrication in the continent's largest producer, **Italy**, is its bullion imports since, in a normal year, these are essentially all for fabrication. Official imports, however, show a modest rise (net or gross), which does not square with fabricators' comments on 2004. No explanation lies in a transfer between unofficial and official trade as the former remained at insignificant levels. Instead, it is assumed that either slight errors crept into the official

Table 7 - Silver Fabrication: Jewelry and Silverware (including the use of scrap - million ounces)

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Europe										
Italy	39.0	40.5	44.8	45.3	51.2	54.2	47.8	45.4	44.5	42.9
Germany	10.3	10.0	10.0	10.1	10.0	9.3	9.4	7.8	7.7	7.2
Poland	1.6	1.8	2.3	2.7	2.9	3.0	2.5	2.3	2.9	3.1
Greece	3.8	4.2	4.5	4.1	4.1	3.3	3.0	2.8	2.9	2.9
France	2.0	2.0	2.2	2.6	2.7	2.8	2.7	2.7	2.6	2.2
Spain	4.1	4.5	4.0	4.1	3.4	3.0	2.4	2.4	2.4	1.9
UK & Ireland	3.0	3.3	3.4	3.3	3.1	3.2	2.9	2.2	1.7	1.5
Portugal	1.7	1.9	1.9	1.9	2.1	2.1	1.8	1.6	1.7	1.5
Norway	1.2	1.1	1.1	1.1	1.5	1.6	1.5	1.3	1.3	1.2
Sweden	1.0	1.1	1.3	1.0	1.0	0.9	0.6	0.7	0.8	0.9
Denmark	0.9	0.9	1.0	0.9	0.9	0.9	0.8	0.7	0.6	0.6
Switzerland	0.3	0.3	0.3	0.4	0.3	0.3	0.3	0.3	0.3	0.3
Cyprus & Malta	0.4	0.4	0.4	0.4	0.4	0.4	0.3	0.3	0.3	0.3
Finland	0.7	0.8	0.8	0.6	0.6	0.5	0.4	0.4	0.3	0.3
Other Countries	1.3	1.1	1.2	1.3	1.2	1	1	0.9	0.9	0.9
Total Europe	**71.2**	**74.0**	**79.2**	**79.7**	**85.3**	**86.6**	**77.5**	**71.8**	**71.1**	**67.8**
North America										
Mexico	11.0	14.2	16.3	15.3	15.1	13.2	12.9	14.1	15.6	15.6
United States	12.5	12.4	12.5	12.6	13.1	13.7	13.0	13.7	15.1	15.4
Canada	1.2	1.3	1.5	1.8	1.5	1.4	1.5	1.5	1.7	1.6
Total North America	**24.8**	**28.0**	**30.4**	**29.7**	**29.7**	**28.4**	**27.4**	**29.3**	**32.4**	**32.5**
Latin America										
Brazil	1.9	1.8	1.6	1.4	1.3	1.2	1.2	1.2	1.4	1.3
Peru	0.9	1.0	1.1	1.0	1.0	0.9	0.9	0.9	0.6	0.6
Colombia	0.8	0.8	0.8	0.8	0.6	0.6	0.5	0.5	0.5	0.5
Ecuador	0.6	0.6	0.6	0.6	0.5	0.5	0.4	0.4	0.3	0.3
Argentina	0.9	0.8	0.8	0.2	0.2	0.2	0.1	0.1	0.1	0.1
Other Countries	0.7	1.0	1.4	1.7	1.9	1.2	0.9	0.8	1.0	1.1
Total Latin America	**5.9**	**6.0**	**6.3**	**5.8**	**5.4**	**4.5**	**4.1**	**3.9**	**3.9**	**3.9**
Middle East										
Turkey	5.1	5.5	5.5	5.2	4.7	5.9	4.3	5.5	6.0	6.5
Israel	2.3	2.6	3.0	2.8	2.9	2.6	2.4	2.5	2.4	2.5
Egypt	2.0	2.1	2.0	1.7	1.9	1.9	1.6	1.5	1.7	1.9
Saudi Arabia	0.4	0.4	0.6	0.5	0.6	0.6	0.6	0.6	0.6	0.6
Other Countries	2.5	2.6	2.6	2.4	2.5	2.6	2.7	2.5	2.6	2.7
Total Middle East	**12.4**	**13.3**	**13.6**	**12.8**	**12.6**	**13.7**	**11.6**	**12.5**	**13.3**	**14.1**
Indian Sub-Continent										
India	66.6	86.0	86.3	82.5	83.2	84.6	102.9	77.7	77.7	45.0
Bangladesh & Nepal	5.1	5.8	6.4	5.1	5.7	6.0	5.9	4.8	4.5	4.2
Other Countries	2.9	2.0	3.1	1.9	2.4	2.3	1.7	1.7	1.7	1.9
Total Indian Sub-Continent	**74.6**	**93.8**	**95.8**	**89.5**	**91.4**	**92.8**	**110.5**	**84.3**	**84.0**	**51.1**
East Asia										
Thailand	27.4	27.1	26.8	23.9	24.9	28.3	30.7	32.3	36.8	40.3
China	1.4	2.4	3.1	4.7	6.3	6.7	7.4	9.4	11.5	13.7
Indonesia	2.7	2.9	3.6	2.2	2.7	3.4	3.8	4.3	4.4	4.9
South Korea	6.8	6.6	6.3	2.6	4.5	4.9	4.6	4.5	4.6	4.7
Japan	2.2	2.1	1.9	1.8	1.8	1.7	1.7	1.7	1.6	1.8
Vietnam	0.6	0.7	0.7	0.6	0.7	0.7	0.7	0.8	0.9	1.0

Table 7 - Silver Fabrication: Jewelry and Silverware (including the use of scrap - million ounces)

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Myanmar, Laos & Cambodia	1.1	1.1	1.0	0.8	0.9	0.8	0.9	1.0	1.0	0.9
Malaysia	0.4	0.4	0.4	0.4	0.5	0.5	0.6	0.6	0.7	0.7
Taiwan	0.5	0.5	0.5	0.5	0.4	0.4	0.3	0.3	0.3	0.4
Hong Kong	0.9	0.9	1.0	0.6	0.6	0.5	0.5	0.4	0.3	0.3
Other Countries	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.3
Total East Asia	**44.2**	**45.0**	**45.6**	**38.3**	**43.5**	**48.3**	**51.6**	**55.5**	**62.5**	**69.0**
Africa										
Morocco	0.4	0.4	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.3
Tunisia	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Algeria	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.2	0.2
Other Countries	0.5	0.4	0.4	0.3	0.4	0.4	0.4	0.4	0.4	0.4
Total Africa	**1.3**	**1.2**	**1.2**	**1.2**	**1.1**	**1.2**	**1.1**	**1.1**	**1.2**	**1.2**
Oceania										
Australia	0.6	0.5	0.6	0.7	0.7	0.8	0.7	0.7	0.7	0.7
Total Oceania	**0.6**	**0.6**	**0.6**	**0.7**	**0.8**	**0.8**	**0.7**	**0.8**	**0.7**	**0.8**
CIS										
CIS	2.0	1.9	1.7	1.7	1.8	2.0	2.5	3.5	5.1	7.1
Total CIS	**2.0**	**1.9**	**1.7**	**1.7**	**1.8**	**2.0**	**2.5**	**3.5**	**5.1**	**7.1**
World Total	**236.9**	**263.7**	**274.3**	**259.4**	**271.7**	**278.2**	**287.1**	**262.7**	**274.2**	**247.5**

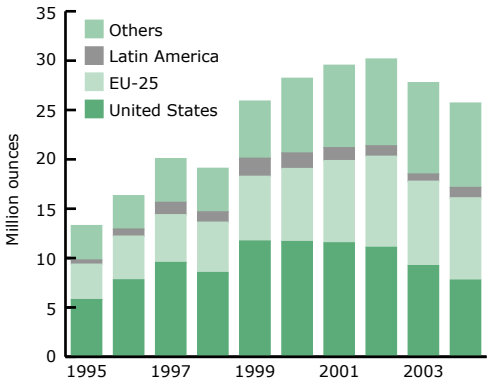
numbers or some of the bullion entering was not truly for fabrication, such that total supply to fabricators fell slightly last year.

One explanation for this decline is that domestic silver jewelry consumption is understood to have fallen somewhat after several years of good growth. Weak overall retail sales did not help but, of more concern to producers, was the loss of market share to other forms of jewelry. The bottom end has been hit by the shift to mixed materials and, in particular, aggressively promoted steel items, while consumers' flirtation with expensive silver pieces looks to be fading. This reversal is in stark contrast to many other European countries which enjoyed further sales growth in 2004.

The rise of steel looks strongest in Italy, yet it does seem to have contributed to the slight fall in jewelry exports in 2004, especially to northern Europe and North America. Perhaps of more importance was greater competition from rival exporters. This explains most of the 12% and the 10% drop in the gross weight of exports to the US and UK markets, Italy's two largest. Much of this is due to lower labor costs and a shift to gemset from chains, which has favored fabricators in East Asia. Even though the duty disadvantage for the US market is much less important for silver than gold, there are still some instances of items being re-routed or finished pieces being made in third countries from Italian semis. Total exports of jewelry semis also rose. This, plus possible under counting of exports to central and eastern Europe, means the fall in exports of jewelry fabrication could well be lower than the 'headline' gross weight drop in (corrected) official jewelry exports of around 7%.

Silverware exports also posted a notable fall last year. Basis the gross weight of official exports, this stood at 14%, yet the true fall for the fine weight looks smaller. Firstly, there appears to be some under reporting of official flows, chiefly, to the Middle East and the eastern Mediterranean. Secondly, exports of silverware semis

Official Italian Jewelry Exports



are only thought to have fallen slightly. On a regional basis, the secular decline in consumption hit shipments to western Europe, while the emerging markets of eastern Europe performed well (the Ukraine became a larger market than France in 2004). Many other developing countries saw growth, while shipments to the US market were broadly flat.

One interesting exception was the marked rise for Scandinavia, in the wake of successful promotion there. Such promotion was conspicuously absent in Italy and it is this which fabricators chiefly blame for the continued slide in local silverware consumption. By product, some of the traditional areas such as tea sets saw further marked falls, while others such as cutlery and photoframes saw steadier sales, contributing to the slowdown in the rate of consumption's recent contraction. There was talk of surging imports in all areas from the likes of China and India, yet these have yet to show in the official statistics and would contradict the bullion import numbers yet further. As a result, we are inclined to put the total decline in Italian silverware and jewelry fabrication at a modest 4% to 42.9 Moz (1,333 t).

The slight decline in **UK** silverware and jewelry hallmarking in 2004 does not necessarily mean that consumption was lower last year. Instead, it implies that a greater proportion of silver jewelry fell under the seven gram minimum hallmarking weight. Up until the fourth quarter solid heart necklets were notably

Consumer Trends & Jewelry Consumption

Changes in consumer taste are in a sense the 'missing link' since, being a discretionary good, there can often be a pronounced mismatch between hard economics and what happens to jewelry sales. In France last year, for example, the value of all retail sales rose by just over 2%, yet that of silver jewelry rose by well over 10%, while gold was flat. A change such as this for silver is all the more remarkable since, in many markets, jewelry faces intense competition from other areas, such as ever heavily promoted and novel technology goods.

It would be wrong to assume that the sole driver of difference between the metals, however, was fashion. Margins can play a huge role. Part reason silver jewelry did comparatively well across Europe is that, with dollar priced per piece contracts and stable local selling prices, margins opened up as the dollar weakened, encouraging retailers to promote silver.

Turning to fashion, one important issue is the popularity of the white versus the yellow look. There has been much talk over the last few seasons of the return of yellow, with an obvious negative potential for silver. However, it seems this trend has struggled to leave the glossy magazines and translate into actual sales and this looks to have remained the case in 2004. This could well be starting to change, if more so in high fashion segments; New York's 5th Avenue might be swinging away from white, but that has yet to really feature in Mid West malls.

Since a swing to yellow was not a 2004 story, the difficult year that the top end of the silver market experienced requires a different explanation. One contributor was the fading fashion of size for size's sake and these associated oversized designs, due to their weight, tended to favour silver.

Silver, however, performed well in the mid/upper-mid price range. In part this was due to a more general theme, the emergence of a "mass-luxury" market. This refers to jewelry that is accessible to the majority, is increasingly self-bought and is for all day wear, an area that silver is well-suited for, especially if gem- or stone-set. This partly explains the ongoing shift away from plain (of importance in fine weight terms) as silver with semi-precious or even precious stones (such as diamonds) has been a strong seller of late. To a degree, that shift was most marked a season or so ago. The associated relative lack of recent novelty in silver jewelry helps explain the slowdown last year in the rate of growth (for example in US and UK sales). In contrast, cheaper pieces set with cubic zirconia are still said to be selling well. This is part reason for the healthier performance of the mid-market versus the top end.

The bottom end of the market had done well over recent years through its success in winning the youth vote. However, offtake from this fickle segment has come under pressure of late from two new areas. Firstly, there has been the success of mixed material pieces (those with, for example, leather or rubber), though this has arguably been of less importance to silver than gold and has probably had a mixed impact (fine weight losses per piece being countered by gains from stimulated purchases). Last year, perhaps more damage was done to silver by the surge in popularity (largely driven by aggressive promotion) in steel pieces. This was initially most pronounced in Italy, where silver jewelry consumption fell last year, but has more recently been hitting silver sales in northern Europe and North America.

In terms of pure styles, some key changes over the last year or so were the return of brooches, a swing from chandelier to stiletto for earring design, the success of charms and a take-off for 'fabric' metals. It is of note that many of these were gold, not silver, oriented. Again, it is this absence of novelty that part explains the slowdown in earlier (admittedly fast) growth or the retreat for consumption in many western markets.

popular but thereafter there appears to have been a shift to considerably lighter pieces. However, domestic manufacturers derived little benefit from the modest growth in overall retail consumption, with an increasing amount of product sourced overseas, leaving UK fabrication some 8% lower year-on-year.

French silver jewelry consumption saw another year of double-digit growth. With imports' market share up only slightly, this room for offtake growth was negated by the relocation of semis production, such that jewelry fabrication actually fell by over 15%. Silver jewelry consumption in **Germany** also rose, if only modestly, though higher imports again constrained the benefits for local producers. Jewelry exports too posted a small rise. In contrast, silverware consumption fell, though the scale of the drop lessened once more. This, together with lower exports of both jewelry & silverware semis, meant that combined silverware and jewelry fabrication posted a decline of just over 6%.

In contrast to much of Europe, **Russian** fabrication of jewelry & silverware was up sharply in 2004, with both categories registering healthy gains. It is also worth noting that imports, particularly of silver jewelry were higher, reflected in the overall hallmarking statistics, which registered a near 60% annual increase in 2004.

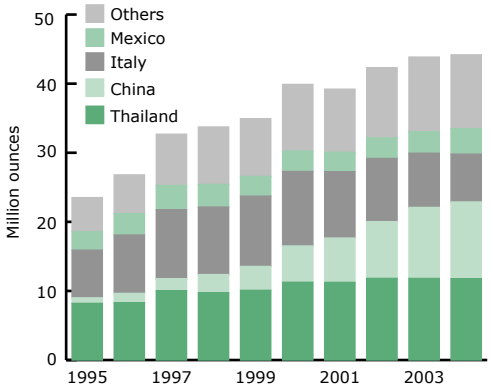
North America

Mexico retained its position as the leading North American fabricator of jewelry & silverware, despite a 2004 fall. However, a 2% rise in the United States left the regional total 0.1 Moz (5 t) higher at a new record level.

The growth in jewelry & silver fabrication in the **United States** slowed considerably last year. This followed robust gains during 2002 and 2003, during which time manufacturing had posted gains of 5% and 10% respectively, in the process adding more than 2 Moz (63 t) to domestic fabrication. However, these gains were almost entirely seen in the jewelry sector in contrast to the silverware industry where manufacturing has remained stagnant. Last year, GFMS estimate that US jewelry fabrication edged up, in the region of 2-3%, while silverware production slipped back a fraction.

The performance of the domestic silver jewelry sector has been all the more remarkable given the trend in the gold jewelry sector, which has seen its manufacturing base contract at the expense of rising import volumes.

US Silver Jewelry Imports



In contrast, higher US consumption of silver jewelry has benefited both locally produced and imported articles. Last year was no exception. Although retail demand for white look articles seems to have plateaued, the modest gains that were achieved in retail sales were reflected in growth from both local and imported sources.

The volume of **Mexican** jewelry & silverware fabrication was little changed last year. Silver jewelry sales to locals and tourists may have contracted slightly but this was compensated by a small rise in exports to both the dominant US market and to Europe. In the case of the former, US import data show that Mexico's market share of the value of silver jewelry imports increased sharply to 8.4% in 2004. This ended several years of losses to lower-cost producers in Thailand and China. Furthermore, the trade data understates the true level of US demand for Mexican jewelry, as a sizeable additional quantity has always entered the United States without being recorded in the official customs statistics.

Middle East

The top three silverware and jewelry fabricators in the Middle East, namely Turkey, Israel and Egypt all posted gains in 2004. The largest gain, in volume terms, was seen in **Turkey**, with most of the increase being driven by higher local consumption of silver jewelry. As discussed in GFMS' *Gold Survey 2005*, the country has benefited from an extended period of both economic and political stability, which has been reflected in higher local demand for a range of consumer products. The 22-karat gold jewelry market has been a notable beneficiary of this trend, which carried through to the silver market. As a result, since its low point in 2001, jewelry alone has added 1.6 Moz (49 t) in just three years.

Israeli fabrication staged a modest recovery last year, in the process returning to the level achieved in 2002. Silverware production of predominantly religious pieces, which accounts for most of the total, was higher as a result of firmer home and export sales.

Within the region, the most impressive rise, in percentage terms, was seen in **Egypt**. The modest economic recovery has not only led to a rise in disposable incomes (which has encouraged higher silverware purchases) but silver pharaonic items have proved particularly popular with tourists.

Indian Sub-Continent

Indian jewelry & silverware demand fell precipitously in 2004, dropping by over 40% year-on-year to just 45 Moz (1,400 t), the lowest offtake recorded since 1992. Perhaps even more dramatically, demand last year was down almost 60% on the peak offtake seen in 2001.

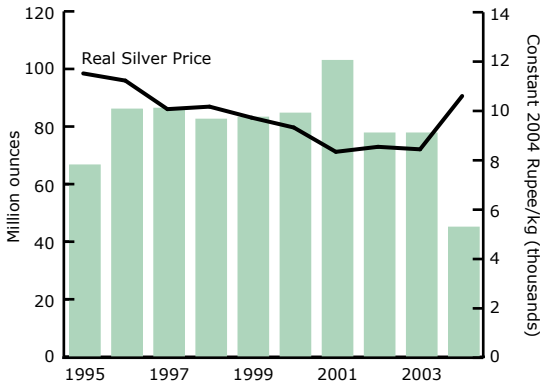
As was the case in 2003, there does not appear to be any one compelling reason as to why offtake has collapsed so markedly in the past two years. Our research in India suggests that there may have been a decoupling of the gold and silver markets, which is why the former saw substantially higher offtake in 2004 (in spite of higher prices), while the latter witnessed a sharp fall.

It has to be noted that this is a tentative theory as to why the two markets have behaved in such a different fashion. As regular readers of these *World Silver Surveys* will know, silver has long been seen as a stepping stone to gold in India, and with few exceptions most consumers will look to upgrade to the yellow metal when the circumstances are right. Given silver's relatively stronger price performance during 2004, it is possible that some consumers made the decision to switch to gold, although given the very different budget constraints associated with both metals it is difficult to see how powerful an impetus this could have been.

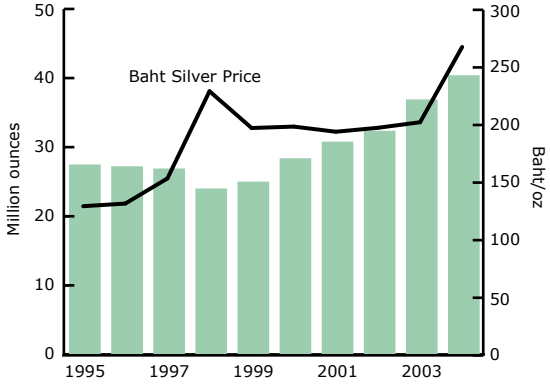
Another issue that might have contributed to the decoupling of the two metals revolves around quality and purity. While it is true that both gold and silver suffer from regular under-karating, the problem is arguably far more pervasive in silver. It is certainly the case that in recent years consumers in India have become more aware of the quality issues in the silver market, and it seems reasonable to assume that they have been put off buying jewelry and silverware because of this. For example, purity on silver can fluctuate massively, falling to as low as 25% in some items but being sold as containing substantially more. Although similar issues have plagued gold for many years, in silver the problems are more severe and this would be expected to push consumers towards substitute products.

One element of the demand equation that has not been discussed in detail yet is the price. The average silver price rose sharply in 2004, pushing above the Rs. 10,000 per kilogram level for the first time and regularly hitting record highs. To put this in context, it is worth noting what we wrote in last year's *World Silver Survey* about the impact of the price. Back then we wrote "Rs. 8,000 per kilogram....a critical price level at which Indians stop buying...", pointing to what used to be a major price trigger for higher scrap and substantially reduced purchases of new metal. Consequently it should not come as too much of a surprise that demand fell in 2004, although the magnitude of the fall suggests that the price

Indian Jewelry and Silverware Fabrication



Thai Jewelry and Silverware Fabrication



elasticity of demand may well be higher at elevated price levels, as would be expected.

Of course no discussion of silver demand in India is complete without a discussion of the monsoon and its impact on jewelry and silverware offtake. 2004 witnessed one of the most fickle monsoons in recent times, and not only were the rains poor (13% below normal), they were also notably erratic. Having started unseasonably soon, the rains quickly disappeared for an extended period, only to return with a vengeance causing floods in many parts of the country. Thus, droughts in some parts and floods in others did not bode well for agricultural production (the impact on agricultural production was reflected in the data; for example, foodgrain production fell from 213.5 million tons during 2003-04 to 206.4 million tons in the latest financial year).

The meteorological data for last year is telling in this regard. Of the 36 divisions in India, only six recorded normal or excess rain; the rest of the country experiencing deficient or scanty precipitation. Perhaps more importantly from a silver perspective, major consuming states such as Rajasthan and the Punjab experienced poor rainfall. Although this data does appear to indicate why silver demand fell in 2004, there is an important caveat to be added. In spite of similar forces working against higher gold demand (elevated price levels and a poor monsoon), offtake of the yellow metal actually rose last year. Whether this points to the disconnect between the two metals alluded to above remains to be seen, but the reality on the ground in 2004 suggests different forces are at work in both markets.

On an even more speculative note, it may just be possible that India is reaching a critical income level (both in the agricultural and industrial/service sector) where consumers are migrating from silver to gold. As already noted, silver is seen in India as very much a stepping stone to gold consumption, with demand for the former being driven primarily by the budget constraint; rising levels of wealth and incomes would be expected, all other things being equal, to result in higher gold offtake at the expense of silver.

East Asia

The jewelry & silverware industry in **Thailand** continues to move from strength to strength and in 2004 it recorded its sixth consecutive year of positive growth in terms of silver demand. Last year saw jewelry & silverware offtake rise by 9.5% to a new record level of 40.3 Moz (1,254 t). To place this in an historical context, the volume of silver used in 2004 was 62% higher than that reached in 1999, just five years earlier.

Of course, when analyzing any jewelry sector located in a developing or emerging economy, the potential margin of error in accurately quantifying the amount of bullion, whether silver, gold and to a lesser extent platinum, consumed in the manufacture of jewelry is heightened compared to the typically more transparent nature of the same industry in a developed country. The reason for making this comment is particularly relevant to Thailand, as several changes in the management and regulation of the economy have taken place over the past five years, which has placed increasing pressure on the underground economy. One of the most notable in relation to silver was the removal of Value Added Tax (VAT) on silver bullion in July 2003. This has led to a noticeable rise in the quantity of silver being imported officially. The VAT change, in conjunction with sporadic crackdowns by the tax authority on the 'cash and carry' jewelry trade, has reduced the amount of silver jewelry being produced and sold 'off the books'. It also makes the task of separating official and unofficial jewelry production over time more difficult. The point being made here is that while GFMS are confident that our historical series accurately reflects the annual size and growth of Thai silver demand in recent times, we do not want to appear to be just accentuating the positive. There is potential, for example, for us to have slightly underestimated the size of the market in the late 1990s.

Based on our analysis, official exports of Thai silver jewelry reached just under $600m in 2004 and contained around 32 Moz (990 t) of fine silver. A further 8.5 Moz (264 t) was either sold in Thailand to locals and tourists or was unofficially exported to the destination country. We have referred to the official imports of partner countries rather than official Thai exports because Thai trade data shows that only $460m of silver jewelry was exported in 2004. The main reason why the Thai data is lower than our estimate of official imports is that a proportion of jewelry leaves Thailand as personal luggage, bought by small business operators (and destined for sale in weekend markets stalls, for example), without being reported to Thai customs on the way out. It is this type of business that is being curtailed by the Thai authorities.

The best performing markets for Thai exporters were the United Kingdom, Canada, Australia, Turkey, Spain and the Netherlands, each growing by 20% or more in fine silver terms last year. Together these markets accounted for around a quarter of total Thai official shipments (basis our analysis). Shipments to the United States, a market which typically takes over one-third of Thai output, rose only marginally last year as US buyers increasingly looked to China and Mexico for their products.

Chinese jewelry & silverware demand soared by 19% year-on-year to 13.7 Moz (426 t) in 2004. Thanks to the tide in popularity of "white metal" jewelry brought about through the marketing efforts for 18-karat white gold and platinum jewelry, consumers have also embraced silver jewelry in light of the lower price and fashionable designs. Silver jewelry demand has now been growing at an annual average rate of 17% since 2000. Such is the size and appeal of silver jewelry that many high street retailers and department stores are now allocating counter space specifically for silver jewelry and silverware.

Those involved in the manufacturing and selling of jewelry are also persuaded to consider devoting attention to silver jewelry because of the profit margins involved. Manufacturers are typically earning a gross margin in excess of 30%, while retailers are able to further markup pieces by multiples of this amount. In fact during a recent field research trip, GFMS discovered that more gold and platinum jewelry fabricators in China have also started to produce silver jewelry. Of course, not all fabrication is sold locally and exports continue to grow. Shipments to the United States, for example, rose by more than 10% in fine silver terms, while exports to the United Kingdom grew by nearly half in 2004.

South Korean silver demand from jewelry & silverware manufacturers rose slightly by 0.7% year-on-year to reach 4.7 Moz (145 t) in 2004. The jewelry industry, in an effort to combat a sluggish domestic retail environment, looked to exporting as a way of maintaining production throughput. This strategy did meet with some success and the value of exported jewelry grew by around 15%, according to our calculations, implying that the quantity of fine silver used rose by around 5% to just over one-fifth of total fabrication. As alluded to above, Korean consumer spending fell sharply in 2004, a result of an inevitable correction in spending patterns, following the credit-card fueled binge seen earlier in the decade.

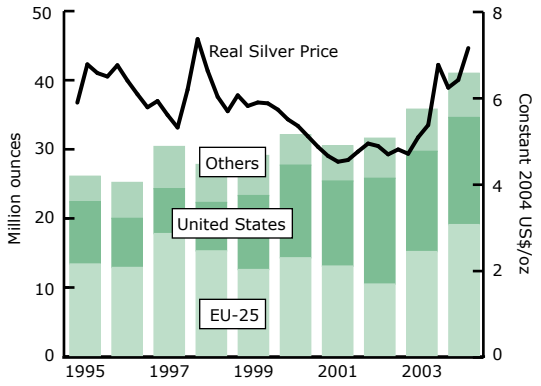
The **Indonesian** silver jewelry sector was hard hit in 2003 by the impact that the terrorist bombings in late 2002 had on the resort island of Bali, also home to Indonesia's largest concentration of silver jewelry manufacturers. Last year was a much better one with the local market rebounding and jewelry exports growing strongly. Concerning domestic sales, the tourist and "cash and carry" trade are a very important part of the silver market and a 48% jump last year in tourist arrivals had a noticeable effect on silver jewelry sales. Likewise, a 15% year-on-year increase in silver jewelry exports in fine silver terms helped lift total jewelry & silverware offtake to 4.9 Moz (151 t) last year.

Coins & Medals

• ***Global manufacturing of coins & medals in 2004 rose to its highest total since 1994.***

From its trough in 2001, world fabrication of coins & medals has risen in each of the following three years, in the process adding 10.6 Moz (329 t) to the global

World Coin Fabrication



US Silver Eagle Coin Sales

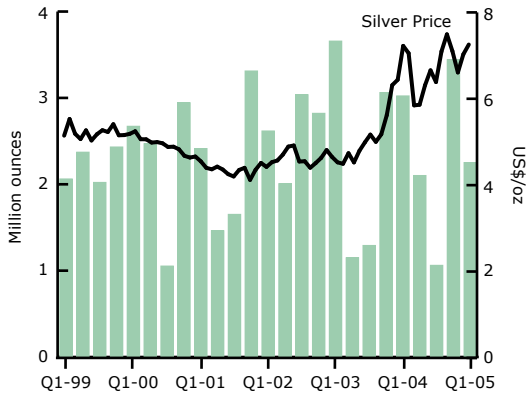


Table 7 - Silver Fabrication: Coins and Medals (including the use of scrap - million ounces)

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
United States	9.0	7.1	6.5	7.0	10.7	13.4	12.3	15.3	14.5	15.5
Germany	4.0	6.2	5.3	10.0	7.0	8.8	8.1	6.0	10.3	10.3
Portugal	0.5	0.8	0.8	1.0	0.9	1.2	0.7	0.0	0.8	2.4
China	0.8	1.4	2.8	2.4	2.3	1.2	1.5	2.1	2.3	2.3
Spain	4.0	2.8	1.8	1.7	1.5	1.8	1.8	1.5	1.1	2.2
Canada	0.7	0.7	0.7	1.1	1.4	1.0	0.9	1.0	0.3	1.3
Australia	0.7	0.8	0.8	1.0	0.9	1.0	0.8	0.6	1.3	1.2
Mexico	0.6	0.5	0.4	0.2	0.4	0.7	1.1	1.1	1.1	0.9
Poland	0.2	0.1	0.1	0.1	0.1	0.2	0.2	0.3	0.3	0.6
Austria	0.6	0.4	0.3	0.3	0.3	0.2	0.3	0.4	0.4	0.5
France	1.1	0.3	0.3	0.3	0.3	0.3	0.4	0.5	0.5	0.5
UK & Ireland	0.7	0.6	0.6	0.6	0.6	0.6	0.5	0.5	0.5	0.5
Russia	0.1	0.6	0.4	0.2	0.2	0.1	0.2	0.3	0.4	0.4
Switzerland	0.4	0.6	0.6	0.3	0.4	0.4	0.4	0.4	0.4	0.3
Thailand	0.3	0.5	0.3	0.2	0.1	0.2	0.2	0.3	0.3	0.1
Other Countries	2.3	1.7	8.6	1.3	1.9	1.2	1.1	1.3	1.3	2.1
World Total	**26.1**	**25.2**	**30.4**	**27.8**	**29.2**	**32.1**	**30.5**	**31.6**	**35.8**	**41.1**

total. The **United States**, which remained the dominant player in the market, was responsible for 15.5 Moz (483 t) of coin minting in 2004. This can be broken down into four categories (all consisting of 90% silver). Eagle bullion coins accounted for the largest share with last year's minting of more than 9.6 Moz, compared with 9.2 Moz in 2003. This reflected modestly higher investor demand but an important determinant was the increasing popularity of slabbed (the packaging of individual coins with a certificate) high-grade coins sold mainly through the TV networks. However, most of the growth was driven by notably higher production of the silver proof sets, which consumed in the region of 2.9 Moz (90 t), a year-on-year rise of 0.7 Moz (22 t). These have been particularly successful since being introduced in 1999 although part of the growth last year was due to the inclusion of two new coins (albeit non-silver), which led to additional retail interest. The last two categories, namely commemorative and proof bullion Eagles, together consumed 1.6 Moz (50 t), some 0.2 Moz (6 t) lower than a year ago.

The production of €10 coins in **Germany** (in 925 silver, weighing 18 grams) was broadly unchanged last year. A total of six issues were produced commemorating, in chronological order: the 2006 FIFA World Cup; Dessau building; extension of the EU; Wattenmeer national park; 200th anniversary of the birth of the poet Eduard Moerike and the Columbus European Space Station. As was the case last year, the minting of each series was effectively serviced from scrapped coins (see Chapter 5 for more on this), a situation which should change in 2006.

Portuguese minting surged ahead last year as a result of sharply higher commemorative coin production, in particular for the Euro 2004 soccer championships. After three years of rising production, **Chinese** minting stabilized in 2004 at 2.3 Moz (72 t). Interestingly, at the six month interval, production was over one-fifth lower year-on-year, before a sharp second half recovery left the annual total unchanged on 2003.

Spain assumed fifth place last year as a result of a surge in minting of the €12 pieces. Since the commemorative coins were first introduced in 1994 (with a Pta2,000 face value, then €12 in 2002), one issue has been produced each year, albeit with varying quantities. 2004 marked a departure from this trend with two coins released. The smaller of the two, commemorating the 500th anniversary of the death of Queen Isabel, accounted for nearly 1.5 million coins, while over 2.5 million pieces were minted to celebrate the wedding of the Prince of Asturias. Significantly higher commemorative coin minting also accounted for the sharp rise in **Canada**, where total minting added 1 Moz (31 t) to the country's 2004 output of 1.3 Moz (40 t).

8. Appendices

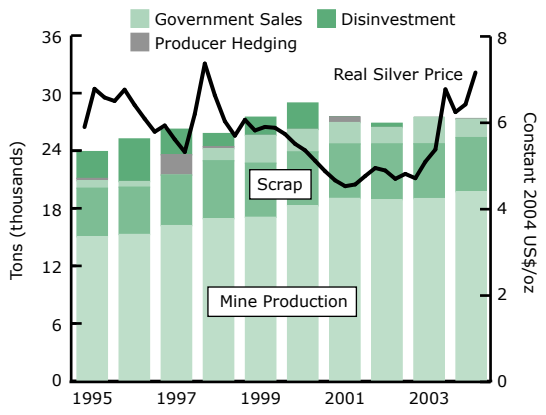
Contents

Appendix 1

Table 1 - World Silver Supply and Demand (tons)

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Supply										
Mine Production	15,024	15,273	16,197	16,921	17,060	18,267	19,029	18,893	19,011	19,731
Net Government Sales	788	589	-	1,263	2,895	2,339	2,229	1,708	2,745	1,920
Old Silver Scrap	5,066	4,925	5,265	6,032	5,636	5,611	5,674	5,818	5,710	5,633
Producer Hedging	233	-	2,118	203	-	-	587	-	-	62
Implied Net Disinvestment	2,795	4,441	2,658	1,367	1,900	2,752	-	439	-	-
Total Supply	**23,906**	**25,227**	**26,238**	**25,786**	**27,492**	**28,969**	**27,519**	**26,857**	**27,466**	**27,346**
Demand										
Fabrication										
Industrial Applications	9,198	9,260	9,977	9,842	10,549	11,675	10,460	10,578	10,903	11,419
Photography	6,527	6,535	6,761	7,011	7,087	6,790	6,628	6,353	5,999	5,629
Jewelry & Silverware	7,369	8,203	8,533	8,067	8,450	8,653	8,930	8,171	8,527	7,698
Coins & Medals	812	784	945	866	907	999	948	983	1,114	1,277
Total Fabrication	23,906	24,782	26,216	25,786	26,993	28,117	26,966	26,085	26,543	26,023
Net Government Purchases	-	-	22	-	-	-	-	-	-	-
Producer De-Hedging	-	445	-	-	499	852	-	772	653	-
Implied Net Investment	-	-	-	-	-	-	553	-	270	1,323
Total Demand	**23,906**	**25,227**	**26,238**	**25,786**	**27,492**	**28,969**	**27,519**	**26,857**	**27,466**	**27,346**
Silver Price (London US$/oz)	5.197	5.199	4.897	5.544	5.220	4.951	4.370	4.599	4.879	6.658

World Silver Supply



World Silver Demand

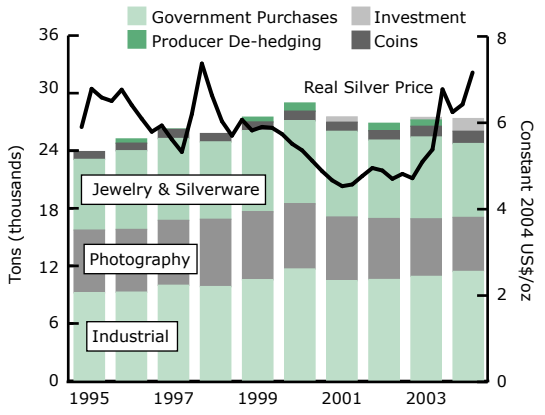


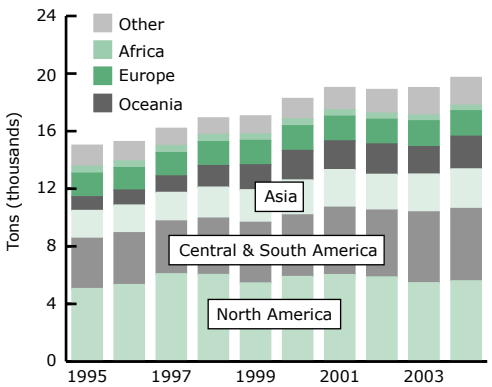
Table 2 - World Silver Mine Production (tons)

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Europe										
Poland	984	953	1,050	1,119	1,115	1,140	1,183	1,211	1,376	1,362
Sweden	250	241	265	268	275	294	275	293	307	292
Romania	44	44	43	39	39	34	38	32	29	28
Ireland	14	15	13	11	15	25	19	15	20	28
Portugal	39	34	34	31	27	21	23	19	22	25
Bulgaria	44	35	31	25	21	18	24	25	22	19
Czech & Slovak Republics	10	7	8	8	8	7	8	7	7	7
Yugoslavia (former)	58	92	65	56	31	31	21	17	6	5
Italy	14	9	4	4	4	2	2	2	2	3
Spain	124	103	66	47	118	115	55	13	2	1
Greece	45	16	36	45	40	31	62	75	4	0
France	4	3	2	1	1	1	1	1	0	0
Norway	5	4	4	4	0	0	0	0	0	0
Other Countries	2	0	0	0	0	0	0	0	0	0
Total Europe	**1,636**	**1,554**	**1,620**	**1,658**	**1,693**	**1,720**	**1,712**	**1,710**	**1,798**	**1,770**
North America										
Mexico	2,258	2,529	2,701	2,848	2,338	2,747	3,030	3,146	2,946	3,085
Canada	1,245	1,243	1,213	1,131	1,166	1,174	1,265	1,373	1,282	1,262
United States	1,560	1,570	2,180	2,060	1,950	1,980	1,740	1,350	1,240	1,250
Total North America	**5,063**	**5,341**	**6,094**	**6,039**	**5,454**	**5,901**	**6,035**	**5,869**	**5,468**	**5,598**
Latin America										
Peru	1,908	1,968	2,077	2,025	2,231	2,438	2,674	2,761	2,921	3,060
Chile	1,042	1,145	1,092	1,341	1,381	1,242	1,349	1,210	1,309	1,330
Bolivia	429	383	386	407	424	434	410	461	466	407
Argentina	37	31	34	69	103	94	176	135	150	156
Honduras	30	38	45	46	49	53	50	56	54	50
Brazil	13	10	7	10	7	7	7	8	7	8
Dominican Republic	21	17	12	7	3	0	0	0	0	0
Other Countries	10	11	10	11	13	13	12	12	13	14
Total Latin America	**3,491**	**3,603**	**3,663**	**3,916**	**4,212**	**4,280**	**4,677**	**4,643**	**4,920**	**5,025**
Asia										
China	1,201	1,212	1,267	1,358	1,494	1,596	1,729	1,646	1,828	1,985
Indonesia	238	237	250	311	271	312	374	332	297	266
Turkey	65	90	90	87	108	109	114	114	113	115
Iran	72	67	74	77	79	83	82	82	82	80
Japan	100	89	87	94	94	104	80	81	79	76
India	38	36	50	52	60	56	54	59	60	64
Papua New Guinea	66	60	49	58	59	73	69	64	63	54
Mongolia	28	29	31	33	33	32	37	35	34	37
North Korea	53	40	36	32	26	22	19	20	25	25
Thailand	7	8	3	4	5	5	6	22	18	16
Saudi Arabia	17	16	16	14	11	9	10	10	17	15
Philippines	33	25	20	19	18	23	34	9	7	8
Malaysia	11	10	10	7	3	0	0	0	0	0
Other Countries	6	5	2	7	2	2	3	9	6	9
Total Asia	**1,936**	**1,924**	**1,986**	**2,153**	**2,262**	**2,427**	**2,610**	**2,484**	**2,631**	**2,751**

Table 2 - World Silver Mine Production (tons)

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Africa										
Morocco	204	200	260	306	278	289	283	263	196	196
South Africa	178	171	163	157	152	144	126	118	108	101
Dem. Rep. of the Congo	1	1	1	1	1	1	1	3	36	34
Namibia	66	64	39	14	0	17	19	20	29	27
Zambia	8	9	7	8	5	5	5	6	6	8
Zimbabwe	11	10	10	6	6	4	4	4	4	4
Other Countries	13	13	12	13	15	15	19	20	21	21
Total Africa	**481**	**467**	**491**	**505**	**458**	**475**	**458**	**433**	**401**	**390**
Oceania										
Australia	920	1,010	1,106	1,469	1,709	2,024	1,970	2,077	1,872	2,237
New Zealand	30	31	33	26	24	23	27	29	30	31
Fiji	2	2	2	2	2	1	2	2	1	1
Total Oceania	**952**	**1,043**	**1,141**	**1,496**	**1,736**	**2,048**	**1,999**	**2,108**	**1,903**	**2,270**
CIS										
Russia	730	758	649	605	617	628	646	772	1,068	1,180
Kazakhstan	650	482	440	430	528	685	797	779	724	642
Uzbekistan	66	70	77	82	64	62	53	49	53	60
Armenia	16	28	31	33	33	35	38	39	41	40
Tajikistan	3	3	3	3	3	4	4	4	4	4
Kyrgyzstan	0	0	1	1	1	1	1	1	1	1
Total CIS	**1,465**	**1,341**	**1,202**	**1,154**	**1,246**	**1,415**	**1,539**	**1,645**	**1,890**	**1,927**
World Total	**15,024**	**15,273**	**16,197**	**16,921**	**17,060**	**18,267**	**19,029**	**18,893**	**19,011**	**19,731**

World Silver Mine Production



Silver Producer Hedging: Outstanding Positions

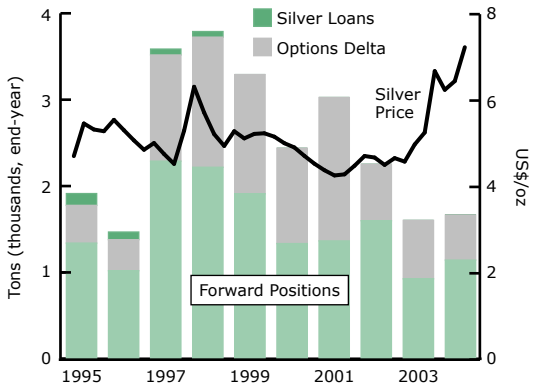


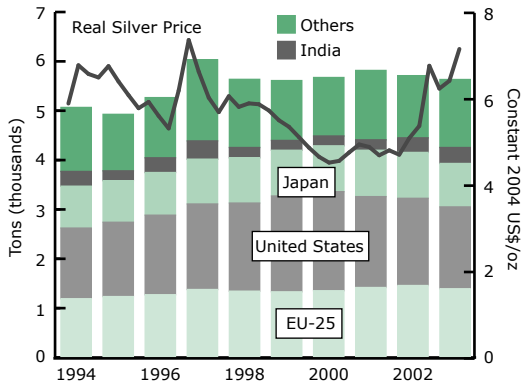
Table 3 - Supply of Silver from the Recycling of Old Scrap (tons)

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Europe										
Germany	460	480	500	510	500	520	523	520	592	568
UK & Ireland	231	236	261	337	358	338	346	423	404	380
France	145	140	133	127	124	110	122	120	126	118
Italy	100	110	105	145	105	105	110	113	112	104
Austria	63	55	56	57	52	50	62	58	48	50
Netherlands	35	39	40	40	40	45	42	44	44	45
Sweden	34	34	35	34	34	33	33	32	32	32
Belgium	20	20	20	20	20	20	21	20	20	20
Denmark	19	19	19	19	19	18	18	17	17	17
Portugal	12	13	14	14	14	14	13	14	14	14
Czech & Slovak Republics	23	28	25	22	19	19	14	13	13	14
Spain	12	14	14	13	12	13	13	13	14	14
Finland	15	15	15	15	15	13	13	12	13	13
Switzerland	51	52	24	14	10	10	10	10	10	10
Norway	24	30	30	25	29	33	21	21	14	10
Other Countries	34	36	37	36	36	35	34	36	34	34
Total Europe	**1,278**	**1,321**	**1,328**	**1,428**	**1,387**	**1,376**	**1,395**	**1,466**	**1,506**	**1,443**
North America										
United States	1,432	1,505	1,612	1,733	1,785	1,941	2,005	1,842	1,766	1,659
Mexico	150	75	134	330	71	48	44	48	55	60
Canada	52	55	50	60	50	45	45	44	47	44
Total North America	**1,634**	**1,635**	**1,796**	**2,123**	**1,906**	**2,034**	**2,094**	**1,934**	**1,868**	**1,763**
Latin America										
Brazil	60	60	50	50	55	48	50	32	36	32
Argentina	20	20	20	20	20	20	23	20	20	20
Chile	14	14	14	17	13	12	12	12	12	12
Other Countries	23	23	23	29	27	25	24	24	25	24
Total Latin America	**117**	**117**	**107**	**116**	**115**	**105**	**109**	**88**	**93**	**88**
Middle East										
Turkey	72	60	50	53	43	40	40	45	55	60
Egypt	25	22	10	13	10	28	35	40	35	42
Saudi Arabia	94	40	101	64	232	70	24	224	23	40
Oman	5	5	5	6	5	5	5	5	5	5
Other Countries	11	11	11	12	11	10	11	11	11	15
Total Middle East	**207**	**138**	**177**	**148**	**301**	**153**	**115**	**325**	**130**	**163**
Indian Sub-Continent										
India	300	200	300	370	207	200	200	210	294	324
Other Countries	9	5	10	15	11	13	15	15	15	15
Total Indian Sub-Continent	**309**	**205**	**310**	**385**	**218**	**213**	**215**	**225**	**309**	**339**
East Asia										
Japan	850	842	865	908	917	927	931	940	930	880
China	135	139	143	180	182	187	192	196	206	240
South Korea	102	107	111	244	164	164	170	180	190	195
Taiwan	22	22	24	26	28	28	28	27	30	31
Thailand	10	11	25	30	12	10	11	14	15	16
Singapore	12	11	11	12	12	12	12	13	13	14
Hong Kong	9	9	11	15	11	11	11	12	12	13

Table 3 - Supply of Silver from the Recycling of Old Scrap (tons)

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Indonesia	10	11	11	12	13	15	13	10	10	11
Vietnam	11	11	12	12	12	11	10	9	10	10
Philippines	5	6	6	7	7	7	6	6	6	6
Malaysia	3	3	3	4	3	3	3	4	4	4
Total East Asia	**1,169**	**1,172**	**1,223**	**1,450**	**1,361**	**1,374**	**1,387**	**1,411**	**1,426**	**1,420**
Africa										
Morocco	14	14	16	17	16	16	16	16	16	40
Other Countries	23	20	17	17	17	18	17	17	17	17
Total Africa	**37**	**35**	**33**	**34**	**33**	**34**	**33**	**33**	**33**	**57**
Oceania										
Australia	78	73	71	74	75	76	74	73	65	64
Total Oceania	**78**	**73**	**71**	**74**	**75**	**76**	**74**	**73**	**65**	**64**
CIS										
CIS	238	230	220	275	240	245	252	263	280	297
Total CIS	**238**	**230**	**220**	**275**	**240**	**245**	**252**	**263**	**280**	**297**
World Total	**5,066**	**4,925**	**5,265**	**6,032**	**5,636**	**5,611**	**5,674**	**5,818**	**5,710**	**5,633**

World Silver Scrap Supply



World Scrap Supply, 2004

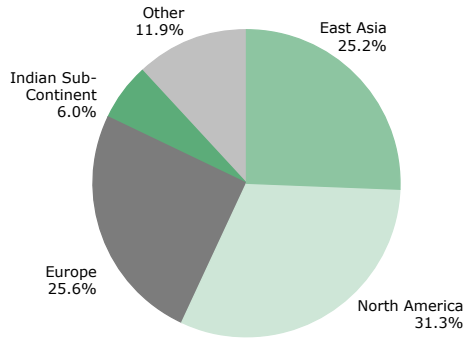


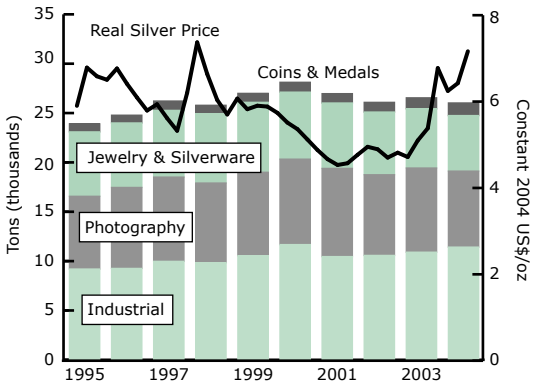
Table 4 - World Silver Fabrication Including the Use of Scrap (tons)

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Europe										
Italy	1,557	1,624	1,757	1,750	1,932	2,033	1,819	1,741	1,712	1,706
UK & Ireland	1,005	1,071	1,104	1,219	1,241	1,344	1,442	1,356	1,386	1,639
Germany	1,480	1,469	1,481	1,505	1,309	1,262	1,258	1,101	1,234	1,275
Belgium	728	788	847	1,052	1,167	1,098	999	958	910	858
France	968	845	892	892	837	907	906	859	813	388
Spain	309	288	271	275	234	210	171	161	148	195
Poland	96	94	104	111	117	120	107	100	120	134
Portugal	76	88	89	96	100	107	80	53	82	127
Switzerland	229	243	298	332	344	281	108	106	94	96
Greece	118	133	140	126	126	104	94	87	90	90
Netherlands	92	77	74	70	88	60	57	64	60	79
Norway	50	45	46	47	94	89	71	60	60	65
Austria	51	46	42	42	38	33	34	37	37	40
Sweden	43	46	52	43	42	41	31	33	37	38
Denmark	33	31	35	32	31	32	28	24	22	21
Czech & Slovak Republics	24	23	23	28	24	25	31	21	22	21
Hungary	15	14	14	13	14	15	13	13	13	13
Romania	9	13	11	16	13	13	12	12	12	12
Finland	27	30	29	21	21	17	14	14	13	12
Cyprus & Malta	12	13	12	11	12	12	10	10	9	9
Yugoslavia (former)	5	5	5	5	5	5	7	7	7	8
Other Countries	7	6	4	6	5	5	4	4	4	5
Total Europe	**6,934**	**6,989**	**7,331**	**7,691**	**7,793**	**7,811**	**7,294**	**6,820**	**6,886**	**6,829**
North America										
United States	4,576	4,592	4,890	5,277	5,782	5,988	5,276	5,503	5,452	5,608
Mexico	544	646	732	682	675	537	530	564	617	604
Canada	83	83	87	106	109	92	90	96	78	106
Total North America	**5,203**	**5,320**	**5,709**	**6,065**	**6,566**	**6,617**	**5,896**	**6,163**	**6,146**	**6,318**
Latin America										
Brazil	291	262	260	253	238	210	204	198	204	202
Argentina	122	118	118	97	84	70	56	58	72	72
Colombia	33	33	33	33	27	24	22	22	22	22
Peru	31	34	35	34	32	30	32	32	22	21
Chile	15	15	15	15	14	13	13	13	13	13
Ecuador	21	21	21	21	17	17	14	14	12	12
Other Countries	19	27	41	50	56	35	27	23	27	32
Total Latin America	**532**	**510**	**523**	**503**	**468**	**399**	**368**	**360**	**373**	**374**
Middle East										
Turkey	199	208	215	204	187	229	171	213	238	255
Israel	105	116	125	120	120	112	102	103	101	103
Egypt	67	70	65	58	63	64	55	49	57	62
Iran	51	54	49	42	43	45	48	43	45	47
Other Countries	43	44	55	54	58	60	56	56	57	58
Total Middle East	**465**	**492**	**508**	**478**	**469**	**509**	**432**	**464**	**496**	**526**
Indian Sub-Continent										
India	3,152	3,801	3,824	3,567	3,779	4,075	4,789	3,809	3,810	2,463
Bangladesh	80	90	100	85	95	100	98	80	80	80
Pakistan	109	75	117	75	93	86	63	62	62	67

Table 4 - World Silver Fabrication Including the Use of Scrap (tons)

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Nepal	80	90	100	75	83	87	87	70	60	52
Sri Lanka	8	9	10	12	12	12	4	4	4	4
Total Indian Sub-Continent	**3,429**	**4,065**	**4,151**	**3,814**	**4,062**	**4,360**	**5,041**	**4,025**	**4,016**	**2,666**
East Asia										
Japan	3,504	3,487	3,955	3,508	3,809	4,200	3,711	3,693	3,604	3,892
China	809	890	1,003	1,055	1,030	1,047	1,109	1,327	1,469	1,624
Thailand	862	859	843	751	779	885	961	1,014	1,155	1,258
South Korea	579	575	579	429	519	611	531	555	596	617
Taiwan	179	198	214	210	210	293	263	279	319	351
Indonesia	97	104	126	84	99	121	132	148	153	170
Hong Kong	107	117	138	112	120	138	100	105	99	107
Vietnam	20	21	22	19	22	22	23	26	28	30
Myanmar, Laos & Cambodia	33	34	30	25	28	26	28	30	32	28
Malaysia	12	12	13	12	15	18	18	19	21	22
Philippines	6	7	7	7	7	8	8	8	9	8
Singapore	5	5	3	4	5	5	6	6	6	6
Total East Asia	**6,213**	**6,308**	**6,931**	**6,216**	**6,644**	**7,372**	**6,891**	**7,210**	**7,490**	**8,113**
Africa										
Morocco	17	18	20	18	17	18	19	18	18	19
Tunisia	8	9	10	10	10	10	10	10	11	11
South Africa	14	9	8	8	8	8	7	7	8	8
Algeria	9	8	7	6	6	6	6	5	6	6
Libya	8	6	4	4	4	4	4	4	4	4
Other Countries	7	7	8	8	8	8	8	8	8	9
Total Africa	**63**	**57**	**56**	**53**	**53**	**54**	**53**	**52**	**54**	**57**
Oceania										
Australia	166	162	161	176	180	218	184	180	193	176
New Zealand	0	1	1	1	1	1	1	1	1	1
Total Oceania	**166**	**162**	**162**	**177**	**181**	**219**	**186**	**181**	**195**	**177**
CIS										
CIS	901	878	846	789	757	775	804	810	888	963
Total CIS	**901**	**878**	**846**	**789**	**757**	**775**	**804**	**810**	**887**	**963**
World Total	**23,906**	**24,782**	**26,216**	**25,786**	**26,993**	**28,117**	**26,966**	**26,085**	**26,543**	**26,023**

World Silver Fabrication



World Silver Fabrication, 2004

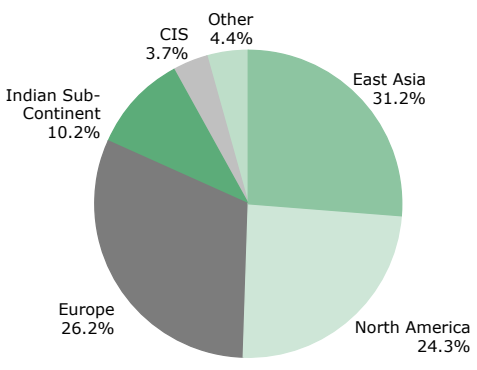


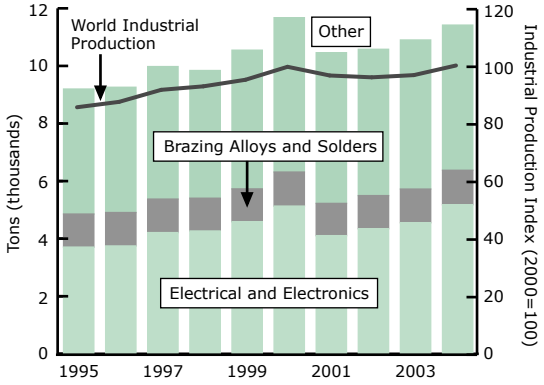
Table 5 - Silver Fabrication: Industrial Applications Including the Use of Scrap (tons)

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Europe										
Germany	575	535	555	571	571	647	665	659	675	730
UK & Ireland	371	381	388	506	472	549	480	466	498	518
Italy	329	348	354	329	331	340	324	324	317	357
France	374	363	418	349	362	381	493	451	423	304
Switzerland	206	215	269	311	322	259	85	84	72	76
Spain	55	61	91	95	83	62	40	40	38	65
Netherlands	54	54	52	52	52	52	48	48	47	48
Norway	13	12	12	11	45	37	23	20	19	26
Poland	26	24	23	23	23	23	22	21	21	22
Austria	22	19	18	17	17	17	17	17	17	17
Sweden	10	10	11	11	11	11	10	10	10	10
Czech & Slovak Republics	16	17	13	13	16	8	11	9	9	8
Belgium	10	10	10	10	10	10	8	8	8	8
Other Countries	23	23	23	24	23	23	21	21	22	22
Total Europe	**2,084**	**2,071**	**2,236**	**2,322**	**2,338**	**2,418**	**2,246**	**2,177**	**2,175**	**2,211**
North America										
United States	2,050	2,120	2,343	2,520	2,757	2,958	2,449	2,584	2,699	2,931
Mexico	79	81	85	92	103	107	94	93	96	93
Canada	23	20	20	17	17	17	16	16	16	16
Total North America	**2,152**	**2,221**	**2,448**	**2,629**	**2,877**	**3,082**	**2,559**	**2,693**	**2,811**	**3,040**
Latin America										
Brazil	108	102	105	108	98	98	98	98	94	94
Argentina	38	36	36	36	30	25	20	20	20	20
Colombia	9	9	9	9	7	6	6	6	6	6
Ecuador	2	2	2	2	2	2	2	2	2	2
Other Countries	12	12	12	12	12	12	13	13	12	12
Total Latin America	**169**	**161**	**164**	**167**	**149**	**143**	**139**	**139**	**134**	**134**
Middle East										
Turkey	39	38	43	41	38	44	35	39	46	51
Israel	30	33	31	31	30	30	26	24	24	24
Egypt	3	4	3	4	4	4	4	3	3	3
Other Countries	3	3	4	4	4	4	4	4	4	4
Total Middle East	**76**	**77**	**81**	**79**	**75**	**82**	**68**	**70**	**76**	**82**
Indian Sub-Continent										
India	1,062	1,105	1,120	992	1,180	1,435	1,579	1,381	1,382	1,053
Pakistan	20	14	22	15	18	16	10	8	8	9
Total Indian Sub-Continent	**1,082**	**1,119**	**1,142**	**1,007**	**1,198**	**1,451**	**1,589**	**1,389**	**1,390**	**1,062**
East Asia										
Japan	1,667	1,622	1,848	1,643	1,890	2,244	1,723	1,839	1,876	2,292
China	567	593	632	645	651	681	693	795	859	936
South Korea	369	370	382	349	379	459	387	416	452	472
Taiwan	163	181	197	193	196	274	250	270	309	339
Hong Kong	79	88	107	93	101	121	85	93	90	97
Indonesia	12	13	15	16	16	16	14	15	17	19
Total East Asia	**2,856**	**2,866**	**3,181**	**2,939**	**3,233**	**3,795**	**3,152**	**3,427**	**3,603**	**4,154**

Table 5 - Silver Fabrication: Industrial Applications Including the Use of Scrap (tons)

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Africa										
Morocco	5	7	7	7	7	8	8	8	8	8
South Africa	10	5	5	5	5	5	4	4	4	4
Other Countries	7	7	5	5	5	5	5	5	5	6
Total Africa	**22**	**19**	**17**	**17**	**17**	**18**	**17**	**17**	**17**	**18**
Oceania										
Australia	76	70	66	72	76	77	65	66	68	69
Total Oceania	**76**	**70**	**66**	**72**	**76**	**77**	**65**	**66**	**68**	**69**
CIS										
CIS	682	655	642	610	586	609	624	600	630	650
Total CIS	**682**	**655**	**642**	**610**	**586**	**609**	**624**	**600**	**630**	**650**
World Total	**9,198**	**9,260**	**9,977**	**9,842**	**10,549**	**11,675**	**10,460**	**10,578**	**10,903**	**11,419**

Components of Industrial Demand



World Silver Industrial Fabrication, 2004

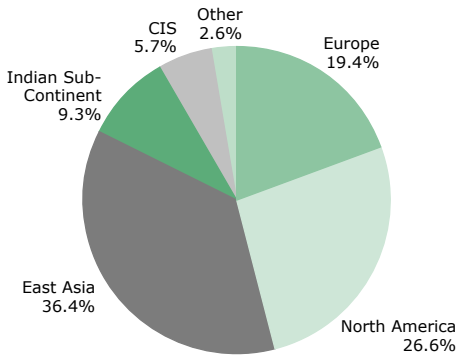


Table 5a - Silver Fabrication: Electrical and Electronics Including the Use of Scrap (tons)

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
United States	1,120	1,129	1,303	1,373	1,464	1,603	1,062	1,168	1,228	1,474
Japan	743	706	804	738	933	1,140	828	913	940	1,181
Germany	370	360	370	380	380	445	488	484	503	551
China	284	293	316	305	308	320	320	340	368	397
Taiwan	113	130	146	148	150	216	203	223	260	287
South Korea	200	199	201	188	206	255	224	236	260	275
France	190	195	238	207	210	228	342	309	297	252
UK & Ireland	145	155	160	210	179	211	153	164	172	180
India	92	100	130	130	140	150	145	151	159	167
Italy	85	103	100	90	92	95	86	87	90	118
Hong Kong	59	68	85	77	90	110	77	87	85	92
Mexico	34	34	36	40	60	64	56	56	58	56
Brazil	49	45	45	45	40	40	40	40	38	38
Turkey	29	28	31	28	24	28	22	25	30	33
Australia	17	16	15	17	18	19	18	20	21	21
Netherlands	20	20	18	18	18	18	16	16	16	16
Switzerland	117	127	172	228	232	165	12	12	14	14
Spain	28	28	29	30	30	9	0	0	0	10
Austria	7	7	7	7	7	7	7	7	7	7
Romania	3	3	3	4	4	4	4	4	4	4
Egypt	3	4	3	4	4	4	4	3	3	3
World Total	**3,709**	**3,749**	**4,212**	**4,266**	**4,588**	**5,131**	**4,106**	**4,345**	**4,552**	**5,177**

Table 5b - Silver Fabrication: Brazing Alloys and Solders Including the Use of Scrap (tons)

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
China	159	170	179	196	198	208	215	247	270	301
United States	249	255	260	269	280	272	258	260	247	228
Japan	150	160	155	130	131	137	109	104	104	116
Germany	110	90	95	97	94	101	88	95	97	101
UK & Ireland	72	72	72	75	68	72	82	72	80	88
India	60	65	50	47	50	55	57	60	64	67
Italy	66	65	59	54	62	65	63	64	63	64
South Korea	38	36	35	25	26	31	38	42	44	45
Switzerland	56	52	52	49	48	50	41	40	42	42
Taiwan	32	35	34	31	32	37	29	31	33	35
Spain	9	18	29	32	33	33	30	30	28	25
Brazil	27	27	25	25	23	23	23	23	22	22
Australia	23	21	20	22	23	24	20	19	20	20
Mexico	27	27	28	30	20	20	17	16	17	16
Canada	16	13	13	10	10	10	9	9	9	9
Netherlands	8	8	8	8	8	8	7	7	7	8
France	40	42	43	32	29	30	29	29	18	6
Austria	4	3	3	3	3	3	3	3	3	3
Israel	2	3	3	3	3	3	2	2	2	2
World Total	**1,149**	**1,161**	**1,163**	**1,138**	**1,140**	**1,181**	**1,120**	**1,152**	**1,169**	**1,197**

Table 6 - Silver Fabrication: Photographic Use Including the Use of Scrap (tons)

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Europe										
EU-25	2,200	2,186	2,275	2,394	2,390	2,246	2,219	2,075	2,016	1,910
Other Countries	10	14	12	14	12	14	12	11	12	11
Total Europe	**2,210**	**2,200**	**2,287**	**2,408**	**2,402**	**2,260**	**2,231**	**2,086**	**2,028**	**1,921**
North America										
United States	1,857	1,863	1,955	2,147	2,285	2,185	2,037	2,017	1,832	1,716
Mexico	104	107	127	107	91	0	0	0	0	0
Total North America	**1,961**	**1,970**	**2,082**	**2,254**	**2,376**	**2,185**	**2,037**	**2,017**	**1,832**	**1,716**
Latin America										
Brazil	123	105	105	100	100	76	70	64	68	68
Argentina	56	56	56	56	49	40	32	34	48	48
Total Latin America	**179**	**161**	**161**	**156**	**149**	**116**	**102**	**98**	**116**	**116**
Indian Sub-Continent										
India	20	20	20	10	10	10	10	10	10	10
Sri Lanka	8	9	10	12	12	12	4	4	4	4
Total Indian Sub-Continent	**28**	**29**	**30**	**22**	**22**	**22**	**14**	**14**	**14**	**14**
East Asia										
Japan	1,770	1,800	1,822	1,810	1,864	1,902	1,935	1,799	1,677	1,543
China	174	180	187	190	114	120	140	176	180	190
Taiwan	1	1	1	1	1	0	0	0	0	0
Total East Asia	**1,945**	**1,981**	**2,010**	**2,001**	**1,979**	**2,022**	**2,075**	**1,975**	**1,857**	**1,733**
Oceania										
Australia	50	49	51	51	52	85	74	71	64	47
Total Oceania	**50**	**49**	**51**	**51**	**52**	**85**	**74**	**71**	**64**	**47**
CIS										
CIS	154	145	140	119	107	100	95	92	88	83
Total CIS	**154**	**145**	**140**	**119**	**107**	**100**	**95**	**92**	**88**	**83**
World Total	**6,527**	**6,535**	**6,761**	**7,011**	**7,087**	**6,790**	**6,628**	**6,353**	**5,999**	**5,629**

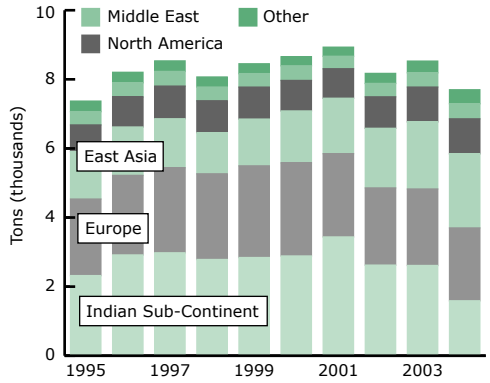
Table 7 - Silver Fabrication: Jewelry and Silverware Including the Use of Scrap (tons)

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Europe										
Italy	1,212	1,260	1,392	1,410	1,592	1,685	1,487	1,413	1,385	1,333
Germany	320	310	310	315	312	290	292	244	240	224
Poland	49	57	71	83	89	92	78	71	91	95
Greece	118	130	140	126	126	104	94	87	90	90
France	63	62	69	81	85	88	85	84	81	69
Spain	127	140	124	126	105	93	76	74	76	60
UK & Ireland	92	104	105	102	98	100	90	68	52	48
Portugal	54	58	59	60	66	66	55	49	52	48
Norway	37	33	33	35	47	51	46	40	42	37
Sweden	32	35	40	31	30	29	20	22	26	27
Denmark	27	28	32	29	28	29	25	21	19	18
Switzerland	10	10	9	12	10	10	10	10	10	10
Cyprus & Malta	12	13	12	11	12	12	10	10	9	9
Finland	23	26	26	18	18	14	11	11	10	9
Austria	12	13	13	15	11	8	7	7	7	7
Other Countries	27	23	26	25	24	23	23	23	23	23
Total Europe	**2,215**	**2,302**	**2,462**	**2,480**	**2,653**	**2,694**	**2,410**	**2,234**	**2,213**	**2,108**
North America										
Mexico	343	442	508	477	470	410	401	437	486	484
United States	389	387	389	391	407	427	406	426	469	478
Canada	38	41	47	55	48	45	47	48	52	50
Total North America	**770**	**870**	**944**	**923**	**925**	**882**	**854**	**911**	**1,007**	**1,012**
Latin America										
Brazil	60	55	50	45	40	36	36	36	42	40
Peru	29	32	33	32	30	28	29	29	19	18
Colombia	24	24	24	24	20	18	16	16	16	16
Ecuador	19	19	19	19	15	15	12	12	10	10
Argentina	28	26	26	5	5	5	4	4	4	4
Other Countries	23	31	45	54	59	37	29	25	30	35
Total Latin America	**183**	**187**	**197**	**179**	**169**	**139**	**126**	**122**	**121**	**123**
Middle East										
Turkey	160	170	171	163	147	184	135	170	188	201
Israel	72	82	92	88	89	80	74	77	75	77
Egypt	64	67	62	54	58	60	51	46	53	58
Saudi Arabia	12	12	20	16	18	20	18	18	18	19
Other Countries	79	82	80	76	79	81	83	77	79	83
Total Middle East	**386**	**412**	**425**	**397**	**391**	**425**	**361**	**388**	**414**	**438**
Indian Sub-Continent										
India	2,070	2,676	2,684	2,565	2,589	2,630	3,200	2,418	2,418	1,400
Bangladesh & Nepal	160	180	200	160	178	187	185	150	140	132
Other Countries	89	61	95	60	75	70	53	54	54	58
Total Indian Sub-Continent	**2,319**	**2,917**	**2,979**	**2,785**	**2,842**	**2,887**	**3,438**	**2,622**	**2,612**	**1,590**
East Asia										
Thailand	852	844	834	744	775	880	955	1,004	1,145	1,254
China	45	75	96	145	195	208	229	291	358	426
Indonesia	85	92	111	68	83	105	118	133	136	151
South Korea	210	205	197	80	140	152	144	139	144	145

Table 7 - Silver Fabrication: Jewelry and Silverware Including the Use of Scrap (tons)

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Japan	67	65	60	55	55	54	53	52	49	56
Vietnam	20	21	22	19	22	22	23	26	28	30
Myanmar, Laos & Cambodia	33	34	30	25	28	26	28	30	32	28
Malaysia	12	12	13	12	15	17	18	19	21	22
Taiwan	15	16	16	16	13	13	10	9	10	12
Hong Kong	28	29	31	19	19	17	15	12	10	10
Other Countries	8	9	9	9	9	10	11	11	11	11
Total East Asia	**1,375**	**1,401**	**1,418**	**1,191**	**1,354**	**1,504**	**1,604**	**1,726**	**1,943**	**2,146**
Africa										
Morocco	12	11	13	11	10	10	11	11	10	11
Tunisia	7	8	9	9	9	9	9	9	10	10
Algeria	7	7	6	5	5	5	5	4	5	5
Other Countries	15	12	11	11	11	12	11	11	12	13
Total Africa	**41**	**38**	**39**	**36**	**35**	**36**	**36**	**35**	**37**	**39**
Oceania										
Australia	19	17	18	22	23	24	22	23	22	23
New Zealand	0	1	1	1	1	1	1	1	1	1
Total Oceania	**19**	**18**	**19**	**23**	**24**	**25**	**23**	**24**	**23**	**24**
CIS										
CIS	61	59	52	54	57	62	78	109	158	219
Total CIS	**61**	**59**	**52**	**54**	**57**	**62**	**78**	**109**	**158**	**219**
World Total	**7,369**	**8,203**	**8,533**	**8,067**	**8,450**	**8,653**	**8,930**	**8,171**	**8,527**	**7,698**

World Silverware & Jewelry Fabrication



World Silverware & Jewelry Fabrication, 2004

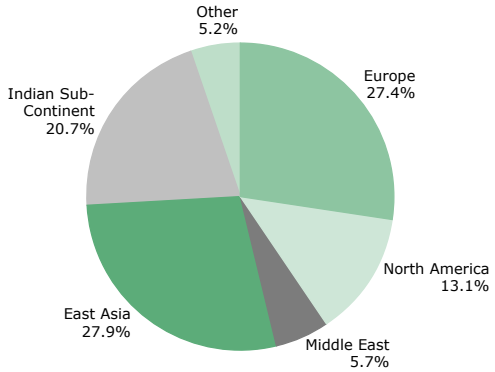


Table 8 - Silver Fabrication: Coins and Medals Including the Use of Scrap (tons)

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
United States	280	222	203	219	333	418	384	476	452	483
Germany	125	194	166	312	218	273	251	187	320	321
Portugal	17	25	25	31	29	36	21	0	26	75
China	24	43	88	75	71	38	47	65	72	72
Spain	124	87	56	54	46	55	55	47	34	70
Canada	22	22	20	34	44	30	27	32	10	40
Australia	21	26	26	31	29	31	23	20	40	37
Mexico	18	16	12	6	11	20	35	34	35	27
Poland	6	4	3	5	5	5	7	8	8	17
Austria	17	14	11	10	10	8	10	13	13	15
France	36	9	10	10	10	11	13	16	17	15
UK & Ireland	23	20	19	19	19	17	14	16	15	14
Russia	4	19	12	6	7	4	7	9	12	11
Switzerland	13	18	20	9	12	12	13	12	12	10
Thailand	10	15	9	7	4	5	6	10	10	4
Other Countries	74	53	266	39	59	37	34	38	39	64
World Total	**812**	**784**	**945**	**866**	**907**	**999**	**948**	**983**	**1,114**	**1,277**

Appendix 2

Silver Prices, 1984 - 2004 (The Effects of Exchange Rates and Inflation)

1. Actual Prices* (money of the day)

	London US$/oz	India* Rupee/kg	Thailand Baht/oz	Japan Yen/10g	Korea Won/10g	Eurozone** Euro/kg	Mexico Peso/oz
1984	8.145	3,514	192.53	622	2,111	382	1.37
1985	6.132	3,880	166.54	470	1,715	296	1.58
1986	5.465	4,105	143.71	296	1,549	195	3.34
1987	7.016	5,124	180.46	326	1,855	208	9.67
1988	6.532	6,231	165.23	269	1,536	189	14.85
1989	5.500	6,803	141.36	244	1,187	170	13.54
1990	4.832	6,779	123.62	225	1,099	129	13.59
1991	4.057	6,993	103.51	176	956	111	12.24
1992	3.946	7,580	100.24	161	991	101	12.21
1993	4.313	6,163	109.20	154	1,113	117	13.44
1994	5.285	6,846	132.92	174	1,365	141	17.84
1995	5.197	6,864	129.49	157	1,289	122	33.36
1996	5.199	7,291	131.77	182	1,345	128	39.51
1997	4.897	7,009	153.60	191	1,498	139	38.78
1998	5.544	8,016	229.30	233	2,498	160	50.65
1999	5.220	8,022	197.38	191	1,995	158	49.90
2000	4.951	8,002	198.61	172	1,800	173	46.82
2001	4.370	7,420	194.15	171	1,814	157	40.82
2002	4.599	7,934	197.57	185	1,850	156	44.41
2003	4.879	8,138	202.39	182	1,869	138	52.64
2004	6.658	10,606	267.79	231	2,452	172	75.14

* Prices are calculated from the London price and the average exchange rate for the year.
In the case of India, the price shown is the one actually quoted in the Bombay market.
**From 1984-1998 DM/kg price is expressed in Euro/kg at the official conversion rate of 1.95583

2. Real Prices*** (Constant 2004 money)

	London US$/oz	India* Rupee/kg	Thailand Baht/oz	Japan Yen/10g	Korea Won/10g	Eurozone** Euro/kg	Mexico Peso/oz
1984	14.810	15,329	397.14	723	5,299	564	199.58
1985	10.768	16,033	335.36	536	4,203	429	145.79
1986	9.415	15,600	284.16	335	3,693	282	166.15
1987	11.661	17,900	348.13	369	4,294	300	207.28
1988	10.434	19,899	307.06	302	3,318	270	148.64
1989	8.380	20,465	249.34	268	2,426	236	112.93
1990	6.985	18,714	205.81	240	2,069	174	89.50
1991	5.626	16,954	162.98	181	1,647	147	65.75
1992	5.312	16,439	151.66	163	1,604	128	56.77
1993	5.639	12,566	159.85	154	1,720	142	56.91
1994	6.735	12,666	185.15	173	1,987	166	70.63
1995	6.442	11,521	170.47	157	1,796	142	97.85
1996	6.261	11,230	163.91	181	1,785	146	86.24
1997	5.763	10,073	180.93	186	1,904	156	70.17
1998	6.424	10,175	249.94	227	2,953	181	79.06
1999	5.919	9,728	214.49	186	2,339	175	66.81
2000	5.431	9,330	212.49	168	2,065	188	57.24
2001	4.661	8,344	204.38	169	1,998	167	46.93
2002	4.829	8,546	206.70	185	1,984	163	48.60
2003	5.009	8,445	207.99	182	1,936	141	55.10
2004	6.658	10,606	267.79	231	2,452	172	75.14

*** Derived from the actual prices shown above using consumer price indices.

Appendix 3

Silver Prices in US$ per ounce

	London Silver Market - Spot			Comex Settlement		
	High	Low	Average	High	Low	Average
1979	32.2000	5.9350	11.0679	34.4500	5.9230	11.1135
1980	49.4500	10.8900	20.9837	48.7000	10.8000	20.6568
1981	16.3030	8.0300	10.4869	16.2900	7.9850	10.5014
1982	11.1100	4.9010	7.9219	11.2100	4.9800	7.9311
1983	14.6680	8.3700	11.4301	14.7150	8.4000	11.4340
1984	10.1100	6.2200	8.1446	10.0640	6.2950	8.1585
1985	6.7500	5.4500	6.1319	6.8350	5.5250	6.1459
1986	6.3100	4.8530	5.4645	6.2850	4.8540	5.4653
1987	10.9250	5.3600	7.0156	9.6600	5.3790	7.0198
1988	7.8215	6.0500	6.5324	7.8270	5.9980	6.5335
1989	6.2100	5.0450	5.4999	6.1940	5.0300	5.4931
1990	5.3560	3.9500	4.8316	5.3320	3.9370	4.8174
1991	4.5710	3.5475	4.0566	4.5450	3.5080	4.0355
1992	4.3350	3.6475	3.9464	4.3180	3.6400	3.9334
1993	5.4200	3.5600	4.3130	5.4430	3.5230	4.3026
1994	5.7475	4.6400	5.2851	5.7810	4.5730	5.2808
1995	6.0375	4.4160	5.1971	6.1020	4.3750	5.1850
1996	5.8275	4.7100	5.1995	5.8190	4.6760	5.1783
1997	6.2675	4.2235	4.8972	6.3070	4.1550	4.8716
1998	7.8100	4.6900	5.5442	7.2600	4.6180	5.4894
1999	5.7900	4.8800	5.2198	5.7600	4.8720	5.2184
2000	5.4475	4.5700	4.9514	5.5470	4.5630	4.9691
2001	4.8200	4.0500	4.3696	4.8570	4.0280	4.3594
2002	5.0975	4.2350	4.5990	5.1250	4.2230	4.6007
2003	5.9650	4.3700	4.8787	5.9930	4.3460	4.8958
2004	8.2900	5.4950	6.6578	8.2110	5.5140	6.6871

US Prices in 2004

Comex Settlement

	High	Low	Average
January	6.6250	6.2000	6.3610
February	6.7770	6.0400	6.4717
March	7.9360	6.7100	7.2940
April	8.2110	5.8200	7.0577
May	6.1900	5.5140	5.8380
June	6.1730	5.6280	5.8513
July	6.7120	5.9350	6.3724
August	6.8660	6.5190	6.6943
September	6.9160	6.1330	6.4042
October	7.3610	6.7400	7.1484
November	7.7700	7.0070	7.5012
December	8.0260	6.6900	7.0989

Leasing Rates in 2004

Monthly Averages

	3-month	6-month	12-month
January	0.40%	0.76%	1.24%
February	0.20%	0.53%	1.06%
March	0.30%	0.61%	1.11%
April	0.19%	0.69%	1.42%
May	0.20%	0.60%	1.19%
June	0.47%	0.79%	1.28%
July	-0.07%	0.25%	0.73%
August	-0.19%	0.08%	0.45%
September	-0.24%	-0.06%	0.22%
October	0.01%	0.20%	0.62%
November	-0.04%	0.30%	0.92%
December	0.00%	0.25%	0.83%

Appendix 4

Leading Primary Silver Mines

Rank	Mine	Country	Operator	2003 Moz	2004 Moz
1	Cannington	Australia	BHP Billiton	38.22	45.91
2	Fresnillo (Proaño)	Mexico	Industrias Peñoles SA de CV	31.97	31.60
3	Dukat	Russia	Polymetal OAO*	9.20	12.06
4	Uchucchacua	Peru	Compania de Minas Buenaventura SA	9.58	9.83
5	Greens Creek	United States	Kennecott Minerals/Hecla Mining Co	11.71	9.71
6	Arcata	Peru	Minas de Arcata SA	4.79	7.94
7	Rochester	United States	Coeur d'Alene Mines Corp	5.59	5.67
8	Imiter	Morocco	Société Métallurgique d'Imiter	4.95	4.95
9	Huaron	Peru	Pan American Silver Corp	4.37	4.08
10	Lunnoye	Russia	Polymetal OAO	3.10	3.70
11	Galena	United States	Coeur d'Alene Mines Corp	3.74	3.52
12	Tayahua	Mexico	Grupo Carso	2.46	3.38
13	Tizapa	Mexico	Industrias Peñoles SA de CV	3.24	3.04
14	Cerro Bayo	Chile	Coeur d'Alene Mines Corp	2.89	2.94
15	Quiruvilca	Peru	Pan American Silver Corp	2.49	2.53

*Acquired outstanding 20% share from Pan American Silver in November 2004

Silver Mine Production by Source Metal

(Million ounces)

	2001	2002	2003	2004
Primary				
Mexico	51.2	56.6	52.1	56.0
Australia	33.3	42.4	38.2	45.9
Peru	26.1	25.1	30.5	32.9
Other	43.0	45.9	52.5	53.5
Total	**153.5**	**169.9**	**173.2**	**188.5**
Gold				
Canada	20.1	23.0	23.6	23.1
Chile	22.2	17.6	17.2	15.6
Mexico	9.8	10.0	9.2	8.5
Other	34.3	29.2	25.3	27.0
Total	**86.7**	**79.7**	**75.6**	**74.4**
Copper				
Poland	37.4	38.3	43.7	43.2
Chile	20.7	18.4	20.4	23.0
Kazakhstan	21.0	21.7	19.5	17.7
Other	75.4	72.9	75.2	77.9
Total	**154.9**	**151.6**	**158.8**	**162.2**
Lead/Zinc				
China	36.6	33.9	38.3	42.7
Peru	43.4	45.3	43.8	41.6
Mexico	33.1	32.0	31.1	32.1
Other	96.8	87.8	85.7	88.0
Total	**210.1**	**199.0**	**198.9**	**204.6**
Other	6.6	7.2	4.7	4.7
World Total	**611.8**	**607.4**	**611.2**	**634.4**

Silver Mine Production by Main Region and Source Metal

(Million ounces)

	2001	2002	2003	2004
North America				
Primary	76.8	81.3	75.4	77.0
Lead/Zinc	48.5	44.8	42.9	45.2
Copper	27.0	22.9	19.1	20.3
Gold	40.0	38.0	36.9	35.8
Other	1.8	1.9	1.5	1.7
Total	**194.0**	**188.7**	**175.8**	**180.0**
Central & South America				
Primary	27.8	28.9	36.4	38.7
Lead/Zinc	58.9	61.8	60.8	56.9
Copper	31.5	30.6	35.2	39.5
Gold	31.9	27.6	25.5	26.2
Other	0.3	0.3	0.3	0.3
Total	**150.4**	**149.3**	**158.2**	**161.6**
Asia & CIS				
Primary	8.0	10.3	18.2	21.9
Lead/Zinc	59.8	55.4	61.3	65.0
Copper	52.0	53.6	53.3	51.5
Gold	11.2	11.1	10.0	9.4
Other	2.4	2.4	2.5	2.5
Total	**133.4**	**132.8**	**145.3**	**150.3**
Rest of World				
Primary	41.0	49.5	43.2	50.9
Lead/Zinc	42.9	37.0	34.0	37.5
Copper	44.2	44.5	51.3	50.8
Gold	3.6	3.1	3.2	3.0
Other	2.2	2.6	0.3	0.2
Total	**134.0**	**136.7**	**131.9**	**142.4**
World Total	**611.8**	**607.4**	**611.2**	**634.3**

Appendix 5

Comex Futures and Options Turnover and Open Interest, and London Bullion Market (LBM) Turnover

	Comex Number of Contracts				LBM Clearing Turnover[3]		
	Futures		Options				
	Turnover[1]	Open Interest[2]	Turnover[1]	Open Interest[2]	Ounces transferred (millions)	Value (US$bn)	Number of transfers
Jan-02	265,773	65,480	40,685	59,528	175.7	0.8	355
Feb	271,293	63,905	44,371	61,029	108.7	0.5	257
Mar	163,898	77,425	39,943	67,311	77.9	0.4	239
Apr	325,889	73,618	43,928	57,896	68.8	0.3	230
May	243,475	99,220	61,876	77,477	99.9	0.5	307
Jun	389,798	92,790	56,055	66,347	107.2	0.5	262
Jul	281,214	82,413	46,648	68,950	72.9	0.4	224
Aug	296,579	77,944	45,724	68,312	66.2	0.3	214
Sep	164,537	81,170	24,499	71,109	61.7	0.3	184
Oct	209,249	87,202	34,241	78,913	67.5	0.3	243
Nov	292,861	78,974	24,042	40,520	58.2	0.3	168
Dec	230,998	80,920	29,566	48,027	79.1	0.4	208
Jan-03	291,120	103,510	40,685	59,528	89.7	0.4	216
Feb	409,737	84,202	53,682	57,466	107.5	0.5	247
Mar	216,660	88,711	34,079	64,726	90.0	0.4	215
Apr	315,240	78,337	26,530	54,820	79.2	0.4	178
May	251,096	78,871	35,606	62,237	78.9	0.4	228
Jun	352,564	79,156	21,939	47,517	61.3	0.3	193
Jul	407,931	112,011	79,976	75,341	108.3	0.5	251
Aug	442,762	106,251	41,053	71,554	97.8	0.5	233
Sep	335,508	105,542	54,298	83,031	96.2	0.5	267
Oct	373,493	94,349	57,230	92,444	101.3	0.5	268
Nov	464,244	104,122	58,403	48,585	89.6	0.5	248
Dec	256,020	102,250	44,274	60,865	110.1	0.6	246
Jan-04	385,058	109,268	99,729	89,994	143.4	0.9	332
Feb	544,939	110,578	82,987	71,347	121.5	0.8	329
Mar	408,447	120,328	91,090	90,383	128.7	0.9	380
Apr	671,204	97,865	139,732	99,921	133.8	0.9	431
May	278,703	85,696	65,310	113,465	94.7	0.6	317
Jun	425,501	89,133	73,248	98,451	95.1	0.6	280
Jul	316,264	91,850	79,758	105,785	93.6	0.6	305
Aug	427,973	95,230	71,223	87,408	82.5	0.6	259
Sep	281,737	93,209	57,455	90,962	82.3	0.5	252
Oct	364,158	117,328	105,397	105,135	92.0	0.7	337
Nov	541,366	116,958	78,530	52,635	75.5	0.6	319
Dec	360,775	100,586	77,417	63,637	102.2	0.7	375

1 Monthly total; 2 Month-end; 3 Daily average; Source: LBMA, Comex