The Silver Institute

World Silver Survey 2013

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World Silver Survey 2013

Produced for The Silver Institute
by Thomson Reuters GFMS

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A-Mark Precious Metals, Inc.

Established in 1965, A-Mark Precious Metals, Inc. is a full service precious metals trading company with customers on six continents and revenues in excess of US$7,000,000,000 yearly. Our counterparts and clientele include mines, refiners, mints, central banks, coin dealers, investment advisors and commodity brokerage houses. We are an authorized purchaser for the US Mint, the Royal Canadian Mint, Rand Refinery, the British Royal Mint, the Perth Mint and China Great Wall. Some of our services include financing, leasing, as well as hedging and risk management of metal positions.

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Coeur d'Alene Mines Corporation is the largest U.S.-based primary silver producer and a growing gold producer. The Company has four precious metals mines in the Americas generating strong production, sales and cash flow in continued robust metals markets.
Coeur produces from its wholly-owned operations: the Palmarejo silver-gold mine in Mexico, the San Bartolomé silver mine in Bolivia, the Rochester silver-gold mine in Nevada and the Kensington gold mine in Alaska. The Company also owns a non-operating interest in a mine in Australia, and conducts ongoing exploration activities in Mexico, Argentina, Nevada, Alaska and Bolivia.

Fresnillo Plc

Fresnillo Plc is the world's largest primary silver producer and Mexico's second largest gold producer, listed on the London Stock Exchange under the symbol FRES. Fresnillo has seven operating mines: Fresnillo, Saucito, Cienega, San Ramon, Herradura, Soledad-Dipolos and Noche Buena and four advance exploration projects: San Julian, San Juan, Orysivo and Juanicipio, as well as a number of other long-term exploration prospects and, in total, has mining concessions covering approximately 1.91 million hectares in Mexico. Fresnillo has a strong and long tradition of mining, a proven track record of mining development and reserves replacement, and production costs in the lowest quartile of the cost curve for both silver and gold. Fresnillo's goal is to maintain the Group's position as the world's largest primary silver company, producing 65 million ounces of silver and over 400,000 ounces of gold by 2018.

Industrias Peñoles, S.A.B. de C.V.

Peñoles is a mining group with integrated operations in smelting and refining non-ferrous metals, and producing chemicals. Peñoles is the world's top producer of refined silver, metallic bismuth and sodium sulfate, and the leading Latin American producer of refined gold and lead. The Company was founded in 1887 and it is part of "Grupo BAL", a privately held diversified group of independent Mexican companies. Peñoles' shares have traded on the Mexican Stock Exchange since 1968 under the ticker PE&OLES. Peñoles highlights:

- Began operations in 1887 as a mining company.
- Has integrated operations in the areas of exploration, mining, metallurgy and chemicals.
- Listed on the Mexican Stock Exchange since 1968; the stock is included in the IPC index.
- One of the largest net exporters in Mexico's private sector.

Pan American Silver Corp.

Pan American Silver's mission is to be the world's pre-eminent silver producer, with a reputation for excellence in discovery, engineering, innovation and sustainable development. The Company was founded in 1994 with the intention to provide investors with the best vehicle to gain real exposure to silver. Pan American currently owns and operates seven mines in Mexico, Peru, Argentina and Bolivia and has several development-stage silver and gold projects, like the Waterloo silver project in California, USA the Navidad silver deposit, in Chubut, Argentina and the La Virginia gold deposit in Sonora, Mexico. Pan American completed the acquisition of Minefinders Ltd. and its flagship Dolores mine in April, 2012 and went on to produce a Company record of 25.1 million ounces of silver and 112,300 ounces of gold in 2012. In 2013, Pan American expects to again increase annual production to 25.5 to 26 million ounces of silver and 140,000 to 150,000 ounces of gold.

Silver Wheaton Corp.

Established in 2004, Silver Wheaton has quickly positioned itself as the largest precious metal streaming company in the world. The company has a number of agreements where, in exchange for an upfront payment, it has the right to purchase all or a portion of the silver and/or gold production, at a low fixed cost, from high quality mines located in politically stable regions around the globe.
Silver Wheaton's industry-leading growth profile is driven by the company's portfolio of low-cost and long-life assets, including streams on Barrick's Pascua-Lama project, Hudbay's Constancia project, and Vale's Salobo and Sudbury mines. The company's unique business model creates significant shareholder value by providing leverage to increases in the price of silver and gold, while reducing the downside risks faced by traditional mining companies. Silver Wheaton's shares are traded under the symbol SLW on the Toronto Stock Exchange and New York Stock Exchange.

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This is the nineteenth annual survey of the world silver market to be produced for The Silver Institute by Thomson Reuters GFMS, the London-based analysts of global precious metals markets. The information contained here is based in part on the analysis of the Thomson Reuters 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 our team of analysts and consultants, which provide the essential data to allow the compilation of reliable estimates for world supply and demand.

Thomson Reuters 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.
Implied Net Investment = the residual from combining all other GFMS data on silver supply/demand as shown in Table 1. As such, it captures the net physical impact of all transactions not covered by the other supply/demand variables.

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

Table Rounding:
Throughout the tables and charts, totals may not add due to independent rounding.

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1. Summary and Outlook

One of the defining characteristics of the silver market in 2012 was its display of duality, at times closely shadowing developments in the gold market and at others taking cues more from the industrial world. Given that 2012 saw economic problems in the industrialized world rumble on, it should come as little surprise that silver might then witness an 11% fall in its annual average price, while the gold price could enjoy a rise. However, it was of note that the silver price still recorded its second highest ever (nominal) level. Furthermore, even gold could not fully escape risk-off trading during certain phases of the year, and the associated spill-over into silver in conjunction with periods of dollar strength were also less than supportive for the silver price.

The silver market's links to the real economy were also apparent in the drop in its industrial fabrication, especially in the fourth quarter when de-stocking down the supply chain created marked weakness in some sectors. Jewelry consumption also failed to provide much by way of support as the normally price inelastic western markets were weak and price sensitive ones such as India saw only restrained bargain hunting on price dips. The market at least experienced limited pressure from the supply side as the drop in scrap and the swing to net de-hedging more than countered the rise in mine production.

It would be wrong to assume that a year-on-year price fall automatically presages an end to the multi-year rally; that occurred in 2009 and yet prices (basis the annual average) then more than doubled in just two years. The drop in the gold:silver ratio also only took its 2012 average to a level broadly in line with the long term average. This is important as, looking ahead, we expect macro-economic developments to feed through to a marked rally in the gold price and, with plenty of room for the gold:silver ratio to contract, particularly if memories of uncomfortable investor losses in silver during 2011 continue to fade, it is easy to see decent scope for sizable gains in the silver price this year.

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

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Supply										
Mine Production	597.2	613.6	637.2	641.3	666.1	683.0	713.6	752.7	757.0	787.0
Net Government Sales	88.7	61.9	65.9	78.5	42.5	30.5	15.6	44.2	12.0	7.4
Old Silver Scrap	196.0	198.7	202.7	206.2	203.0	200.8	199.8	228.8	258.1	253.9
Producer Hedging	-	-	45.9	-	-	-	-	50.4	12.2	-
Implied Net Disinvestment	7.8	-	-	-	1.4	-	-	-	-	-
Total Supply	**889.8**	**874.1**	**951.7**	**926.0**	**913.0**	**914.3**	**929.1**	**1,076.2**	**1,039.4**	**1,048.3**
Demand										
Fabrication										
Industrial Applications	368.4	389.7	430.3	453.0	486.2	490.9	403.6	500.8	487.8	465.9
Photography	192.9	178.8	160.3	142.2	117.6	101.3	79.3	72.1	66.1	57.8
Jewelry	186.8	187.6	188.4	176.5	183.8	179.1	178.7	192.8	186.5	185.6
Silverware	85.1	68.3	69.6	63.4	61.5	59.8	55.0	52.8	48.3	44.9
Coins & Medals	35.7	42.4	40.0	39.8	39.7	65.3	78.8	99.4	118.3	92.7
Total Fabrication	868.8	866.7	888.6	874.9	888.9	896.4	795.4	917.9	907.1	846.8
Producer De-Hedging	21.0	2.0	-	11.6	24.1	8.7	17.4	-	-	41.5
Implied Net Investment	-	5.4	63.1	39.5	-	9.3	116.3	158.3	132.3	160.0
Total Demand	**889.8**	**874.1**	**951.7**	**926.0**	**913.0**	**914.3**	**929.1**	**1,076.2**	**1,039.4**	**1,048.3**
Silver Price										
(Average London US$/oz)	4.879	6.658	7.312	11.549	13.384	14.989	14.674	20.193	35.119	31.150

Table 1a - Supply & Demand with Bar Investment

(million ounces)	2010	2011	2012
Supply			
Mine Production	752.7	757.0	787.0
Net Government Sales	44.2	12.0	7.4
Old Silver Scrap	228.8	258.1	253.9
Producer Hedging	50.4	12.2	-
Total Supply	**1,076.2**	**1,039.4**	**1,048.3**
Demand			
Total Fabrication	917.9	907.1	846.8
Producer De-Hedging	-	-	41.5
Physical Bar Investment	47.2	100.6	53.0
Implied Net Investment	111.1	31.8	107.0
Total Demand	**1,076.2**	**1,039.4**	**1,048.3**

The difference between Table 1 and Table 1a above is that investment in bar form is extracted from our implied investment series. This was initially done after the explosion in Indian bar hoarding in 2008 as this distorted the message conveyed by the implied investment residual. Originally we only presented Indian bar investment but we have expanded this to show global figures as recent years have seen gains elsewhere, particularly in China and the United States (last year, demand for physical bullion products in these three countries plus Germany accounted for 88% of the global total). Our implied figure also covers investor activity in the OTC and futures markets, and demand for ETFs. As for the latter, this rose by 55.1 Moz (1,714 t) in 2012, while net investor positions in Comex futures saw a notable increase of a nominal 156 Moz (4,853 t). These combined would imply that the OTC market saw notable net selling, and indeed our information from field research supports this conclusion.

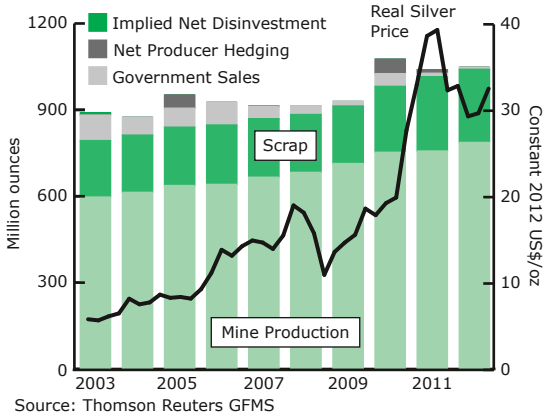
Supply in 2012

- ***Silver mine production grew by 4.0% to reach a new record high of 787.0 Moz (24,478 t) in 2012.***
- ***Scrap supply fell by 1.6% to 253.9 Moz (7,897 t), due mainly to a drop in high grade scrap.***
- ***Net government sales dropped by 39% to 7.4 Moz (229 t) in 2012.***

Global silver **mine production** increased notably again last year, as it rose by 4.0% to 787.0 Moz (24,478 t). Nevertheless, this growth actually fell short of our expectation that mine output would touch 800 Moz. The primary silver mining sector grew only modestly, up 1% to 221.6 Moz (6,892 t) to account for 28% of global silver mine output. The reason for this comparatively balanced outcome from the primary sector related to two decreases at major primary silver mines; Fresnillo in Mexico saw lower processed grades, while Lucky Friday in the United States suffered from mining operations being suspended for much of 2012 to allow for upgrades to the main shaft. These two outcomes largely countered a broad base of production gains across the primary sector. The principal driver of global growth in fact originated from the lead/zinc sector, with robust increases in China, India and Mexico. Primary silver producers' Total Cash Costs increased by 9% last year to $8.88/oz, owing to input cost inflation and an easing of credits associated with lower base metal prices.

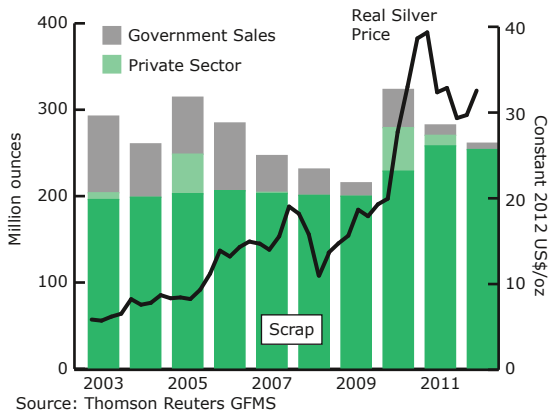
Global **scrap** supply retreated 1.6% from its record high in 2011 to reach an estimated 253.9 Moz (7,897 t) last year. Supply from industrial sources saw further gains in 2012 as elevated metal prices and tighter environmental legislation lifted recycling volumes, with these gains offset

World Silver Supply



Source: Thomson Reuters GFMS

Mobilization of Above-Ground Stocks



Source: Thomson Reuters GFMS

by a decline in supply from the recovery of silver from old silverware and jewelry, coins, and further attrition in the contribution from photographic sources. The picture across world markets was far from uniform, even within the industrialized world. Scrap supply from Europe for instance recorded a 5% rise due in part to increased refining capacity to handle growing industrial scrap, while the depletion of near-market stocks of jewelry and silverware accounted for much of the 10% fall in US recycling. Elsewhere, India registered its fourth consecutive increase in scrap supply, recording a near 30% jump, thanks mainly to a weaker currency that lifted silver in rupee terms to near record levels.

Net government stock sales in 2012 dropped for the second year, falling a notable 39% to a 15-year low of 7.4 Moz (229 t). This was largely driven by the continued decline in disposals from Russia. If we exclude that country, interest in reducing silver bullion holdings remained subdued, as the bulk of sales were believed to have been related to the release of old coin stocks.

Demand in 2012

- ***Total fabrication in 2012 dropped by 6.6% to 846.8 Moz (26,339 t), reflecting losses in all areas.***
- ***Industrial fabrication fell the second year in a row, easing by 4.5% to 465.9 Moz (14,490 t), due mainly to patchy GDP growth and thrifting.***
- ***Jewelry fabrication remained broadly flat as robust demand in India and China offset losses in the developed world.***
- ***Implied net investment surged by 21% to a fresh all-time high of 160.0 Moz (4,976 t).***
- ***Coins & medals fabrication eased but remained elevated by historical standards.***
- ***Producers' hedging activities switched to the demand side with a 41.5 Moz (1,289 t) reduction to the global hedge book.***

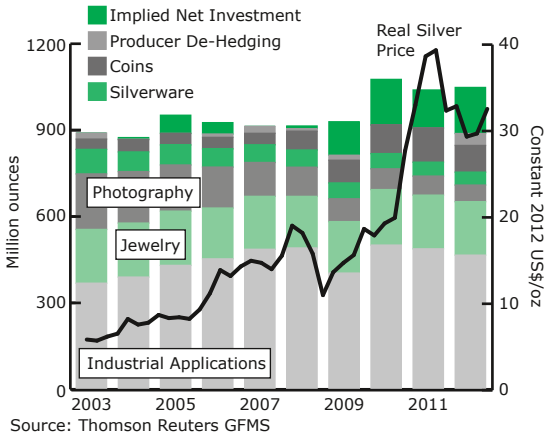
In 2012, **total fabrication** declined for the second consecutive year, falling by 6.6% to 846.8 Moz (26,339 t), in the process accounting for 81% of total demand. Every category of silver offtake declined last year, with losses particularly heavy in photographic and silverware fabrication, largely due to ongoing structural factors, and in coins & medals demand, although the latter must be seen in the context of what was a record total in 2011.

Global **industrial** offtake fell by 4.5% last year to 465.9 Moz (14,490 t), a drop of 34.9 Moz (1,085 t) from the record level in 2010. Much of the decline was driven by the challenging economic environment in many industrialized countries, which impacted negatively on consumer sentiment and demand for finished goods, coupled with ongoing thrifting and substitution. All of the major regions recorded lower demand last year. Heavy losses for instance were registered in Japan, where a weak economic backdrop resulted in a 16% fall last year, while European industrial offtake also posted a double-digit percentage decline, with losses most pronounced in the fourth quarter. Industrial silver fabrication in the United States fell, chiefly due to losses in the photovoltaic sector, but a strong year for ethylene oxide catalysts helped trim the overall drop to just 4%. In contrast, Chinese industrial demand rose, if only by 1%, to a fresh high. The main exception, however, was India, where industrial offtake posted 4% growth, partly as a result of lower exposure to troubled western economies.

Silver use in **photographic** applications last year continued its secular decline, dropping 12.6% to 57.8 Moz (1,797 t), its lowest level in our data series. The dominant reason behind this remains the rapid penetration of digital technology in all photo-related areas. This saw photography's share of total fabrication fall to just 7% last year, compared to 22% a decade ago.

In 2012, silver **jewelry** fabrication remained broadly unchanged, dropping by less than 1% to 185.6 Moz (5,771 t). This occurred despite losses in the industrialized world thanks to healthy gains in India and China. If we exclude these two countries from

World Silver Demand



Source: Thomson Reuters GFMS

the global total, jewelry offtake in the rest of the world fell by a more pronounced 4.2%. Indian jewelry fabrication returned to growth last year, rising by 6.6% to its highest level since 2003, while jewelry demand in China continued to expand last year, rising by 4.1% to a record high of 56.6 Moz (1,762 t) as both saw firmer consumption on the back of ongoing economic growth. In contrast, jewelry fabrication in many industrialized countries declined last year, largely as a result of a poor economic backdrop and consumers switching to non-precious metal jewelry in lower price point segments, all of which meant weak domestic consumption.

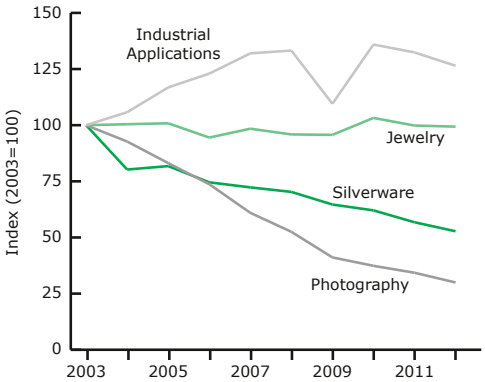
Last year, **silverware** fabrication suffered another fall, dropping by 7.1% to 44.9 Moz (1,396 t). Much of this decline was down to heavy losses in the developed world, due to ongoing structural factors and economic weakness. Elevated local silver prices also led to lower demand in the price sensitive markets, especially India. The notable exception, however, was China, where a robust domestic market saw silverware offtake post a 3% rise.

Investors remained significant net buyers of silver in 2012, as evidenced by a 21% increase in **implied net investment** (including physical bar investment). Furthermore, the level it attained of 160.0 Moz (4,976 t) was an all time high basis our records. Buoyant investor interest was also apparent in demand for **coins & medals**; despite a 22% fall, at 92.7 Moz (2,884 t) in 2012, global coin minting remained elevated by historical standards. In aggregate, **World Investment**, the sum of implied net investment and coins & medals rose marginally to 252.7 Moz (7,860 t) last year, with its share of total silver demand remaining steady at 24%. In approximate value terms, the figure dropped by over 10% to below $8 billion, although this was against an exceptionally high level in 2011. This figure also remained comfortably above the annual average of $1.2 billion over the 2001-10 period.

The bulk of investment was driven by those with concerns about loose monetary policies and elevated fiscal deficits in the major economies as this continued to encourage allocations to hard assets, gold in particular, but with silver benefiting from strong spillover effects. In addition, interest continued to arise from those seeking silver as a hedge against future high inflation, given central banks' growing apparent willingness to tolerate potential inflation in order to combat sluggish GDP growth. That said, the scale of investment inflows into silver seems to have been restrained by a number factors, including a relatively strong dollar and more cautious attitudes towards general commodity trades. Lingering memories of heavy losses in 2011 also cooled the ardor of more speculative players who might use silver as a leveraged proxy for gold.

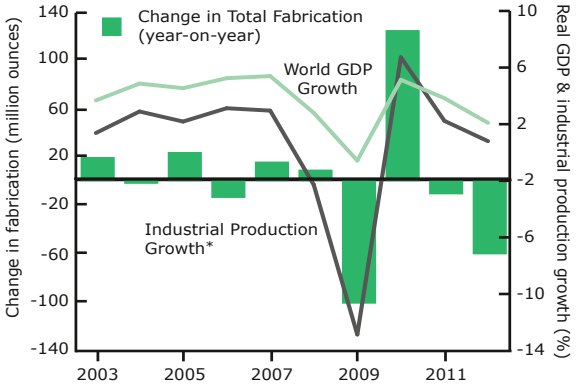
The two previous years of producer hedging were reversed with a decisive 41.5 Moz (1,289 t) of **net de-hedging** recorded in 2012. This came about as few producers put large new hedges in place last year, owing to comparatively unfavorable pricing conditions for new hedging throughout much of the year. Meanwhile, several companies allowed contracts to mature or actively bought hedges back. The reduction to the hedge book, which in delta-adjusted terms had fallen to a total of 54.8 Moz (1,704 t) at end-2012, was due to cuts made to the options book, as the volume of forward sales contracts actually increased marginally year-on-year.

World Silver Fabrication Indices



Source: Thomson Reuters GFMS

Fabrication Demand & World Economic Indicators



*Advanced economies only; Source: IMF, Thomson Reuters GFMS

2. Silver Prices

- ***Silver's annual average price declined 11% in 2012 to $31.15. Once again, price action was volatile, although less so than in 2011 and the 2012 high of $37.23 fell far short of the prior year's peak.***

- ***Two steep bull markets, in the first weeks of the year and then in mid-August to late-September, almost offset two longer, shallower, downtrends and the intra-year change was a gain of 4%.***

Silver's annual average price declined by 11% in 2012 to $31.15, the first retracement since 2009 and in contrast to gold's 6% increase to a fresh (nominal) high. Silver's average in 2012 was, nonetheless, the second-highest on record and gold was the anomaly within the metals sector, as it was the only major base or precious metal to post a year-on-year increase in its average price. Silver's daily high of $37.23, the result of a price spike in late February, was also well down on 2011's high of $48.70. An undulating decline developed thereafter, taking the market to a low for the year in mid-July of $26.67, although that was a fraction stronger than 2011's low of $26.16. In addition, the year closed at $29.95, which represented an intra-year rise of 4%. In real terms, silver's 2012 average fell far short of that in 1980, which was equivalent to $56.87 in 2012 dollars, while the daily peak in 1980 equated to $139.

Prices typically fared better in non-dollar terms. On the consumption side, the average euro silver price for instance only fell by 4%, while the rupee price actually rose (by 3%). On the producer side, the Mexican peso price fell by a more restrained 6%.

A high level of volatility remained a feature of the market: in 2011, the market had experienced two very sharp price falls (25% in one week in early May and 27% in an even shorter-lived fall in late September), whereas, in 2012, silver dropped by 27% over ten weeks from the end of February to mid-May. To put this further into context, it is worth noting that, while silver shed 27% during this fall, the major base metals, oil and the other precious

US$ Silver Price

	1982	1992	2002	2012
Annual Average	7.920	3.946	4.599	31.150
Maximum	11.110	4.335	5.098	37.230
Minimum	4.901	3.648	4.235	26.670
Range:Average	78.4%	17.4%	18.8%	33.9%

Source: Thomson Reuters GFMS

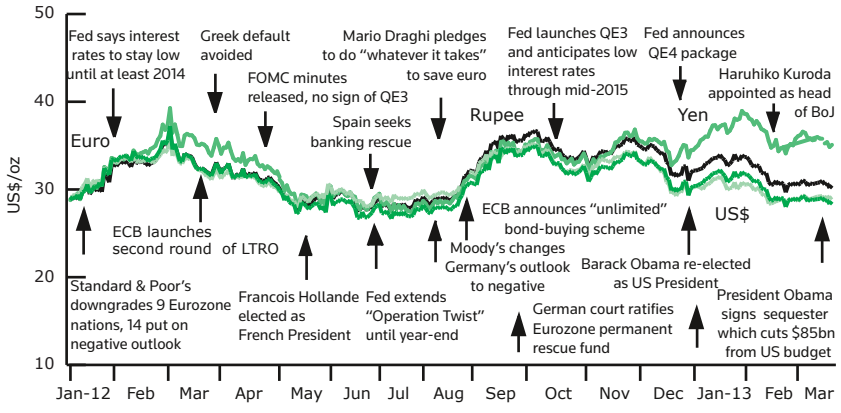
The Silver Price in Other Currencies in 2012

	Euro/kg	Rupee/kg	Yen/10g	Yuan/kg
Annual Average	778.6	57,086	799.0	6,314
Maximum	894.9	64,430	969.1	7,533
Minimum	686.1	51,655	677.2	5,465
Range:Average	26.8%	22.3%	36.5%	32.8%

Source: Thomson Reuters GFMS

London Silver Market: Spot Price

US$/oz; other currencies reindexed to January 3rd 2012



Source: Thomson Reuters GFMS

metals fell by an (unweighted) average of 13% over the period. That said, silver traded in a narrower range overall during 2012 than in 2011, with a range:average ratio of 34% versus 64%, while the metal's volatility in 2012 was 29%, considerably lower than the 61% of 2011. Even so these numbers show that the silver marketplace should still perhaps be viewed as one more for the braver investor. Gold's range and volatility in 2012, for example, were 15% and 17%, while those of the S&P 500 equities index were 15% and 22%. Silver's relationship with the S&P tightened late the year as the market concentrated increasingly on silver's industrial characteristics.

During the end February- mid May correction, the gold:silver ratio widened sharply from around 48 to 58, and this helped lift the annual average for the ratio from 45 to 54. This relative under-performance to an extent reflects lingering investor unease after the 2011 corrections. Another measure of this continued caution was that the price recoil was not accompanied by much short-side trading activity until silver had been falling for almost three weeks.

Lease rates traced a downward path over the course of 2012, reflecting ample liquidity in the market and a lack of borrowing interest either from hedging producers or from consumers' financing activities.

Once more, investment remained the prime driver of silver's price moves, in particular the bull run to the high in February. That said, the market was not helped by the drop in industrial fabrication and, although the jewelry sector was more resilient, it provided meager support on price dips. There was also little damage from the supply side as a dip in scrap and the swing to net de-hedging outweighed a modest rise in mine production.

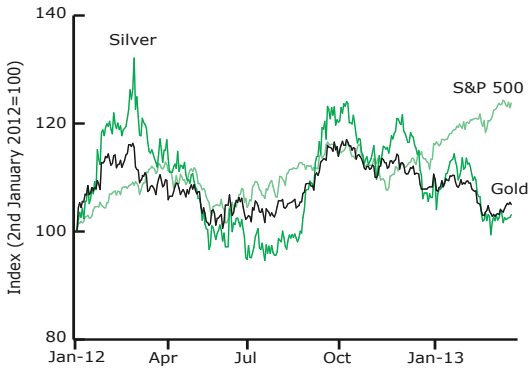
Market Analysis

In order to set the early 2012 performance into perspective, we should look at the closing weeks of the prior year. December 2011 saw silver fall steeply from over $33 to close with a fix of $28.18, following the year's low of $26.16 on the previous day. This move had been driven by technical selling and gold market weakness, along with silver lending as institutions sought dollars for year-end balance sheet purposes. Silver opened 2012 with a fix of $28.78 and rallied smartly, wiping out those December losses before the end of January and moving on rapidly to post what proved to be the year's high on February 29th at $37.23, a level previously seen in September 2011 when silver was falling.

The bull run of January and February was stimulated predominantly by investor activity as the markets focused on the global economic outlook and the prognosis for the United States in particular. Any nuances from The Federal Open Market Committee (FOMC) were closely scrutinized, as they were throughout the year, as the markets sought guidance about the prospects for a further round of quantitative easing ("QE3"). In early January, therefore, silver started to rally in response to the Minutes of the FOMC December meeting, which said that interest rates were likely to be held at very low levels until mid-2013 (but that there was some feeling that this date might have to be pushed back).

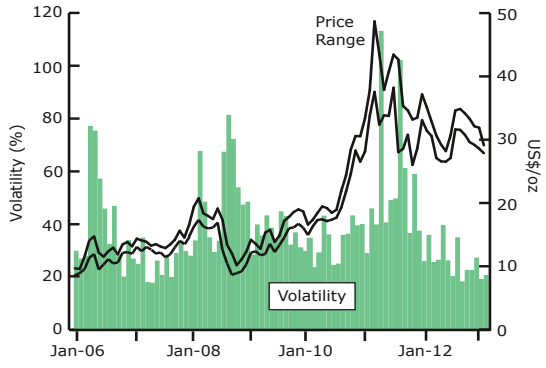
Meanwhile a number of US economic indicators were improving and early Chinese economic figures were also encouraging, so despite intensifying fears over the Eurozone outlook, silver bounced from its oversold condition, aided by short-covering. In the background, however, physical demand for silver (in India and China,

Silver, Gold and the S&P 500



Source: Thomson Reuters

Daily Silver Price Volatility



Source: Thomson Reuters GFMS

for example) waned as the price strengthened and became more volatile.

Despite the slippage in parts of the physical market, silver rallied through to end-February as professional investors used it as a geared proxy for gold. Over the first two months of 2012 silver prices gained 30%, compared with gold's 11% and a 13% average among the major base and precious metals plus oil.

The reversal at the start of March was triggered by the reaction to Federal Reserve Chairman Bernanke's testimony to Congress, where his lack of reference to QE3 was taken by some to mean that the likelihood of more easing was receding, even though he referred to "particularly troubling" unemployment levels. This had a dual impact on the precious metals; as well as reducing the expectation of intensifying medium-term inflationary forces, it sent the markets into "risk-off" mode, while enhancing the appeal of the dollar as a safe haven.

Silver's move was all the sharper because it was, by end-February, heavily overbought. Silver thus shed 27% from end-February to May 16th, falling to $27.25 before starting to stabilize and entering a period of range-trading that lasted just over three months to mid August. Comex investors reduced their outright long position by 25% over the end-February to mid-May period, while short positions expanded by 76%. ETF investors were much more sanguine, only skimming a small amount of metal from their holdings.

Other negative influences were at work in March-May. In Europe, markets were cautious about the Greek debt-restructuring deal in mid-March as many doubted that the economy could grow its way out of its debt, and Spanish and Italian bond markets came under renewed pressure. Also, in Germany, a 32-year bond auction in mid-April was not fully taken up. The European Central Bank (ECB) maintained its refinancing operations, but did not implement any new stimulus.

These developments kept investors away from risk, while the outlook for silver demand also remained uncertain. Weakening growth figures from China during the first and second quarters affected sentiment in this regard. The launch of the silver contract on the Shanghai Futures Exchange in May did not have a noticeable impact on price, although it contributed to higher silver turnover on the Shanghai Gold Exchange. A slowdown in Indian GDP growth and fears for a poor monsoon season were also not well received, and we estimate that the country's jewelry consumption in the second quarter fell by perhaps as much as 20% year-on-year to a low for the year.

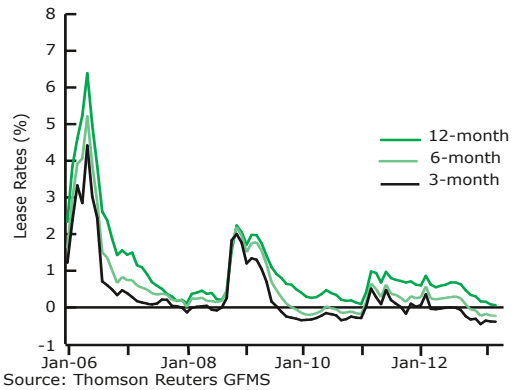
From May to August, silver traded essentially sideways in a narrow range between $29.36 (June 6th) and $26.72 (June 25th). This steady performance allowed for a gradual gain in investor confidence as a body of support developed below $28, even though silver failed to rally with gold in June, with the gold:silver ratio widening

Volatility (US$ Price)

	2009	2010	2011	2012
Annual	38%	33%	61%	31%
	12.Q1	**12.Q2**	**12.Q3**	**12.Q4**
Quarterly	33%	30%	32%	27%

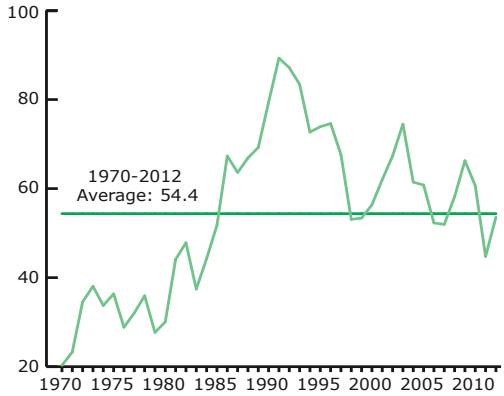
Source: Thomson Reuters GFMS

Silver Leasing Rates



Source: Thomson Reuters GFMS

The Gold / Silver Price Ratio



Source: Thomson Reuters

towards 59, having been 54 in early May. Silver did, however, hold steady after the effective extension of Operation Twist in late June, while other precious metals lost ground. The price's broad stability in this period also saw a gradual improvement in physical demand in India (and a dwindling in domestic scrap supply) and evidence of an improving physical market helped in turn to stimulate OTC investment interest during July.

Silver bounded higher in mid-August to early-October, running up from $27.64 on August 15th to $34.96 on October 4th, a gain of 26%, unwinding 76% of the overall fall from end-February to mid-August. The rest of the year saw a rolling downward trend, which persisted into the first months of 2013. The rally had been triggered as gold and silver anticipated QE3 and further ECB intervention. Under increasingly heavy Comex purchases (but only cautious ETF interest), the moves gathered pace as the ECB said in September that it would allow some secondary-market bond purchases.

This was furthered by news from the Jackson Hole conference in early September when Fed Chairman Bernanke signaled that QE3 was on the horizon. The Fed statement announcing QE3, on September 13th, prompted the final leg of the rally. The heavy Comex involvement was a key to the price action; in what was almost a classic example of "buy the rumor, sell the fact", the rally came to a halt in late September and went into reverse in October.

Although the US presidential election removed some uncertainty and contributed to a silver price rally in November, the markets again became risk-averse in December, partly due to nervousness over the polarization in Washington over fiscal cliff negotiations, but in part also as it became clear that there was disagreement among FOMC members about the future impact of continued asset purchases by the Fed. The uncertain prospects for a Spanish bail-out were another contributory factor to a weakening in the metals markets as a whole, while Chinese economic data was also mixed during the quarter.

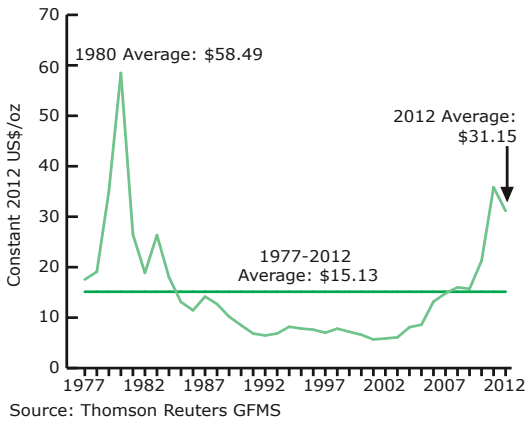
Silver therefore encountered heavy liquidation on Comex (partly end-year selling) and despite some investor purchases into the price weakness, silver dropped to a 2012 close of $29.95, a fall of 14% from the top of the August-October rally and a gain of just 4% intra-year. By year-end, the gold:silver ratio stood at 55.3, barely changed from the 55.5 at the start of 2012. The average ratio for the year was 53.8, compared with an average in 2011 of 45.2, reflecting gold's net increase (and presaging further gains in the early months of 2013 as silver underperformed gold during the bear phase at the start of the year).

Another factor behind the downtrend in prices during the closing months of 2012 was fundamental developments. For instance, silver's industrial demand remained under pressure in the fourth quarter as a result of Eurozone troubles, but the start of a recovery in photovoltaic demand and strong ethylene oxide offtake limited overall damage. There was also a notable improvement in Indian jewelry fabrication in the fourth quarter, although that was outweighed by still weak consumption in Europe and stagnant sales in the United States.

The Silver Price and the US Dollar

Source: Thomson Reuters

Real Silver Prices



Source: Thomson Reuters GFMS

Silver and Other Commodity Prices

Thomson Reuters GFMS believes that the examination of correlation coefficients is highly useful, not only as an indication of underlying themes that may influence the market, but also to confirm economic theory with empirical evidence. It must be noted, however, that the existence of either a positive or inverse correlation between two assets is not sufficient in itself to establish direct causality.

Silver's "hybrid" precious and industrial nature leads to links with gold, copper and the CRB Index that appear powerful, but which can vary greatly. Gold and silver's closest relationship in 2012 came in the first quarter. Gold's enjoyed a strong bull run in January and February in response to economic nervousness and the expectation of QE3; silver, with its thinner market and more volatile price, was in turn bought as a geared proxy for gold. The sectoral price retreat from March to May saw the correlation weaken as gold lost some investor favor. The revitalization of the correlation with gold in the latter part of the year came with renewed expectations for QE3 and fresh investment pressure in gold spilled over into silver.

That said, copper took over as silver's most closely correlated asset during the second quarter, a position that it retained through the rest of 2012. In fairness, it should also be noted that all the base metals were also rallying hard in September, thus underpinning silver's relationship with copper. The fourth quarter saw silver flitting between the gold camp and that of the base metals, but gold's uncertainty, especially in the face of budget wrangles in Washington, saw silver trade more as a base metal as the year drew to a close. Silver also started to reassert its relationship with the industrial sector via the equity markets, with the S&P gaining modest influence as the year progressed.

Silver's correlations with the CRB and GSCI were variable, reflecting the diversity of components in the indices; in early 2013 the CRB held 18% energy and 18% precious metals with a heavy agricultural bias, while the GSCI is 70% energy and 3% precious metals. Meanwhile silver has had a notable relationship with oil in the past because of silver's role as a partial inflation hedge, but oil's contribution to inflationary forces has been eroded in recent years and the silver:oil linkage was tenuous last year, particularly in the fourth quarter.

Silver's correlation with the $:€ rate rose during the first half-year, but then loosened, in tandem with gold's falling correlation with the $:€ rate. This also reflected silver's increasing bias towards the industrial sector.

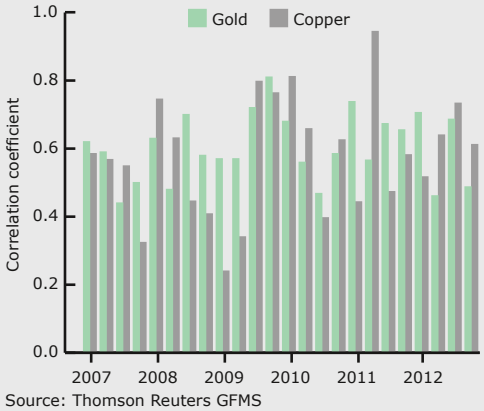
Correlations of Changes in Daily Prices

(using log-returns in spot prices)

	11.Q4	12.Q1	12.Q2	12.Q3	12.Q4
Gold	0.65	0.71	0.46	0.69	0.49
US$/Euro	0.31	0.41	0.44	0.39	0.30
Oil (WTI)	0.11	0.20	0.22	0.11	0.09
CRB	0.24	-0.20	0.39	0.14	0.25
GSCI	0.19	0.23	0.28	0.19	0.15
Copper	0.58	0.52	0.64	0.73	0.61
S&P 500	0.10	0.07	0.11	0.14	0.16

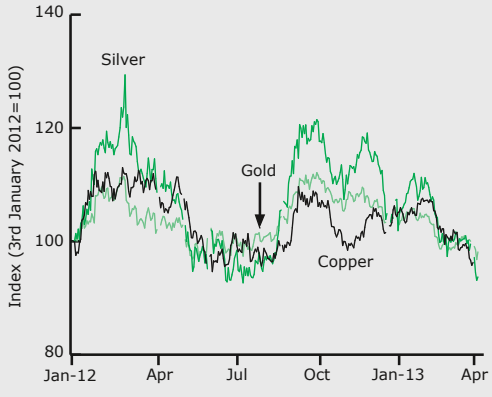
Source: Thomson Reuters GFMS

Quarterly Correlation of the Silver Price



Source: Thomson Reuters GFMS

Gold, Silver and Copper Prices



Source: Thomson Reuters GFMS

3. Investment

- ***World Investment rose by a marginal 0.8% to 252.7 Moz (7,860 t) in 2012, which enabled investor activity to remain the dominant driver of silver prices last year.***

- ***The above rise was largely due to growth in ETF holdings and net investor positions on Comex, as physical investment in coins and yet more so bars fell notably, with India taking much of the blame.***

Overview

World Investment, the sum of implied net investment and sales of coins & medals, is estimated to have totaled 252.7 Moz (7,860 t) in 2012, up slightly year-on-year and accounting for almost a quarter of total silver demand. In value terms, the picture is somewhat less encouraging, as a good part of investor purchases took place at lower prices than in 2011, with World Investment falling by over 10% to approximately $8 billion in 2012.

A closer look at the numbers hints though at a fair amount of changes in ownership within the investor community. For instance, purchases of coins & medals dropped by 22% from the record level seen in 2011, although the global total remained by some margin the largest source of investment demand on a net basis last year. Demand for physical bullion bars, which is included in our implied figure, posted an even larger fall in 2012, albeit against an exceptionally high basis in the previous year. By contrast, after some notable outflows in 2011, demand for silver ETFs rebounded strongly during 2012, generating net demand of 55.1 Moz (1,714 t) last year. Finally, the futures and OTC markets (which is dominated by western institutional players) in aggregate recorded decent growth in net investor buying, although there were some marked fluctuations in their positions over the course of the year.

As regards key drivers behind investment demand last year, investor activity was heavily influenced by macroeconomic developments in several key countries and, more importantly, their potential impacts on central banks' monetary policy decisions. For instance, a notable increase in investment inflows into silver in the first two months of the year was primarily driven by the support to liquidity from the ECB and the Fed's pledge to extend its ultra-low interest rates to at least late 2014, more than a year beyond its previous guidance. In particular,

Silver Price and Investment Indicators

	2011 Average	2012 Average	Change y-o-y
Silver Price $/oz	35.12	31.15	-11%
Contango (3-mth annualized)	0.20%	0.53%	n/a
US$ Libor (3-mth annualized)	0.34%	0.43%	n/a
S&P 500 Index	1,267	1,379	9%
CRB Index	539	487	-10%
XAU Index	205	172	-16%
World GDP Growth*	3.8%	3.3%	n/a
Advanced Countries CPI*	2.7%	1.9%	n/a

*Annual rates; Source: Thomson Reuters GFMS, IMF

World Investment (Moz)

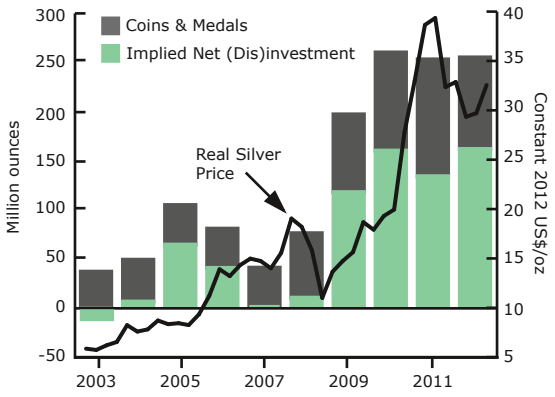
	2010	2011	2012
Implied Net Investment*	111.1	31.8	107.0
of which, Physical Bar Investment	47.2	100.6	53.0
Coins & Medals	99.4	118.3	92.7
World Investment	**257.7**	**250.7**	**252.7**
Indicative Value US$(bn)**	**5.2**	**8.8**	**7.9**

* Implied Net Investment is the residual from combining all the other Thomson Reuters GFMS data on supply/demand as shown in Table 1. By definition, it therefore captures the net physical market impact of all transactions not covered by the other supply/demand variables.

**Indicative Value calculated on an annual basis using annual average silver prices.

Source: Thomson Reuters GFMS

World Investment



Source: Thomson Reuters GFMS

London Bullion Market (LBM) and Comex Turnover

(daily averages)	LBM No. of Transfers	Turnover Moz	Comex Turnover Moz	LBM/ Comex Ratio
2006	447	146.9	109	1.3:1
2007	462	114.4	135	0.8:1
2008	519	125.8	176	0.7:1
2009	340	97.3	159	0.6:1
2010	381	87.3	254	0.3:1
2011	798	173.7	389	0.4:1
2012	811	134.5	264	0.5:1

Source: LBMA, Comex

the Fed's announcement not only led to a notable fall in the US dollar but also fueled interest that it would soon launch a new round of monetary easing, which in turn gave an additional boost to short-term speculative inflows into precious metals. However, as Fed Chairman Bernanke's testimony at end-February soon dashed such hopes, there was a wave of profit taking and stop loss selling, which subsequently sparked a sharp price decline.

The resurgence in investor purchases from late summer through to September/October was also related to growing anticipation and then the confirmation of major monetary loosening by the key central banks. Although it is fair to say that the persistence of lax monetary policies from 2008 onwards failed to ignite near-term inflation pressure in many western countries, the prospects of excess cash injection and central banks' willingness, the Federal Reserve in particular, to tolerate inflation to boost economic growth undoubtedly raised fears about potential high inflation in the future. With real short-term interest rates already deeply negative and sagging confidence in the major international currencies, it is not surprising that appetite for bullion as a hedge against inflation and currency debasement recovered somewhat in late 2012.

Given gold's historical role as the ultimate store of value, it is not surprising that the bulk of these safe haven inspired purchases went directly into the yellow metal. Given its close link to gold and notably lower unit value, silver was also an attractive home for small investors since it was perceived as likely to ride the coat-tails of any rally in the gold market. In addition, for many investors, the white metal is seen as a more leveraged alternative to gold, with greater upside potential during market upswings.

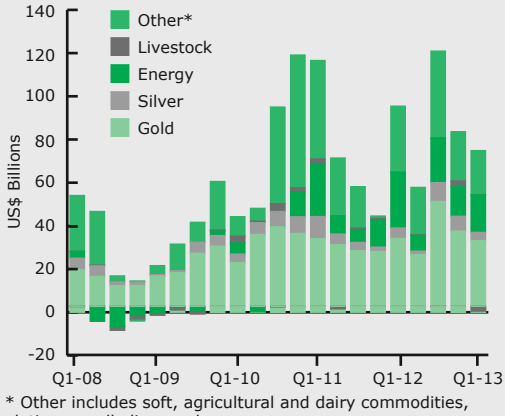
Investment in Commodities

Net positions in index instruments rose by $39 billion or 87%, to an end-2012 level of $84 billion. Looking at intra-year developments, the aggregate value of net positions had jumped by 114% to $95 billion in the first quarter from the end of 2011. However, the recovery soon proved to be short-lived and nearly 40% of the value was shed in the second quarter alone. That was then followed by a rise in long positions to a record of $121 billion by end-September before another fall was recorded in the fourth quarter to close 2012 at $84 billion.

The initial trigger for strong rebound in net positions in the first quarter was the dovish comments from the FOMC meeting in January, which together with escalating tensions between the West and Iran over the latter's nuclear program and with the EU planning to push for an embargo from mid-2012, heightened fears of supply tightness in the crude oil market. This helped oil price rally to a post-2008 peak of $128 per barrel, thereby almost doubling in the first quarter. The crisis in Greece, tepid growth numbers from China, not so encouraging job numbers from United States and the Fed's lack of commitment to its QE3 led to sharp liquidations in the second quarter, dragging net long positions in crude oil to just $9.7 billion. Easing inflationary concerns saw gold post losses, leading to liquidations of $8.5 billion in the second quarter. Copper was a notable casualty too, as net short positions were the highest on record in a quarter.

This was followed by a new round of easy monetary policy action from major central banks, which coupled with a weaker tone in the dollar, led to a rebound in long positions in gold by $24 billion, silver by $7 billion and crude oil by $14 billion. Even copper returned to positive territory and platinum saw an addition of $2 billion in investment. However, as fiscal talks in the United States started to weigh on investor sentiment in the fourth quarter, funds turned cautious on commodities. Most affected were agricultural commodities whose positions declined from $35 billion as of end-September 2012 (the highest ever in six quarters) to $15 billion.

Value of Speculative Positions in 22 Commodity Futures



* Other includes soft, agricultural and dairy commodities, platinum, palladium and copper
Source: Thomson Reuters GFMS

Another important driver of investment last year was continued worries about elevated fiscal debt levels in the key industrialized economies, although its net impact on investor sentiment towards silver was less clear cut. Unsurprisingly, physical silver investment received a strong boost amid heightened risk aversion particularly at times when fears about the European sovereign debt issue intensified in the second quarter and when negotiation over the US "fiscal cliff" stalled in late 2012. This development was further assisted by silver's relatively low cost and ease of access, which help to draw support from small retail investors, especially those that had been "priced out" of the gold market. On the flip side, however, such growing market uncertainty was also accompanied by a rush to liquidity such as US Treasuries by short-term investors, as silver was also quickly liquidated along with other so-called risky assets in the futures and OTC markets in order to raise cash.

It is also worth stressing that silver turned out to be particularly vulnerable to investor selloffs during 2012. Apart from the metal's innate volatility, this also reflected a generally more cautious attitude towards alternative asset classes such as commodity trades by institutional players in 2012. This in turn mainly stemmed from investors starting to question the sustainability of the decade long commodity boom, as growth in emerging market countries, led by China, slowed considerably last year. In addition, the reluctance to build on massive long positions from the more speculatively driven investors should also be viewed in the context of silver's marked volatility during 2011, which forced many to adopt a more prudent approach towards the white metal in 2012.

Net "Investor" Positions on Comex

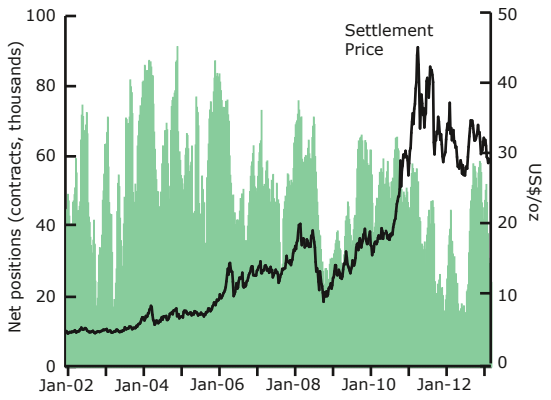
		Contracts	Moz	Price
2009		44,699	223	14.67
2010		52,720	264	19.93
2011		38,166	191	35.34
2012	**Q1**	30,622	153	32.64
	Q2	19,776	99	29.55
	Q3	30,311	152	29.81
	Q4	54,115	271	32.41

(average non-commercial and non-reportable net futures positions, Moz equivalent and average Comex settlement price in $/oz; Source: CFTC)

Early 2013 has witnessed particularly robust demand for physical silver bullion products, a sharp contrast to the futures market which has experienced some heavy liquidation from mid-February onwards. Such dramatic differences between physical and paper investment have clearly highlighted a growing desire by technical investors to move back to equities on the back of rising optimism towards the US economy. Long-term investors, by contrast, have remained firmly on the long side of the silver market, as the economic backdrop still encourages allocations to hard assets. Going forward, we expect a healthy increase in silver investment this year. At present, there is little sign that major central banks will soon unwind their monetary stimuli, which should fuel inflation expectations. Furthermore, worries about the fiscal situation in the key economies, especially in the United States, may well resurface later in the year. Such a development should give gold investment a powerful boost, which should spill over into the silver market. As recent selling has already removed a large portion of the speculative froth from the market, this should pave the way for a new bull run.

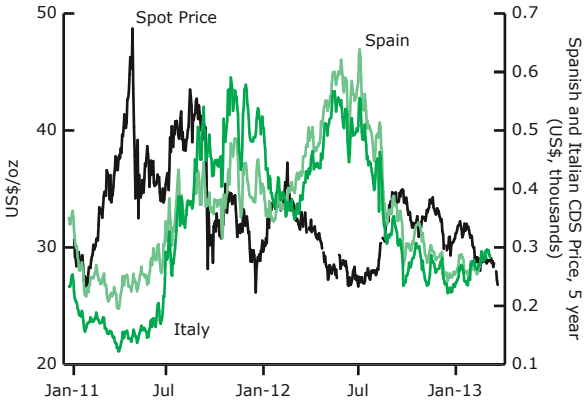
Comex: Net "Investor" Positions

Non-Commercial & Non-Reportable Net Futures Positions & Price



Source: CFTC

Silver and Spanish & Italian Credit Default Swaps



Source: Thomson Reuters

Investment

OTC Market

Due to the lack of meaningful publicly available data on activity in over-the-counter (OTC) products in silver stemming from the absence of actual statistics on volumes and open interest, we cannot give a precise estimate of the impact of OTC activity on the underlying physical market. Although the clearing statistics from the London Bullion Market (LBM) can provide a gauge, this data is an imperfect reflection of investor activity. First, it does not capture the trends in other OTC markets and secondly, it fails to differentiate between pure investment flows and other forms of activity. Therefore, we rely on information collected through field research, which, in 2012, suggested the OTC market experienced some investor selling on a net basis.

Along with a disappointing price performance, selling pressure in the OTC market was largely attributed not so much to outright shorting of the metal but rather the liquidation of existing long positions by many institutional players. Silver's volatile trading and memories of acute losses in 2011 also led to a pull back in fresh long-side interest. Furthermore, there was also a degree of technically related selling due to a break in key support levels, such as the 200-day moving average. Finally, with tightening regulations in the OTC market in both Europe and the United States, there was some pressure on investors to shift away from OTC products in favor of simple and standardized contracts, such as futures.

It is worth mentioning here that the bulk of OTC selling activity discussed above came from institutional players with a short term investment outlook (such as hedge funds). In contrast, medium to longer term players seem to have generally kept on the sidelines of the market. For instance, in the second quarter when the sovereign debt situation in Europe deteriorated rapidly and there was growing signs of a faltering global economy, such short-term institutional investors were forced to liquidate positions across a broad range of asset classes in an effort to raise cash. With this, silver was pressured from both outright selling of the metal and by the dumping of commodity index-tracking vehicles. While there was a decent recovery in buy-side interest in August and September in anticipation of further monetary loosening from major central banks, a fair portion of these more speculative positions were soon closed out in October when the rally appeared to be running out of steam.

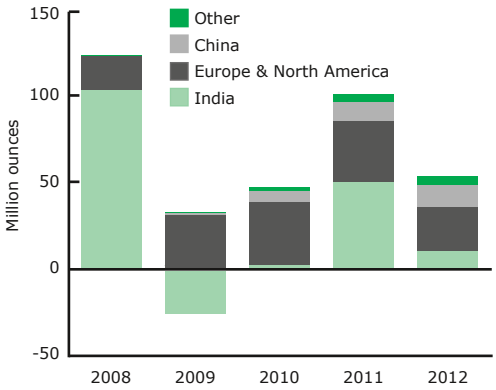
Physical Bar Investment

Physical bar investment in 2012 almost halved to 53.0 Moz (1,649 t), cutting its share of World Investment from around 40% in 2011 to almost 21% last year. The drop was overwhelmingly the result of lower Indian demand, although losses were seen in several other key markets. The main exception here was China, which enjoyed double-digit percentage growth, enabling the global total to remain at still historically elevated levels.

Indian bar investment declined by 81% to 9.6 Moz (300 t) last year, although this fall should be viewed in the context of the steep rise in demand in 2011. Looking at intra-year developments, the local market witnessed heavy disinvestment in early 2012, triggered by an unexpected rise in customs duty to 6%. Fresh buy-side interest resumed in the second quarter and continued over much of the summer before another wave of long liquidation occurred in September, as the local price surged above Rs. 65,000/kg. Our information from field research suggests that the bulk of the selling in late 2012 was driven by investors who bought the metal in April 2011 (when prices peaked at just under Rs. 75,000/kg) and had been waiting for a major recovery to take profits.

Bar demand last year in **Europe** fell at a notably steeper pace than in the United States, chiefly as the former saw no recovery towards year-end following a similarly quiet first half. The key reason for the overall decline was that news on Eurozone troubles was insufficient to sustain interest. The total for Europe reached in 2012, however, remained high historically, which was in part due to decent levels of interest from smaller investors; this is also reflected in the drop for coin demand in Europe being

Physical Bar Investment



Source: Thomson Reuters GFMS

Exchange Traded Funds

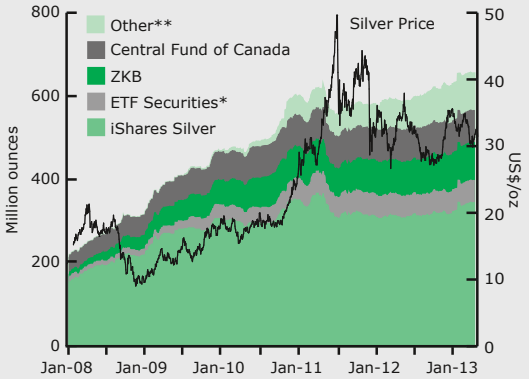
Following a modest decline in 2011, silver exchange traded funds (ETFs) posted a robust performance last year. Combined holdings of the ETFs and physically backed Canadian funds grew by 10% or 55.1 Moz (1,714 t) over the year, closing 2012 at a fresh high of 631.4 Moz (19,637 t). In value terms, total holdings rose to a record of $18.9 billion by year-end, up by 16% from the figure recorded at end-December 2011. The greatest inflows took place in the established entities. The biggest increase was recorded by Sprott Physical Silver Trust, with total holdings rising by 27.0 Moz (839 t), while iShares Silver Trust, the largest silver ETF, registered growth of 15.4 Moz (479 t).

After opening 2012 on a quiet note, demand for physically backed silver accelerated on growing concerns over an escalation of the Eurozone debt crisis and the possibility of a Greek default. Combined ETF holdings increased by 16.2 Moz (505 t) in the first two months of the year, to reach 592.5 Moz (18,428 t) on March 5th. During that period, Sprott Physical Silver Trust posted the biggest increase in volume terms, with its holdings rising by 10.6 Moz (329 t). After the silver price rally ran out of steam in late February, however, the pace of investment began to abate somewhat. The period from early March through to mid-May saw a modest decline in investor interest in physically backed silver, chiefly driven by profit-taking, which took total holdings back to levels seen at the beginning of the year.

From this level, investor interest quickly recovered and continued to rise for the rest of the year, supported by growing concerns over the US fiscal position and increased worries over the sovereign debt situation in many other advanced countries. The main thrust of the increase last year was, however, concentrated in the period from early August through to late September, when the world's major central banks announced additional stimulus measures in an attempt to support the slowing economic recovery. This translated into heavy inflows into silver ETFs, with combined holdings rising by 23.3 Moz (724 t) during that period, which accounted for more than 42% of the year's total gains. Looking at individual funds' performance, iShares Silver Trust saw the largest increase, one of 11.5 Moz (358 t), over this period. Despite a temporary dip in investment demand in October and mid-November, silver ETFs ended the year at a historic high of 631.4 Moz (19,637 t).

Turning to this year, demand for silver ETFs continued to strengthen in the first half of January, taking total volumes to a new high of 653.3 Moz (20,320 t) on the 18th. Key to this robust performance was ongoing monetary loosening and easing concerns about the Eurozone debt crisis. This was also supported by the last-minute deal to avoid the so-called "fiscal cliff" in the United States. Despite modest selling in the second half of January, investment demand for silver ETFs continued to rise thereafter, albeit at a slower pace than that seen at the start of the year. The period from February through to mid-March witnessed positive inflows of 10.5 Moz (327 t), with combined holdings reaching 653.7 Moz (20,322 t) by mid-March, up by 4% from the year-end figure in 2012. The largest increase in volume terms was posted by iShares Silver Trust, which saw growth of 18.1 Moz (562 t), accounting for more than 80% of the period's total gains.

Silver ETF Holdings



*ETF Securities: includes LSE, Australia, NYSE, GLTR and WITE
**Other: includes Sprott Physical Silver Trust, Julius Bär, DB Physical Silver, BlackRock Silver Bullion Trust, Silver Bullion Trust, Mitsubishi UFJ Tokyo, iShares Physical Silver ETC, Source Physical Silver, Royal Canadian Mint;
Source: Respective issuers

Silver ETFs Holdings

(Moz)	end-2011	end-2012
iShares Silver Trust	308.8	324.2
ZKB Silver ETF	81.0	89.8
Central Fund of Canada	77.0	77.0
ETF Securities*	53.3	52.5
Others**	56.1	87.9
Total	**576.2**	**631.4**

* includes LSE, Australia, NYSE, GLTR and WITE

** includes Sprott Physical Silver Trust, Julius Bär, DB Physical Silver, BlackRock Silver Bullion Trust, Silver Bullion Trust, Mitsubishi UFJ Tokyo, iShares Physical Silver ETC, Source Physical Silver, Royal Canadian Mint.

Source: Respective issuers

smaller than for bars. The overall fall for bars, however, is not thought to represent any substitution to coin in the key German market as its increase in VAT on silver coins threatened for (but not enacted on) January 1st 2013 failed to generate any year-end surge in coin buying. Interest is said to have grown at the start of this year, but chiefly among more speculative players who reportedly viewed early 2013 levels as a good buying opportunity.

Demand in the **United States** for small bars (100-ounce and below) is understood to have contracted for the second consecutive year, although the level attained was still high by historical standards and the drop was not great. The decline centered on the first half of the year, whereas activity sprung to life in the final few months (a change also paralleled in US gold retail investment), and strength is said to have continued through into the start of this year. Some contacts even noted a late year rebound strong enough to bring calendar 2012 volumes back in line with 2011. The chief reasons for this were ongoing concerns about lax US monetary policy, a belief that silver might have bottomed (partly as industrial demand was felt to have turned a corner) and a desire to have exposure to precious metals outside of just gold.

In **China**, demand for silver bars (restricted to products sold at retail outlets and bank branches) grew by 13% last year, reaching a new record of 12.7 Moz (396 t). Similar to previous years, negative real interest rates and continued inflation pressure remained the dominant drivers behind such a healthy increase in silver investment. Given its low unit price compared with gold, silver turned out be particularly popular among retail investors, especially those with limited budgets. Such a development was also assisted by a growing number of commercial banks and stores that added silver to their precious investment bullion products in 2012.

Commodity Exchanges Activity

Following a strong performance in 2011, turnover in silver futures on **Comex** fell by nearly a third last year. Total volumes reached 13.3 million contracts, equivalent to an average daily turnover of 264.2 Moz (8,217 t). In contrast, open interest at 141,489 contracts by end-December was up by 34% compared to the end-2011 figure. Turnover in options was down by a relatively modest 10% year-on-year, with its total volume for 2012 standing at 1.7 million contracts.

Silver Turnover on Major Commodity Exchanges

(total volume in nominal million ounce equivalents)

	2010	2011	2012	Change y-o-y
Comex	64,117	98,042	66,578	-32%
SHFE	-	-	20,513	n/a
MCX	19,260	32,599	14,652	-55%
SGE	2,410	7,924	6,731	-15%
NYSE LIFFE*	1,651	1,767	671	-62%
Tocom	76	120	39	-68%

*N.B.: Includes the 5,000-ounce and 1,000-ounce contracts

Source: Thomson Reuters GFMS, Tocom, MCX, SGE and SHFE

The analysis of the data on non-commercial and non-reportable net positions in Comex futures and options provides a proxy for 'investor' activity on the exchange. Looking at the intra-year trends in the futures market, the year started on a bullish note, with the net investor long rising by an impressive 180% in the first two months, to 44,593 contracts by end-February, which was a key driving force behind the notable price strength over the same period. Central to this surge in investor interest was a return of risk appetite in response to easing concerns over the Eurozone crisis and strong economic data in the United States. After the silver price rally ran out of steam, not surprisingly, investors on the Comex started to lock in profits, which resulted in a steep fall in the net long to a low for the year of 12,011 contracts by the final week of June. From this low level, investor interest rebounded strongly, triggered by a series of announcements of additional stimulus plans from major central banks, to reach 57,840 contracts on October 2nd. Following a period of liquidations, early November saw a quick rebound in investor interest, to hit a high for the year of 58,514 contracts in early December. Despite year-end profit taking, the net investor long position stayed at high levels by end-December.

The last few years have witnessed growing investor interest in silver on a number of other exchanges around the world, particularly the **Shanghai Gold Exchange**, where despite a 15% decline last year, total volumes remained elevated by historical standards. Furthermore, the **Shanghai Futures Exchange** (SHFE) launched a silver contract in May 2012. By end-2012, total turnover had already exceeded 20,500 Moz (638,000 t). With rapid growth in investor activity, the SHFE has already become the second largest commodity exchange for silver futures trading on a global basis, after Comex.

Table 2 - Silver Fabrication: Coins and Medals (including the use of scrap - million ounces)
Thomson Reuters GFMS / The Silver Institute

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
United States	14.5	15.5	16.6	17.6	16.0	25.4	34.3	41.7	47.8	38.9
Canada	0.3	1.3	1.6	2.9	4.3	9.0	10.8	18.6	23.5	18.7
Austria	0.4	0.5	0.6	0.5	0.5	8.3	9.5	11.6	18.4	9.3
China	2.3	2.3	1.8	1.6	2.6	2.8	3.0	3.7	5.8	8.5
Australia	1.3	1.3	1.0	1.4	3.5	5.9	6.5	8.8	11.3	6.6
Germany	9.7	9.7	9.7	8.7	6.3	7.2	7.4	6.4	3.3	2.9
Mexico	1.5	2.7	2.6	1.9	1.6	1.4	1.7	2.1	1.7	1.1
Spain	1.1	2.2	1.7	1.5	1.2	1.1	1.0	1.3	0.7	0.7
Other Countries	4.5	6.8	4.3	3.7	3.7	4.2	4.5	5.3	6.0	6.0
World Total	**35.7**	**42.4**	**40.0**	**39.8**	**39.7**	**65.3**	**78.8**	**99.4**	**118.3**	**92.7**

Coins and Medals

Following four consecutive years of strong growth, global silver coin & medal minting dropped by 22% or 25.6 Moz (797 t) in 2012. It should be emphasized, though, that fabrication in 2011 was a record high (with respect to the modern coinage era). At 92.7 Moz (2,884 t), world coin fabrication in 2012 remained well in excess of the pre-crisis level. Last year's decline was primarily related to markedly weaker investor interest in physical silver in western markets. Our propriety quarterly bullion coin survey shows that demand for newly minted coins fell by 14% and 39% respectively in North America and Europe.

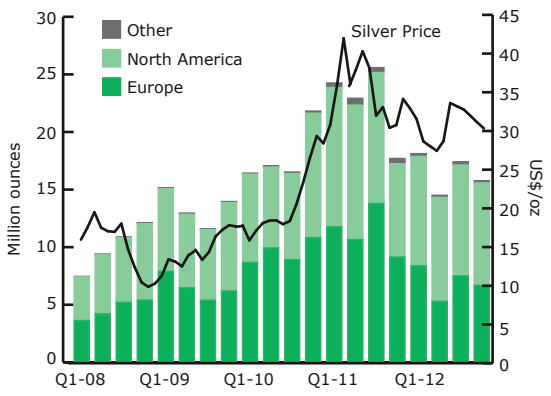
Starting with the former, the bulk of losses occurred in the first nine months of the year, as fresh investor interest was undermined by less bullish price expectations and an absence of near-term inflation pressure. Nevertheless, following the announcement of QE3 by the Federal Reserve, growing worries about high inflation in the future sparked a rapid recovery in demand for silver bullion coins in late 2012, with further strong gains reported in early 2013. Sales of US Eagle silver coins, for instance, amounted to 14.2 Moz (442 t) in the first quarter of this year, up by some 40% year-on-year.

Turning to Europe, the hefty decline was largely attributed to less acute concerns about the sovereign debt situation in Europe and a degree of satiation among potential investors, as those that were inclined to purchase physical silver as a safe haven may have already done so in previous years. That also helps to explain a much greater fall in sales of bullion coins in the region than that seen in North America. Interestingly, despite the possible VAT hike on silver coins from 7% to 19% at the start of 2013 in Germany (the rise now has been postponed to 2014), there seems to have very limited response from small retail investors.

Given generally weak demand across western markets, each of the principal bullion coin producers suffered losses in 2012, encompassing the **US** Eagle, **Canadian** Maple Leaf, **Austrian** Philharmoniker and **Australian** Kookaburra (together with their Koala and Lunar) coins. Fabrication in **Germany** (related to the country's commemorative coin programmes) also fell in 2012, albeit by a limited magnitude, as the dramatic drop in 2011 was related to a one-off development when the purity of the silver used was lowered from 925 to 600 before it was replaced entirely with a copper:nickel alloy.

By contrast, coin minting in **China** posted a strong increase in 2012, as fabrication realized a 47% increase in 2012 to hit a new all-time high basis our records (in terms of modern coin mintage). Similar to the bar segment, investor interest in silver coins was fueled by negative real interest rates, heightened inflation pressure and a limited access to alternative investment vehicles.

Silver Bullion Coin Sales



Source: Thomson Reuters GFMS Quarterly Bullion Coin Survey

4. Mine Supply

- ***Global silver mine production grew last year, by 4%, rising to a new record of 787.0 Moz (24,478 t).***

- ***By-product output from the lead/zinc sector provided much of the growth, up by 9%, with strong growth in China, Mexico and India.***

- ***Primary silver mine supply grew only slightly in 2012, by 1%.***

- ***Primary silver total cash costs rose by 9%, to $8.88/oz, as credits from base metal by-product revenues fell, coupled with lower grades and higher input cost inflation.***

- ***Producer de-hedging of silver contracts amounted to 41.5 Moz (1,289 t) representing a 43% cut to the silver producer hedge book.***

Mine Production

- ***For the tenth consecutive year, silver mine production rose, adding 30.0 Moz (932 t) to global silver supply.***

Last year global silver mine supply rose once again, preserving a general trend of growth since the mid-1990s. Last year's increase, of 30.0 Moz (932 t) left global supply standing at a new record high, or 787.0 Moz (24,478 t).

In 2012, with the primary silver sector growing by just 1%, to 221.6 Moz (6,892 t), the importance of the by-product sector to global silver supply was once again demonstrated, despite the decline in the silver price lowering silver's absolute value as a by-product credit. This was reflected in the growth of the volume of

Top 20 Silver Producing Countries

Ranking 2011	Ranking 2012	Country	Output (Moz) 2011	Output (Moz) 2012
1	1	Mexico	153.6	162.2
3	2	China	104.6	117.0
2	3	Peru	109.8	111.3
4	4	Australia	55.5	56.9
8	5	Russia	38.5	45.0
6	6	Poland	40.8	41.2
7	7	Bolivia	39.0	39.7
5	8	Chile	40.9	37.0
9	9	United States	36.0	32.6
10	10	Argentina	22.6	24.1
11	11	Canada	18.7	21.3
12	12	Kazakhstan	17.6	17.5
17	13	India	7.5	12.7
14	14	Sweden	9.1	9.8
13	15	Turkey	9.4	7.6
16	16	Morocco	8.0	7.4
15	17	Guatemala	8.8	6.6
18	18	Indonesia	6.0	4.4
19	19	Islamic Rep. of Iran	3.3	3.2
21	20	South Africa	3.0	2.9
		Rest of World	**24.5**	**26.4**
		World Total	**757.0**	**787.0**

Source: Thomson Reuters GFMS

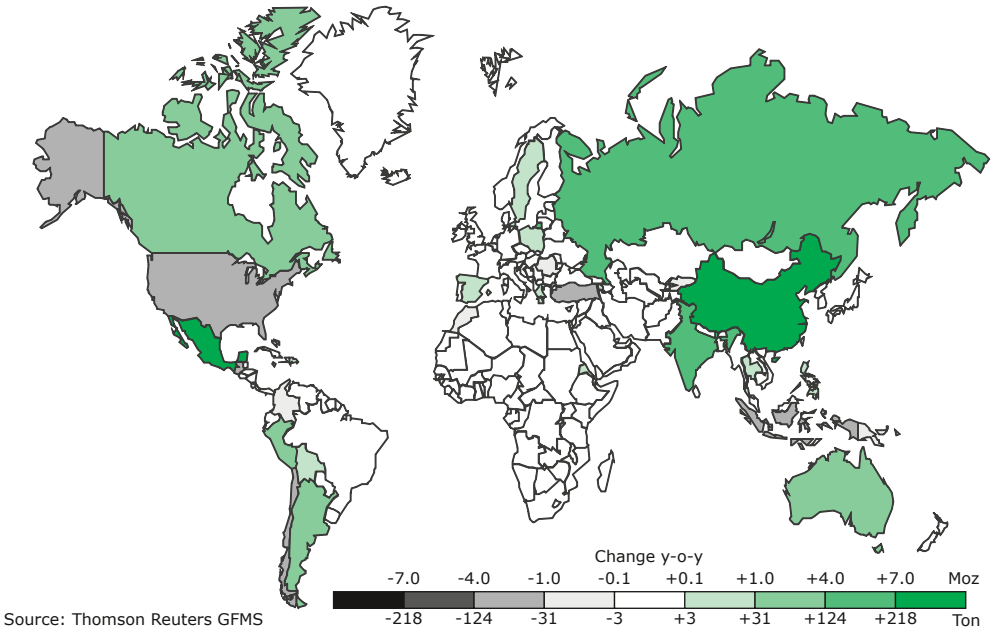
Top 20 Silver Producing Companies

Ranking 2011	Ranking 2012		Output (Moz) 2011	Output (Moz) 2012
1	1	KGHM Polska Miedź S.A. [1]	40.5	41.0
2	2	BHP Billiton plc.	39.0	39.0
3	3	Fresnillo plc. [2]	38.0	36.9
4	4	Goldcorp Inc. [3]	27.8	30.5
7	5	Polymetal International plc. [2]	19.9	26.5
5	6	Pan American Silver Corp. [2]	21.9	25.1
6	7	Volcan Cia. Minera S.A.A. [4]	21.1	22.0
9	8	Cia. De Minas Buenaventura S.A.A. [4]	16.2	18.3
8	9	Coeur d'Alene Mines Corp. [2]	19.1	18.0
13	10	Southern Copper Corp.	12.7	13.6
10	11	Hochschild Mining plc.	15.0	13.6
11	12	Sumitomo Corp. [3]	14.0	13.0
12	13	Kazakhmys plc.	13.1	12.6
15	14	Industrias Peñoles S.A.B. de C.V.	11.4	12.2
16	15	Xstrata Zinc [5]	11.1	11.4
14	16	Kinross Gold Corp. [6]	12.1	10.7
17	17	Teck Resources Ltd. [3]	10.1	10.6
19	18	Yamana Gold Inc.	9.3	9.0
-	19	Silver Standard Resources Inc. [2]	7.1	8.6
-	20	First Majestic Silver Corp. [2]	7.2	8.3

1 Reported metallic silver production 2 Primary producer
3 Estimate 4 Includes production from minority subsidiaries
5 Reported silver in concentrate and lead bullion 6 Reported silver sales

Source: Thomson Reuters GFMS, Company Reports

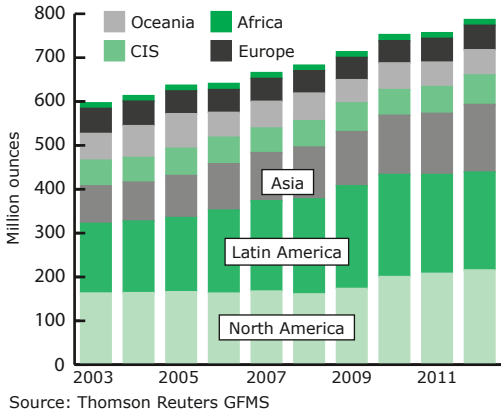
Silver Mine Production Winners and Losers, 2012 versus 2011



Source: Thomson Reuters GFMS

silver recovered as a by-product of the lead/zinc mining industry, whose output increased by 25.5 Moz (794 t), to account for 39% of all the silver mined last year. While we had initially expected growth to be higher this year, to hit 800.0 Moz (24,883 t), the rise of 4% in silver mine supply is nonetheless significant. Geographically, the strongest result was recorded in Asia, where production rose by 14.7 Moz (456 t). Growth came from the region's two largest producers China and India. Output from North America and the CIS was also higher, by 7.8 Moz (242 t) and 6.5 Moz (203 t) respectively, as production rose in Mexico and Russia. Losses at the country level were limited with the largest drop seen in Chile, of 3.9 Moz (123 t), largely a function of lower production from the country's copper industry.

World Silver Mine Production



Source: Thomson Reuters GFMS

North America

North American production rose by 4%, to total 216.1 Moz (6,722 t). This arose due to a ninth successive year of growth in Mexico, coupled with an increase in Canada, which partially offset lower output in the United States.

Mine supply in **Mexico**, the world's largest silver producing country, rose by 8.6 Moz (268 t) or 6% last year, setting a new record high of 162.2 Moz (5,046 t). Much of the rise came from Goldcorp's Peñasquito (primary zinc), where output reached 22.3 Moz (693 t), an increase of 30% year-on-year as operations continued to ramp up. Throughput rates at the mill increased by 17%, ore grade rose by 5% and metallurgical recoveries reached 77%, up from 74% in 2011.

A moderate uplift came from the country's gold mining industry, where we estimate that silver produced as a by-product grew by 2.4 Moz (75 t). Among these, a first full year of operation at Mercedes added 0.5 Moz (15 t), while a second full year at Gold Resource Corp's El Aguila added 0.9 Moz (27 t). At Ciénega, output more than doubled, to 3.3 Moz (104 t), as a result of a doubling of silver grades, mainly from the San Ramón satellite deposit. In the country's primary silver sector, although total output was flat, there was one notable gain. At Fresnillo's Saucito, mined ore grades increased from the Saucito vein and production from the high grade Jarillas vein began, raising production by 1.2 Moz (36 t).

Table 3 - World Silver Mine Production (million ounces)

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Europe										
Poland	44.2	43.8	40.5	40.5	39.6	39.0	39.2	37.7	40.8	41.2
Sweden	9.9	9.4	9.1	8.6	9.4	8.4	8.7	9.2	9.1	9.8
Spain	0.1	0.0	0.2	0.1	0.1	0.1	0.1	0.7	1.1	1.3
Portugal	0.7	0.8	0.0	0.3	0.9	1.3	0.7	0.7	1.0	1.1
Greece	0.1	0.0	0.0	0.8	1.1	1.1	0.9	0.9	0.8	1.1
Bulgaria	0.7	0.6	0.7	0.6	0.4	0.4	0.5	0.4	0.5	0.6
Romania	0.9	0.9	0.9	0.5	0.1	0.0	0.1	0.2	0.5	0.4
Macedonia	0.2	0.1	0.2	0.4	0.3	0.3	0.3	0.3	0.3	0.3
Ireland	0.3	0.2	0.2	0.2	0.2	0.2	0.1	0.0	0.0	0.1
Serbia and Montenegro	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Italy	0.1	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Other Countries	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Europe	**57.2**	**55.8**	**52.0**	**52.0**	**52.2**	**50.8**	**50.7**	**50.2**	**54.2**	**55.9**
North America										
Mexico	82.6	82.6	93.1	95.5	100.8	104.1	114.3	141.8	153.6	162.2
United States	39.9	40.2	39.2	36.7	40.5	36.0	40.2	40.8	36.0	32.6
Canada	41.0	41.6	34.2	31.2	26.7	21.5	19.5	18.4	18.7	21.3
Total North America	**163.5**	**164.4**	**166.5**	**163.3**	**168.0**	**161.6**	**174.0**	**201.1**	**208.3**	**216.1**
Latin America										
Peru	93.9	98.4	102.6	111.1	112.6	118.3	123.6	117.0	109.8	111.3
Bolivia	15.8	14.0	12.8	15.2	16.9	35.8	42.6	41.0	39.0	39.7
Chile	42.2	43.7	44.3	51.5	62.3	45.1	41.8	41.0	40.9	37.0
Argentina	4.4	4.6	6.0	6.8	8.1	10.7	17.9	23.2	22.6	24.1
Guatemala	0.0	0.0	0.3	1.6	2.8	3.2	4.2	6.3	8.8	6.6
Honduras	1.7	1.6	1.7	1.8	1.7	1.9	1.9	1.9	1.6	1.6
Dominican Republic	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.6	0.6	0.9
Ecuador	0.0	0.0	0.3	0.4	0.4	0.4	0.4	0.5	0.5	0.6
Colombia	0.3	0.3	0.2	0.3	0.3	0.3	0.3	0.5	0.8	0.5
Brazil	0.2	0.3	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.4
Nicaragua	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.3
Other Countries	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.2
Total Latin America	**158.8**	**163.1**	**169.0**	**189.3**	**205.8**	**216.5**	**233.9**	**232.7**	**225.3**	**223.1**
Asia										
China	58.8	63.2	67.6	75.9	79.3	84.8	86.8	96.9	104.6	117.0
India	2.9	3.4	3.3	5.9	5.7	6.8	6.2	8.2	7.5	12.7
Turkey	3.6	4.0	5.2	6.0	7.5	10.1	12.5	12.3	9.4	7.6
Indonesia	9.6	8.6	9.9	7.9	8.6	8.0	7.7	6.7	6.0	4.4
Islamic Rep. of Iran	2.6	2.7	2.9	3.2	2.9	3.2	3.4	3.4	3.3	3.2
Papua New Guinea	2.0	1.7	2.2	1.6	1.4	1.6	2.2	2.1	3.0	2.6
Philippines	0.3	0.3	0.6	0.8	0.9	0.5	1.1	1.3	1.5	1.6
Thailand	0.6	0.5	0.6	0.5	0.4	0.4	0.7	0.7	0.8	1.2
Mongolia	1.1	1.2	1.2	1.2	1.2	1.1	1.1	1.1	1.1	1.0
North Korea	0.8	0.8	0.8	0.9	0.9	0.9	0.8	0.8	0.9	0.9
Japan	2.7	1.7	1.0	1.1	0.4	0.4	0.4	0.3	0.8	0.8
Dem. Rep. of Laos	0.0	0.1	0.2	0.2	0.1	0.2	0.5	0.6	0.6	0.6
Other Countries	0.6	0.6	0.5	0.4	0.4	0.3	0.3	0.3	0.4	0.5
Total Asia	**85.7**	**88.8**	**96.0**	**105.7**	**109.9**	**118.4**	**123.6**	**134.9**	**139.5**	**154.2**

Table 3 - World Silver Mine Production (million ounces)

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Africa										
Morocco	6.7	7.2	7.9	7.6	6.9	7.8	8.9	9.9	8.0	7.4
South Africa	2.8	2.3	2.8	3.0	2.8	2.7	2.9	3.0	3.0	2.9
Dem. Rep. of the Congo	1.2	1.1	0.0	1.1	2.3	1.1	0.0	0.2	0.4	0.4
Tanzania	0.3	0.4	0.4	0.4	0.3	0.3	0.3	0.4	0.4	0.4
Zambia	0.2	0.2	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.4
Botswana	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2
Mali	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Ghana	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Namibia	0.9	0.9	1.0	1.1	0.3	0.2	0.0	0.0	0.0	0.0
Other Countries	0.3	0.2	0.2	0.1	0.1	0.1	0.1	0.2	0.4	1.1
Total Africa	**12.7**	**12.6**	**12.9**	**13.9**	**13.2**	**12.8**	**13.0**	**14.3**	**12.8**	**13.0**
Oceania										
Australia	59.9	71.5	77.4	55.6	60.4	61.9	52.4	60.4	55.5	56.9
New Zealand	1.0	1.0	1.5	1.1	0.6	1.0	0.5	0.5	0.5	0.4
Fiji	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Oceania	**60.9**	**72.5**	**78.9**	**56.7**	**61.0**	**63.0**	**52.9**	**60.9**	**55.9**	**57.3**
CIS										
Russia	29.5	30.3	32.5	31.3	29.3	36.4	42.2	36.8	38.5	45.0
Kazakhstan	25.8	22.6	26.1	25.6	22.8	20.2	19.7	17.6	17.6	17.5
Armenia	1.3	1.3	1.2	1.3	1.2	1.3	1.6	1.7	2.4	2.6
Uzbekistan	1.7	1.9	2.1	2.1	2.5	1.7	1.7	1.9	1.9	1.9
Kyrgyzstan	0.0	0.0	0.0	0.2	0.2	0.3	0.3	0.3	0.3	0.2
Tajikistan	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1
Other Countries	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.2	0.2
Total CIS	**58.5**	**56.3**	**62.0**	**60.4**	**56.0**	**60.0**	**65.6**	**58.6**	**60.9**	**67.5**
World Total	**597.2**	**613.6**	**637.2**	**641.3**	**666.1**	**683.0**	**713.6**	**752.7**	**757.0**	**787.0**

Offsetting some of the gains, silver output at the country's largest silver producing mine, Fresnillo, declined for a second year, falling by 3.9 Moz (122 t) due to lower processed grades, which fell from 396g/t in 2011, to 328g/t in 2012, a drop of 17%. Elsewhere, production from Ocampo fell by 1.7 Moz (50 t), and output at Palmarejo dropped by 0.8 Moz (25 t), due to a 51% and 32% drop in processed grades respectively.

Canadian production grew to 21.3 Moz (663 t), up 14% year-on-year, following seven years of consecutive losses. The restart of production at the Langlois mine added 0.5 Moz (16 t), as the mine reached commercial production in the first half of last year. At Yukon Zinc's Wolverine mine, mill commissioning commenced in 2011 and commercial production of 1,020 tons/day or 60% of nameplate mill capacity was achieved on March 1, 2012. Production is currently increasing towards 1,700 tons/day capacity. At Alexco Resources' Bellekeno, output continued to ramp up. Although silver ore grades fell by 9%, mill throughput increased by 17% year-on-year, allowing overall production to increase by 6% to 2.2 Moz (67 t). Also worthy of a mention, at Xstrata Copper's Kidd Creek silver output also increased by 11%. Growth was held back in Canada by a continued decline in output at Brunswick, which is scheduled to close this year, and reduced output at Agnico-Eagles' La Ronde, where output fell by 0.9 Moz (29 t) or 30% due to lower silver head grades.

After a sharp drop in 2011, production from the **United States** continued to fall and totaled 32.6 Moz (1,013 t). The majority of this decline was due to the suspension of Hecla Mining's primary Lucky Friday mine, while rehabilitation and enhancement work took place on the 6,100ft deep Silver Shaft, accounting for a 3.0 Moz (93 t) loss. However, mining subsequently resumed in February 2013. In addition, silver output from Rio Tinto's Bingham Canyon copper-gold operation declined for a third consecutive year, falling by 30%, to 2.1 Moz (65 t).

Increases were few in number, with the most significant being a 1.4 Moz (44 t) rise at Rochester, with a new leach pad in operation following the resumption of mining and crushing operations in late 2011. Elsewhere, at Hecla's Greens Creek, the country's largest silver producing mine, production was down slightly, by 0.1 Moz (3 t).

Latin America

Latin American production fell for the third successive year, by 2.2 Moz (70 t) to 223.1 Moz (6,938 t). Across the region, while the two largest sectors, primary silver and lead/zinc, saw production increases, these were outweighed by falls in silver output from the copper and gold sectors. The lead/zinc sector accounted for 83.7 Moz (2,603 t) of output last year, while primary silver mining contributed 64.1 Moz (1,995 t) of the total.

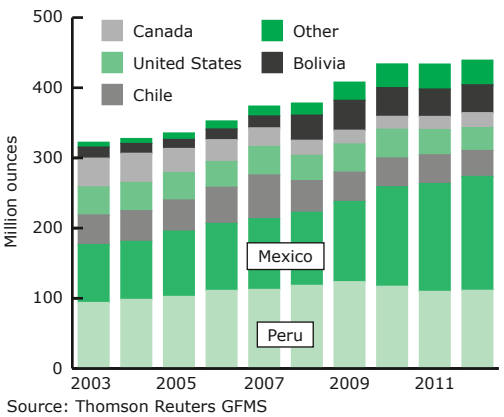
The largest loss was seen in **Chile**, where production fell by 3.9 Moz (123 t) year on year, stemming from the copper and gold mining sectors. Among the former, we estimated a noteworthy decline at the operations of Codelco, who reported a 24% reduction in silver output in the first six months of 2012, which we estimate could have reached a 3.0 Moz (93 t) shortfall by end-year. A 0.4 Moz (13 t) reduction was also seen at Escondida, where silver grades fell, while we also estimate that production at Los Pelambres contracted, in line with copper output. Lower silver grades and recoveries in the gold sector were behind losses at Yamana's El Peñón and Kinross' La Coipa, where production fell by a combined 1.9 Moz (59 t). Providing some partial offset, Mandalay Resources' Cerro Bayo saw a 1.6 Moz (50 t) increase in primary silver supply, thanks to higher grades and recovery rates.

Guatemalan silver production fell by 2.2 Moz (68 t) in 2012, a decrease of 25%. This was due to lower output from Goldcorp's Marlin. Silver head grade was one third lower following the cessation of open pit mining.

A number of Latin American countries did, however, post increases in silver output in 2012. In **Peru**, the source of half of Latin American silver, supply increased marginally, by 1%, to 111.3 Moz (3,461 t). Growth came from a number of base metal operations including Antamina, where production rose by 1.7 Moz (51 t), primarily due to a 26% increase in throughput. Minera Volcan's operations also saw aggregate growth, of 0.9 Moz (28 t), due to an increase in silver output at the company's Cerro de Pasco and Chungar operations. The primary silver sector remained effectively flat year-on-year. A 1.2 Moz (36 t) rise in silver output at Buenaventura's Uchucchacua arose from 6% higher throughput and 5% higher recovery rates. An offset was, however, provided by lower production at Pallancata and Arcata, due to lower silver head grades. We estimate that they accounted for a 1.9 Moz (59 t) reduction. In tandem with a broad drop in Peru's gold production, silver recovered from gold mines was the only sector to record a net loss, falling by 1.2 Moz (36 t). But the main driver of this was an estimated 0.5 Moz (15 t) drop at Yanacocha, as throughput fell by nearly one quarter, despite an increase in the volumes of recovered gold at the operation.

In **Argentina**, supply rose by 1.5 Moz (47 t). The bulk of this came from the primary silver sector, where output at Silver Standard Resources' Pirquitas, Argentina's largest silver producing mine, grew by 1.6 Moz (49 t). Although grades and recovery rates were lower year-on-year, this was outweighed by plant improvements that led to lower downtime and drove a 49% increase in throughput. Partially mitigating this, output at Pan American Silver's Manantial Espejo and Coeur d'Alene's Martha fell by a combined 0.3 Moz (11 t), as silver grade fell at the former, and mining activity ceased at Martha in September last year. Output from the gold sector also rose, albeit by a smaller amount, stemming from a 0.5 Moz (16 t) increase at Troy Resources' Casposo. Throughput increased sharply with the implementation of a "winterization" project to maintain throughput in adverse weather. At the San José joint venture higher throughput led to a slight lift in production. The biggest loss in the country was an estimated 0.4 Moz (14 t) at Barrick's Veladero, as grades and throughput fell.

Mine Production in the Americas



Source: Thomson Reuters GFMS

Bolivian output rose slightly to 39.7 Moz (1,234 t). Consequently, Bolivia has overtaken Chile to become the second largest silver producer in Latin America. Moderate growth was seen at UMZ and San Vicente, of a combined 1.1 Moz (35 t). The former is in the process of ramping up after commencing commercial production on January 1st 2012, whereas at San Vicente both throughput and grade increased in 2012. Silver production at San Cristóbal, a zinc producer that is Bolivia's largest source of silver, is estimated to have increased by 9% to an annual total of 13.0 Moz (400 t). These increases were sufficient to outweigh a 1.6 Moz (49 t) fall at San Bartolomé, stemming from lower grades and throughput.

Although supply from the **Dominican Republic,** at 0.9 Moz (28 t), remained modest relative to the rest of the region, 2012 saw new contributions from Panterra Gold's Las Lagunas and, notably, Barrick Gold's Pueblo Viejo. Pueblo Viejo is expected to produce over 5.0 Moz (156 t) this year in its first full year of operations.

Asia

Chinese silver mine production is estimated to have increased for a tenth consecutive year, rising by 12.4 Moz (387 t), the largest gain globally. This left China's output for the year at 117.0 Moz (3,640 t), overtaking Peru to become the second largest silver producing country. The bulk of the increase came from the country's base metal smelting industry, from which almost 90% of the country's silver is derived, with domestic production of lead, zinc and copper concentrates rising by 20%, 14% and 26% respectively. We estimate that in aggregate silver recovered from these sources rose by 12%. A smaller contribution was made as a by-product of China's gold sector, which continued to grow last year, by 11%. Total refined silver output is also reported to have risen in the country, by over 10%, which we ascribe to an increase in our assessment of imports of silver in concentrate, building on the growth from domestically mined material.

Elsewhere in Asia, production rose strongly in **India**, by 5.2 Moz (160 t), with a sharp lift in domestically mined (and refined) silver from Hindustan Zinc, due to the ramp up of Sindesar Khurd and the operation of a new silver refining facility. Production from **Turkey** declined, by 18%, and we estimate that output at the Gümüsköy mine fell by 1.9 Moz (60 t). The mine's operator, Eti Gümüş, lowered output while it undertook remediation activities at tailings dams following stability problems in 2011 and 2012. Production also fell in **Indonesia**, with the county's copper-gold mines behind the decline. Silver output at Grasberg fell by a marked 1.6 Moz (50 t) due to lower mined silver grades and labour unrest.

Oceania

Total supply from Oceania increased by 1.4 Moz (43 t) to 57.3 Moz (1,782 t) in 2012. The increase was wholly attributable to largest producer **Australia**, where output recovered slightly following a large 5.0 Moz (155 t) decrease in 2011. Supply from individual properties in Australia generally saw only modest changes in 2012. A 1.0 Moz (30 t) increase was recorded in the primary silver sector, from a ramp up of production at Alcyone Resources' Twin Hills, which recommenced production in 2011, and a fresh contribution from Wonawinta. Australia's largest silver mine, Cannington, which can often dominate the trend of Australian production, recorded flat output last year. Higher silver grades were the common theme behind slightly higher output from the lead/zinc sector, at Angas, Endeavor, McArthur River, Mount Isa and Broken Hill.

Meanwhile, substantial production decreases were seen at the Ernest Henry, Hellyer and Mount Garnet base metal mines, in each case due to significant changes in operating circumstances. At Ernest Henry, production fell in 2012 as the operation was in the process of transitioning to underground mining, following the completion of the open pit in December 2011. The Hellyer mine ceased operations in May 2012, and is now on care and maintenance. Mount Garnet was also placed on care and maintenance during early 2012 along with all of operator Kagara Mining's other assets, prior to the company entering administration.

Commonwealth of Independent States (CIS)

Silver output in the CIS rose strongly last year, by 6.5 Moz (203 t), or 11%. This second successive year of growth was entirely driven by higher output from **Russia**, which saw the third biggest increase at the country level. Much of this came from Russia's gold mining sector, which increased silver output by one third. At Khakanjinskoye, a 60% increase in silver grade stemming from higher contributions of ore from the Avlayakan and Ozerny pits was behind a 1.8 Moz (56 t) addition. The Kubaka mill saw growth of 2.5 Moz (78 t), with a near doubling of processed volumes from the high-grade Sopka deposit.

An Overview of Corporate Transactions in 2012

Silver merger and acquisition activity was comparatively buoyant in 2012, with several of the larger deals in the precious metals space concerning silver companies. Among these, the principal theme was one of consolidation, with activity focussed in Mexico and South America, much of which was concluded in the first half of the year.

Standing out was Pan American Silver Corp's acquisition of Minefinders Corp. Ltd., completed in March 2012, to gain control of the Dolores gold-silver property in the Sierra Madre belt in Mexico, in a cash and shares deal valuing the target company at around $1.5 billion. Prior to this transaction, January saw McEwen Mining Inc. conclude the purchase of Minera Andes Inc., that held a 49% stake in the San José mine in Argentina, in partnership with Hochschild Mining. In the following quarter, Endeavour Silver Corp. entered into an agreement with AuRico Gold Inc. to acquire the producing El Cubo operation and Guadelupe y Calvo exploration project in Mexico, in a cash and shares transaction for around $250 million. Pan American later announced it had disposed of all assets and liabilities associated with the Quiruvilca mine in Peru, Pan American's first operating asset, to Southern Peaks Mining L.P. for consideration of $2 million plus a royalty payments structure.

In the second half of the year, the frequency of large deals moderated relative to the first half, the largest of which being by First Majestic Silver Corp., in the form of its purchase of Silvermex Resources Inc. and with it the high grade La Guitarra operation, which is currently undergoing a plant expansion, in a deal valued at C$147 million when closed.

More recently, and representing one of the largest transactions announced in precious metals over the past year, Silver Wheaton announced a streaming agreement with the Brazilian diversified miner Vale in February 2013. Silver Wheaton branched out from its silver streaming model, by acquiring gold streams for 25% of life-of-mine gold output from the Salobo copper-gold mine in Brazil, and 70% of output over a 20 year term from the Sudbury Nickel complex in Canada, for $1.33 billion in cash and $570 million in cash, plus 10 million Silver Wheaton warrants respectively.

Primary silver mining also grew markedly last year, as output at Dukat and Lunnoye rose by 13%, or 2.2 Moz (68 t), boosted by higher average grades and a 10% increase in recovery rates through the Omsukchan concentrator. Volumes of silver recovered from the country's base metal mining industry are also thought to have increased slightly in 2012, from a low base in 2011, as the country's lead/zinc sector continued to expand.

In the region's second largest producer, **Kazakhstan**, government statistics again show a sharp rise in the volumes of refined silver production, of 10.2 Moz (318 t). However, we estimate that domestic production remained flat year-on-year, with the balance of production being sourced from foreign imports. Although recording better than expected results, Kazakhmys recorded a drop of 0.5 Moz (15 t) in silver output, due to a 5% decline in silver grade, and an increase in the volumes of silver processing in progress at year-end. Production at the country's other integrated producer, Kazzinc, rose by a modest 0.5 Moz (15 t) from its own feedstock. While the company's total silver outturn doubled, the majority of this came from a 9.5 Moz (294 t) increase in the volumes of third party material processed, as Kazzinc sought to increase the utilisation rate of its refining facilities closer to capacity.

Europe

European silver production increased modestly by 3% in 2012, to 55.9 Moz (1,738 t). The vast majority of European silver comes from the **Polish** copper operations of KGHM Polska Miedź, whose production remained flat in 2012, at 41.0 Moz (1,274 t). Growth instead came from smaller contributors, such as **Sweden**, where output rose by 8% to 9.8 Moz (306 t), due to increases at the Aitik copper and Zinkgruvan zinc mines. **Spain**, **Portugal**, **Greece** and **Bulgaria** are also estimated to have posted small increases in their silver output, producing a collective total of 4.0 Moz (125 t) last year.

Africa

Silver production from Africa remained effectively flat in 2012, at 13.0 Moz (405 t). The majority of African supply is from the primary silver sector, at 5.5 Moz (170 t), most of which is attributable to the Imiter mine in **Morocco**. Production at Imiter was down by 0.5 Moz (16 t) in 2012, as operations were affected by ongoing local civil unrest. Elsewhere, **South African** silver production decreased slightly in 2012, due to lower production at a number of operations which were affected by strike action in the gold sector.

Average Prices of Source Metals

($/ton)	2008	2009	2010	2011	2012	Change y-o-y
Lead	2,085	1,726	2,148	2,398	2,061	-14%
Zinc	1,870	1,659	2,159	2,191	1,946	-11%
Copper	6,952	5,164	7,539	8,811	7,950	-10%
Gold ($/oz)	872	972	1,225	1,572	1,669	6%

World Mine Production of Source Metals

(Thousand tons)	2008	2009	2010	2011	2012	Change y-o-y
Lead	3,805	3,833	4,327	4,645	5,186	12%
Zinc	11,882	11,608	12,486	12,948	13,604	5%
Copper	15,452	15,831	15,929	16,011	16,669	4%
Gold (tons)	2,430	2,612	2,739	2,838	2,861	1%

Source: LME, Thomson Reuters, ILZSG, Thomson Reuters GFMS

Outlook

• Silver mine supply is expected to grow at a much more muted rate, an eleventh consecutive high.

In 2013, we expect silver supply to once again grow, but slowing somewhat from the 4% pace seen in 2012, and for silver output to reach 800.0 Moz (24,883 t). The main thrust of this growth is expected to come from the gold sector, where we expect global production to rise once again next year, with an accompanying rise in the volumes of recovered silver. In particular, an important contribution will come from Barrick's Pueblo Viejo, in the Dominican Republic, which we expect to add around 5.0 Moz (155 t) in 2013. Some growth is also expected from the lead/zinc sector, with further gains expected from Goldcorp's Peñasquito.

Growth will be driven by projects in the Americas. At the mine level, specific projects due to come on stream in this region include the above-mentioned Pueblo Viejo and Peñasquito, the start of output at Aurcana's Shafter, Minera Frisco's Concheño, First Majestic Silver's Del Toro and the restart of Hecla's Lucky Friday, combined with growing output from Gold Resource Corp's El Aguila and Southern Copper Corp's Toquepala and Cuajone. An output lift should also be seen in Indonesia, from a rebound at Grasberg and a ramp up at Martabe.

While silver prices did not scale new record highs during 2012 and the annual average actually fell, by 11%, the cost of producing an ounce of silver is not sufficiently high to worry primary producers, given the volume of by-product credits these primary mines. In addition, just 28% of global silver supply in 2012 was sourced from primary silver mines, down from 30% in 2010. We therefore expect that, in the absence of a sharp drop in base metal mining activity, there is only a limited risk that growth this year could be derailed, given the wide spread of risk among the various sources of silver mine supply.

By-Product Analysis

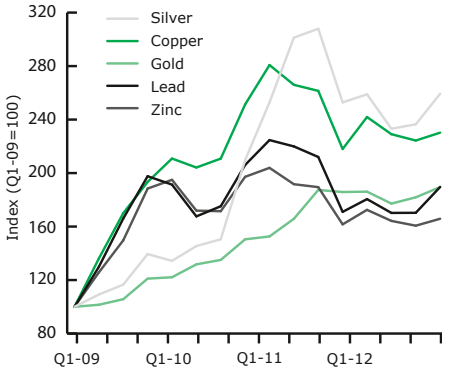
• Production from primary silver mines rose by just 1.8 Moz (57 t), as a handful of increases offset two stand out losses.

• Silver produced as a by-product of other metal mining was the main driver of growth, and rose by 28.1 Moz (875 t) year-on-year.

Global production of silver from primary silver mines tracked up slightly in 2012, by just 1%. Two large losses were observed, at Fresnillo and Lucky Friday, accounting for a combined 6.9 Moz (215 t) loss. This was outweighed by a broader base of gains, with Dukat, Cerro Bayo, Pirquitas, San José, Rochester, Uchucchacua, La Parilla and Saucito all seeing growth over 1.0 Moz (32 t) and totaling 11.7 Moz (363 t). Output as a by-product of gold mining continued to expand in 2012; a fifth successive year of growth as a consequence of the expanding gold mining industry. Last year, however, the pace of expansion slowed, but notable increases were seen at the Kubaka mill (+2.5 Moz, 76 t), La Cienega (+1.9 Moz, 58 t) and Khakanjinskoye (+1.8 Moz, 56 t).

Demand for base metals was generally sluggish last year. Despite record Chinese imports Thomson Reuters GFMS

Indexed Silver & By-product Metal Prices



Source: Thomson Reuters

Silver Output by Source Metal

(million ounces)

	2011 Output	% of Total	2012 Output	% of Total	Change y-o-y
Primary	219.8	29%	221.6	28%	1%
Gold	98.2	13%	101.8	13%	4%
Lead/Zinc	278.2	37%	303.7	39%	9%
Copper	157.5	21%	156.2	20%	-1%
Other	3.5	0%	3.8	0%	8%

Source: Thomson Reuters GFMS

estimates that global refined copper demand grew by a marginal 0.5% year-on-year, while lead consumption rose only 1.3% and zinc demand fell 2.8%. Chinese zinc consumption, which accounts for more than 40% of the global total, dropped over 3% last year. Against this backdrop, LME copper cash prices averaged $7,950/ton in 2012, down 9.8 % from 2011 levels; zinc prices fell 11.2% and lead prices dropped 14.1% over the period, to $1,946/ton and $2,061/ton respectively.

Despite the lukewarm demand picture, global lead and zinc mine output rose quite sharply last year, driven almost exclusively by China. According to the International Lead and Zinc Study Group (ILZSG), Chinese zinc mine output grew by 14% in 2012, offsetting declines in India, Brazil, Kazakhstan and the United States, boosting world output by 5% to 13.6 million tons. ILZSG figures indicate global lead mine output rose 12% last year, with Chinese production up around one-fifth from 2011 levels.

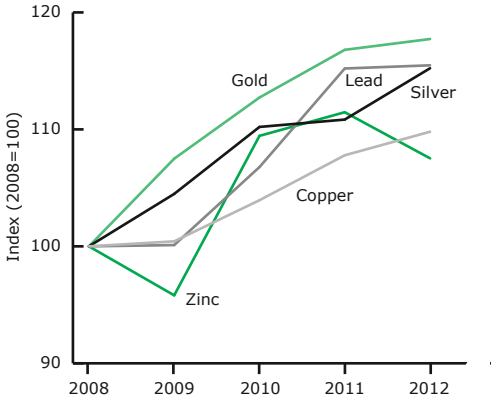
Chinese lead mine output, which accounts for more than half the global total, tailed off towards the end of the year, in part due to harsh weather in some provinces and as lower concentrate prices also acted as a disincentive. Even so, the slowdown was seen as temporary. It is worth noting, however, that despite the strong growth seen in the mine output of lead and zinc, Chinese domestic concentrates generally contain less silver than foreign sources, with this shown in the correspondingly weaker impact of this supply growth in Chinese silver output volumes.

Outside of China, the main noteworthy addition to silver volumes from the lead/zinc sector came from the 30% increase in silver from Peñasquito. The start-up of new sources of lead and zinc should also make a positive contribution this year, although many of the gains expected do not yield silver in meaningful quantities. For example, although Ivernia has restarted its Paroo Station (Magellan) lead mine in Western Australia, two years after it suspended work due to lead contamination, this property does not yield by-product silver. Elsewhere, Blackthorn Resources said in late January that its Perkoa zinc project in Burkina Faso was in the commissioning phase, although without a proposed upgrade, the plant will not liberate silver in meaningful quantities.

Meanwhile, after years of constraint, global copper mine supply picked up pace last year, with output rising by 4% to 16.7 million tons. This was the highest annual increase since 2004, as technical and labor-related problems were less prominent, and a few properties recorded prominent gains. In regional terms the growth areas were Africa and Asia, with increases of 9% and 7% respectively. China was largely responsible for the rise in Asia, with output there jumping 26% to 1.64 million tons, with increases concentrated in Inner Mongolia, Anhui and Hebei provinces. This rapid expansion helped to offset another year of losses from Grasberg and Batu Hijau in Indonesia. Strong growth was also seen in the African Copperbelt, with output in the Democratic Republic of Congo rising by more than one-quarter. However, unlike many of the Asian base metal mines, African copper mines, on balance, yield only modest volumes of silver.

Worth noting is that just under half of the global increase in copper production in recent years has been through the solvent-extraction-electrowinning process, which does not liberate silver directly.

Indexed Global Metal Mine Production



Source: ILZSG, Thomson Reuters GFMS

Production Costs

• ***Silver mine cash costs rose for the third successive year in 2012, by 9%, to $8.88/oz.***

Silver total cash costs for 2012 averaged $8.88/oz, a 9% rise from a revised figure of $8.11/oz for the prior year. Coupled with an 11% decline in the annual average price, producers' simple cash margin contracted, by 18%, to $22.27/oz. It should be noted that our analysis is focused on primary silver mines and excludes mines for which silver is not the principal metal (i.e. providing the largest proportion of a mine's net revenue).

In 2012, 28% of global supply came from primary silver operations and our costed data capture of 131.5 Moz (4,089 t) represented 59% of global primary silver supply. Even those mines considered 'primary' benefit from associated by-product metals, most commonly gold, lead and zinc. Silver mines with associated gold were given a boost once again by higher average gold prices (+6%). However, the prices of the other main source metals of silver all fell year-on-year, with the prices of copper, lead and zinc falling by 10%, 14% and 11% respectively, the first year of decline since 2009.

Among the population of costed mines, labor continued to be cited as a key driver of cost inflation with labor costs rising at rates above local inflation rates, partly due to a shortage of skilled workers in the global mining industry.

The processing of lower grade ore has also continued to be a factor in pushing costs higher. Among the larger mines, grades fell meaningfully at Fresnillo (-17%), Arcata (-13%) and Pallancata (-15%). Alamo Dorado was one of the few mines to buck the trend, with grades increasing by 10%. The trend of falling average silver ore grades looks set to continue; at the Fresnillo mine the average grade is anticipated to gradually decline from 328g/t in 2012, towards the reserve grade (281g/t).

Of the key producing countries, the Mexican peso and the Russian rouble both fell by 6% and this movement helped to keep locally priced input costs, such as labor, under control. In major producers Australia, Bolivia and Chile, exchange rates were effectively flat year-on-year, while in Peru, the nuevo sol strengthened against the dollar, by 4%.

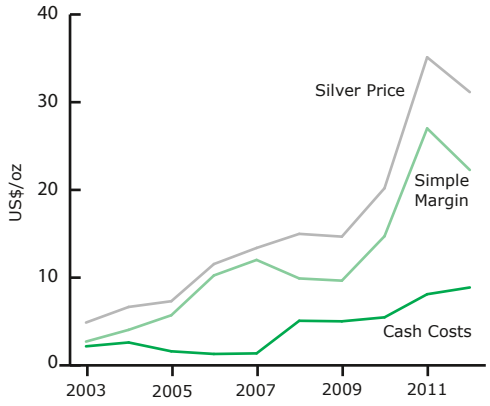
With regard to energy inputs, the average WTI oil price was only 1% lower in 2012, averaging $94/bbl, and thus had little impact on costs year-on-year. Other factors cited as contributing to mining cost inflation last year included higher prices for electricity, reagents, mining consumables and maintenance costs. In addition, general increases in commodity prices have been accompanied by rising royalty rates and production taxes (which are often linked to metal prices), and in some instances measures by governments to re-structure royalty regimes.

Silver Mine Production Costs

(US$/oz unless stated)	2010	2011	2012
Total Cash Costs	5.47	8.11	8.88
Average Spot Price	20.19	35.12	31.15
Sample Size (Moz)	139.2	148.9	131.5
Global Primary Production (Moz)	225.5	219.8	221.6

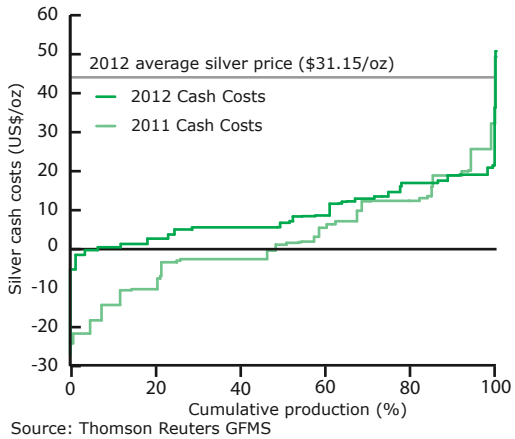
Source: Thomson Reuters GFMS

Historical Silver Cash Costs



Source: Thomson Reuters GFMS

Silver Mine Cash Costs



Source: Thomson Reuters GFMS

Producer Hedging

• In 2012 the delta-adjusted hedge book fell by 41.5 Moz (1,289 t).

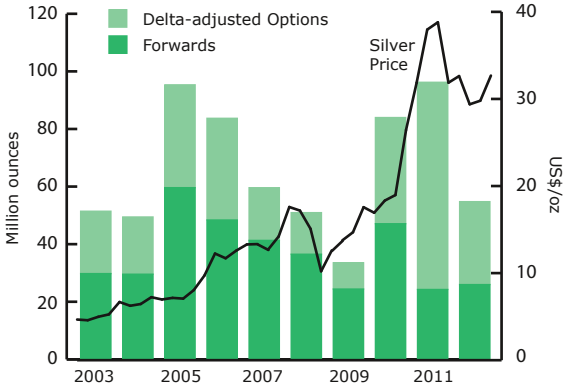
Producers' hedging activity reverted decisively back to net de-hedging in 2012, with miners reducing, or not replacing, their positions in 2012. At end-year, the delta-adjusted global hedge book stood at 54.8 Moz (1,704 t), a reduction of 41.5 Moz (1,289 t). The cut to the book in 2012 represented the biggest decrease to the outstanding silver delta-adjusted hedge book in our data series; a 43% reduction year-on year. The cut was wholly attributable to maturing option positions, with the nominal (number of contracts) hedge book falling by a net 71.1 Moz (2,210 t). When adjusted for option delta, which represents the true draw on the silver market from these positions, the fall in the level of hedging was a lower, but still significant 43.2 Moz (1,342 t). In contrast, the number of outstanding forward sales rose slightly in 2012, by 1.7 Moz (53 t), with the net gain attributable to one company.

During 2012 Barrick Gold was one of the most active hedgers, adding an additional 40.0 Moz (1,244 t) of options arranged in a collar structure. At end-year, Barrick had silver contracts covering 65 Moz (2,022 t) of future silver production. Within the option structure, the weighted average strike prices of the put and call contracts were $23/oz and $53/oz respectively. At end-2012 Barrick Gold's positions accounted for 130 Moz (4,043 t), or 70% of the nominal hedge book. However, Industrias Peñoles, KGHM Polska Miedź and Minera Frisco all significantly reduced their option books during 2012. Most significantly, Minera Frisco cut back its options by a total of 69.0 Moz (2,145 t). Correspondingly, at year-end Frisco had 43.2 Moz (1,344 t) of options remaining in a collar structure, covering 21.6 Moz (672 t) of output in 2013. The maturity of option contracts held by Peñoles and KGHM also led to an estimated reduction of 17.1 Moz (531 t) and 18.0 Moz (560 t) respectively.

Slightly offsetting these reductions, the volume of forward sales increased marginally year-on-year. There was one stand-out hedger: Minera Volcan entered into 14.5 Moz (451 t) of forwards and an additional 1.1 Moz (33 t) of scaling contracts. Conversely, a couple of producers reduced their forward sales positions. Minera Frisco bought back its entire position of 10.8 Moz (337 t) during the second quarter of 2012. Boliden delivered into 2.9 Moz (91 t) of forward sales during 2012 and, elsewhere, Cobar Consolidated Resources, Alcyone Resources and Discovery Metals all delivered into forward sales emplaced during 2011, totaling 0.6 Moz (18 t) of hedges.

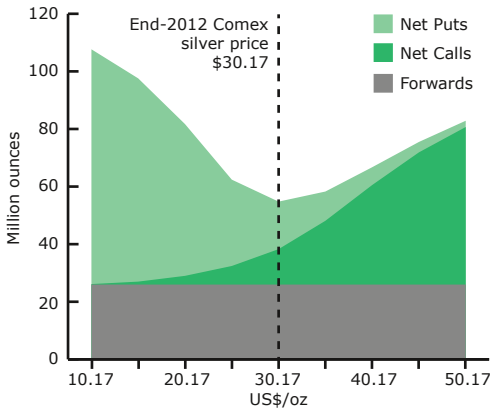
Brady's Trinity™ trading and risk management software is used for the calculation of deltas against producers' option contracts. The chart below plots the sensitivity of the hedge book to changes in silver price, assuming all other market factors remain equal, and shows that the hedge book was more sensitive to a potential fall in the silver price. If prices had been $10/oz lower at end-2012, the volume of silver delta-hedged against the options book would have risen by 26.9 Moz (838 t). However, if prices had increased by the same amount, the delta-adjusted hedge book would have expanded by a more modest 11.9 Moz (371 t). The reason being that while the options book largely comprises collar option structures, the bought puts have average strike prices closer to the end-period price, in the $20-25 region.

Producer Hedging: Outstanding Positions



Source: Thomson Reuters GFMS

Sensitivity of the Global Hedge Book



Source: Thomson Reuters GFMS

5. Supply from Above-Ground Stocks

- ***Supply from above-ground stocks eased by 7.5% to 261.3 Moz (8,126 t) in 2012.***

- ***The fall was driven by a continued decline in government stock sales, a small drop in scrap supply plus an absence of net producer hedging.***

- ***Net government sales dropped for the second consecutive year, reaching a 15-year low of 7.4 Moz (229 t) in 2012, almost exclusively driven by the ongoing fall in disposals from Russia.***

- ***Scrap slipped by 1.6% to 253.9 Moz (7,897 t) in 2012, although the total remained the second highest basis our records.***

Total Silver Supply © Thomson Reuters GFMS/ The Silver Institute

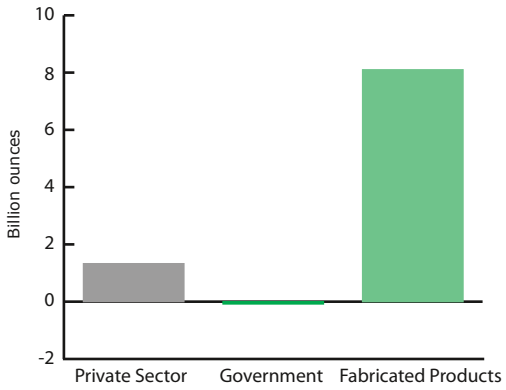
(Moz)	2010	2011	2012
Implied Net Disinvestment	-	-	-
Net Producer Hedging	50.4	12.2	-
Net Government Sales	44.2	12.0	7.4
Sub-total Bullion	**94.6**	**24.3**	**7.4**
Old Silver Scrap	228.8	258.1	253.9
Total from Above-Ground Stocks	**323.5**	**282.4**	**261.3**
Mine Production	752.7	757.0	787.0
Total Supply	**1,076.2**	**1,039.4**	**1,048.3**

Overview

The supply of silver to the market can be divided into two categories, namely flows from new mine production and flows from above-ground stocks. The latter can either be sourced from the recycling of fabricated products or from the mobilization of bullion stocks owned by private individuals or by governments. As illustrated in the accompanying table, in 2012, overall supply from above-ground stocks dropped 7.5% or 21.3 Moz (657 t) to 261.3 Moz (8,126 t). By contrast, global mine production continued to grow, for the tenth year in a row last year, as it rose by almost 30 Moz (940 t) in 2012. Above-ground stocks' contribution to total silver supply therefore eased to 25% in 2012 from 27% in 2011.

Lower supply from above-ground stocks was primarily driven by a return to producer de-hedging, lower government sales and a small fall in scrap supply. Meanwhile, consistent with the trend seen in previous years, investors remained on the demand side last year.

Changes in Above-ground Stocks (2003-2012)



Source: Thomson Reuters GFMS

Looking at each component, the recycling of fabricated products remained the largest source of supply from above-ground stocks. Following two consecutive years of strong growth, scrap supply eased by a modest 1.6% last year, although the global total remained elevated by historical standards.

As is discussed in detail on page 39, it is of note that despite a remarkable price rally in the last decade, silver scrap supply trended broadly sideways through to the late 2000s. Behind this apparent conundrum is the fact that most sources of recycled silver are a good deal less price sensitive than those, for example, for gold.

In gold's case, the bulk of fabricated products are in the form of jewelry, scrap from which is highly price sensitive due to the metal content accounting for a very high portion of the finished product's value. The same is true for silver jewelry, silverware and coins but, in this instance, the absolute value of contained metal is usually far lower. On the other hand, silver-bearing finished products in the industrial and photographic sphere tend to have a low contained metal content and value. As such, silver scrap tends to be relatively inelastic to price levels and volatility, and is mostly driven by the performance of the relevant sector as well as environmental legislation. Having said that, as the silver price breached the $20/oz mark in late 2010, scrap supply eventually posted some price elastic response over the 2010-2011 period, particularly from the jewelry and silverware sectors.

Looking at 2012, given that the silver price fell, it is not surprising that both jewelry and silverware scrap supply slipped in many markets. India was the only notable exception where rising local prices (due to significant weakness in the Indian rupee against the dollar) encouraged recycling. Industrial scrap, by contrast, remained strong, although growth slowed considerably, following a heavy increase in recycling in the previous two years. Finally, photographic scrap remained on a declining trend, as a result of the ongoing weakness in photographic fabrication demand.

Turning to net government stock sales, the total is estimated to have fallen for the second year in a row in 2012. At 7.4 Moz (229 t), net disposals were down by almost 40% from an already depressed level seen in the previous year and they represented a mere 0.7% of world silver supply in 2012. The decline once again stemmed from weaker sales from Russia. Elsewhere, sales remained broadly flat, as the bulk of these transactions were related to releases of old coins stocks from a limited number of countries.

In contrast to gold where central banks were the principle source of liquidity in the lending market, the metal used to fund producers' activities in the silver forward and derivatives market is largely sourced from privately held stocks of bullion. By implication, therefore, the net 41.5 Moz (1,289 t) decline in the producer hedgebook is understood to have also been reflected in a net increase in private stocks of silver. Taking into account elevated sales of coins and metals plus the record implied net investment figure derived for the year, this suggested that the private sector demanded rather than supplied silver bullion on a net basis in 2012.

Identifiable Bullion Stocks

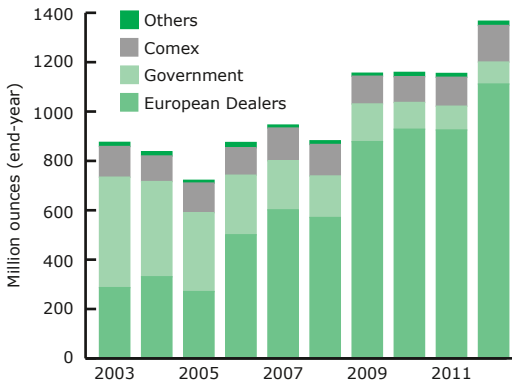
Thomson Reuters GFMS' analysis of identifiable bullion stocks includes inventories for which sufficient evidence is available to form a statistical picture. In contrast, silver bullion held in depositories on which information is not available, as well as in private investors' vaults, is excluded from our figures. Besides suggesting the existence of additional stocks of silver, this caveat has implications for the interpretation of changes in our estimates of identifiable bullion stocks. Specifically, in addition to such changes being driven by the absorption of surpluses or the filling of deficits, they could in theory be explained by metal flowing out of unidentifiable stocks and into identifiable ones or vice versa.

As illustrated in the table on the next page, in total, identifiable bullion stocks rose by 211.7 Moz (4,456 t) in 2012 to a 17-year high of 1,366.0 Moz (42,487 t) by year-end. It is of note that this increase was larger than the 194.1 Moz (6,036 t) net inflow derived by the sum of implied net investment and net producer de-hedging, less net government stock sales over the year.

Central to this is implied net investment data which aggregates investor activity in all areas. As such, the somewhat smaller figure suggested by our supply/demand analysis reflects bouts of significant selling of paper products from more speculatively driven investors in 2012. In addition, the difference could have been related to the fact that some of the bullion stocks were moved from non-identifiable sources to identifiable vaults monitored by reporting institutions.

Turning to the breakdown of identifiable bullion stocks, European dealers' inventories accounted for the bulk of

Identifiable Bullion Stocks



Source: Thomson Reuters GFMS

Bullion Stocks in Dealers' Vaults in Europe

Source: Thomson Reuters GFMS

Identifiable Bullion Stocks

(Million ounces)

	end-2011	end-2012
European Dealers	925.2	1,111.4
Comex	117.3	148.2
Government	96.5	89.1
Other Stocks	15.4	48.6
Total	**1,154.3**	**1,366.0**

Source: Thomson Reuters GFMS

Comex Silver Stocks

(Million ounces; end period)

	Q1	Q2	Q3	Q4
2009	125.4	117.6	115.4	112.4
2010	116.6	114.0	111.1	104.5
2011	105.4	98.7	108.0	117.3
2012	137.1	146.5	141.4	148.2

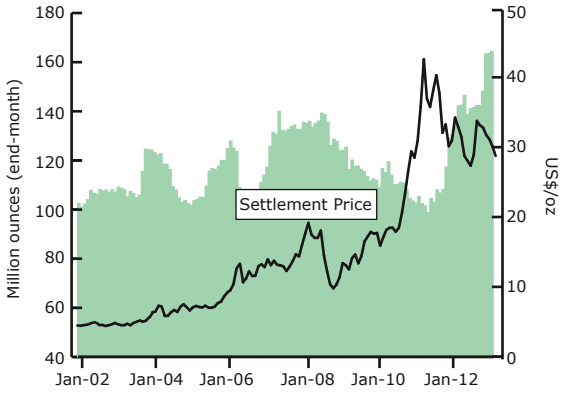
Source: Comex

the increase in 2012, reflecting ongoing investor interest in the white metal. Comex deposits and other stocks also recorded notable increases, rising by 30.9 Moz (961 t) and 33.2 Moz (1,032 t) respectively in 2012, although the latter was almost entirely due to a rapid ramp up in inventory held at the Shanghai Futures Exchange following the launch of silver futures trading in May last year. Government owned silver was the only component to record a net decline last year, with its share of total identifiable bullion stocks falling below 7% by end-2012, compared with its peak of 71% at end-1997.

European Dealers' Stocks

Since 1996, we have conducted a confidential survey of bullion stocks held in European dealers' vaults and have reported an aggregate end-year total for these in the World Silver Survey. At the end of 2012, European dealers' silver stocks amounted to a fresh all-time high of 1,111.4 Moz (34,568 t), or 186.2 Moz (5,793 t) above the level seen at end-2011.

Comex Warehouse Stocks



Source: Comex

A good portion of this increase last year was related to a major rebound in net inflows into silver ETFs (discussed in the relevant focus box in Chapter 3). Elsewhere, the 41.5 Moz (1,289 t) decline in the global producer hedgebook in 2012 also contributed to the increase in dealers' inventories. In addition, the rise in stocks should also be viewed in the context of a growing fundamental surplus in the silver market, the bulk of which has been absorbed by private and institutional investors. For instance, steady fabrication demand along with a 31% increase in local scrap supply resulted in a hefty decline in Indian bullion imports in 2012. As the country tends to source metal from dealers located in Europe, this provided an additional boost to the stock levels discussed above.

Comex Stocks

Silver stocks held at Comex depositories grew strongly in the first half of 2012, rising by almost a quarter to 146.5 Moz (4,558 t) by end-June, a level last seen in late 1997. After a modest fall over the summer, Comex stocks started to rebound strongly in the final quarter of the year, closing 2012 at 148.2 Moz (4,610 t). Further notable growth was seen in early 2013, with total inventories amounting to 164.2 Moz (5,106 t) at end-March, over 10% above the level seen at end-2012. Central to this rapid build-up in stockpiles at Comex since the start of 2012 has been softening physical demand from both industrial end users and private investors in the US market in conjunction with the ongoing strength of silver mine production. Looking at changes in individual depositories' stocks last year, increases were widespread across most of the vaults. In particular, after gaining a license for storing and taking delivery of silver at Comex in 2011, the JP Morgan vault recorded a marked increase of well over 20 Moz (620 t) in its silver deposits during 2012.

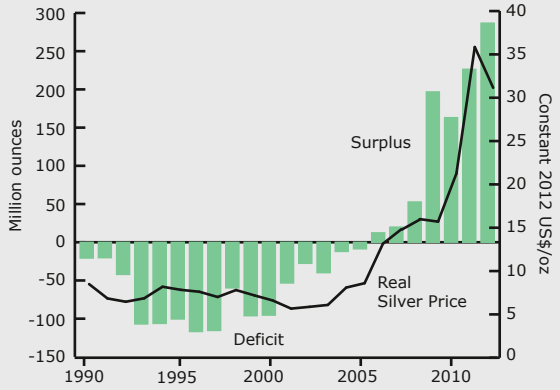
Deficits and Surpluses in the Silver Market

For the seventh year in a row, the silver market recorded a fundamental surplus in 2012, with this volume rising to a new high of 286.8 Moz (8,920 t). Here, a surplus is defined as the difference between supply from mine production plus scrap and demand from fabrication (please note, for this analysis, fabrication excludes coin minting, which instead is treated as new bullion demand). Interestingly, this growing market surplus along with continued government stock sales in recent years did not derail a marked silver rally over the same period, as the excess metal has been comfortably absorbed by private and institutional investors at rising price levels.

Behind this surge in investment were several factors. First, we should mention a rise in demand for safe haven assets, in light of extremely low or negative real interest rates in the leading economies, growing concerns over sovereign debt levels on both sides of the Atlantic and, related to this, a rising risk of currency debasement. Meanwhile, in the wake of ongoing monetary loosening by major central banks, increasing fears about future high inflation have also enhanced precious metals' appeal as a means of wealth preservation. Further support has come from the general growth in investor interest in commodities as an asset class, boosted by a weakening US dollar against most currencies for much of the last decade coupled with strong economic performances in emerging market counties, which in turn has boosted demand for raw materials.

In addition, silver's wide trading range in a far smaller and less liquid market, particularly compared with gold, has also recommended the white metal to more speculative investors. This helps to explain a spectacular rise in buy-side interest in silver from late 2010 through to April 2011. Despite several bouts of heavy long liquidation thereafter, the silver market saw investors, on balance, remain significant net buyers, which kept the price floor elevated by historical standards over the course of last year.

Silver Deficits and Surpluses



Source: Thomson Reuters GFMS

Government Stocks

Thomson Reuters GFMS' estimates for changes in silver bullion stocks held by governments are largely based on private information we have received in the course of our field research, as there is very little publicly available data on levels of and changes in government silver stocks. This is a particularly important caveat when it comes to the outstanding level of government stocks where our numbers are somewhat at the conservative end of the spectrum. Nevertheless, we are far more confident when it comes to measuring the annual changes in stocks, as shown in our government sales data.

Following a considerable fall in 2011, net government sales are estimated to have dropped by another hefty 39% to 7.4 Moz (229 t) in 2012, significantly lower than the level seen in the previous decade when disposals averaged 54.0 Moz (1,708 t) per annum over 2001-10 period. At end-2012, total government silver stocks amounted to just under 90 Moz (2,800 t).

Similar to 2011, last year's decline was primarily driven by Russia where disposals fell to a decade low. In part, this is simply due to the fact that the country's silver stocks had already been reduced considerably after several years of heavy sales. For instance, from 2004 to 2010, gross sales from the country amounted to over 200 Moz (6,200 t). That said, given the high degree of uncertainty over the size of remaining state stocks, it is probably unwise to rule out completely the return to a higher level of Russian sales in the future.

Outside Russia, interest in offloading silver bullion stocks remained tame in 2012, as the majority of total sales were believed to have been related to disposals of old coin stocks by a handful of countries.

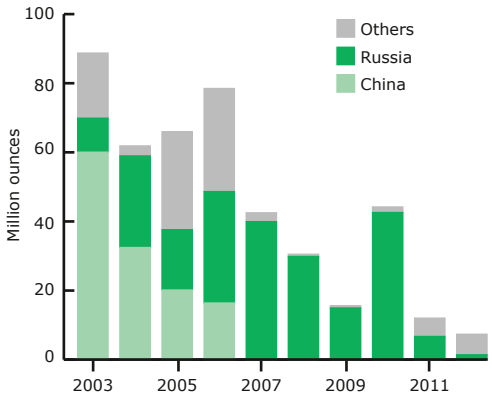
Finally, looking at China and India, once again, both countries were absent from the market last year. As far as China is concerned, it is our understanding that, following several years of heavy sales, its silver stocks have already been reduced significantly from "excessive" levels, and remaining stocks will play a small part in diversifying its reserves portfolio away from US dollars.

Other Stocks

In addition to the above-mentioned stocks, we also track those registered on the Tokyo Commodity Exchange, the CME Group (previously the Chicago Board of Trade), the Shanghai Futures Exchange (SHFE) and Japanese trade stocks, as reported by the country's Ministry of Economy, Trade and Industry. Due to their only accounting for a small portion of the overall figure, we have aggregated these under the "Other Stocks" category in the chart on page 36 and the table on page 37.

These stocks more than tripled in 2012 to total 48.6 Moz (1,510 t) by year-end. Nevertheless, this massive increase is almost exclusively driven by a rapid rise in silver inventory held at the SHFE after the exchange launched trading of silver futures contracts in May 2012.

Net Government Stock Sales



Source: Thomson Reuters GFMS

Scrap

• ***A drop in western supplies of recycled jewelry and silverware, combined with further falls from photographic sources drove scrap 1.6% lower last year.***

Following two years of considerable gains in scrap (where growth averaged 14%), recycling levels last year eased back, slipping 1.6% to 253.9 Moz (7,897 t). Despite the modest fall, scrap flows remained at near record levels as they achieved the second highest volume ever seen basis our records, with its share of total supply at 24% standing above the average of 22% seen over the previous decade. That said, it should be noted that last year's total was augmented by a near 30% jump in supply from both India and Germany; removing these anomalies reveals a more substantive drop for the remainder of 7.1% in 2012.

Last year, the main drivers that facilitated the jump in scrap supply in recent years remained in play, with further gains (albeit modest) noted from industrial sources. This has been increasing steadily over time, enjoying a period of near uninterrupted growth during the mid to late 2000s due to tighter environmental legislation and the rapidly growing pool of above-ground products. However, we believe higher prices have also contributed in recent years, in a segment which was previously thought to be largely price inelastic, as they encouraged greater adherence to waste recycling regulations and as they made economic some more marginal areas of recovery.

Some of these increased flows have been driven by gains in electronic scrap (E-scrap) and on occasion the recycling of spent ethylene oxide (EO) catalysts, which also accounts for a large slice of industrial silver scrap. This latter sector has seen a mixed outcome in recent years, with a post-recession surge in 2010 (which benefited from change outs postponed from the previous year) giving way to a reduction in recycling in 2011 and a mixed performance last year.

While it appears as though any gains in global industrial silver scrap last year were only at the margin, one area that did see a notable rise in 2012 was in the recovery of silver from old silverware and jewelry. A surge in recycling from this segment explains much of the rapid

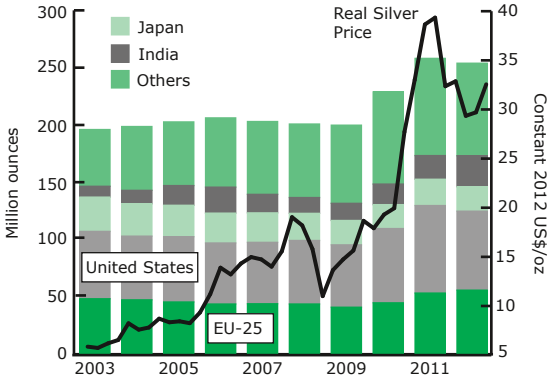
growth in the last couple of years, led by a surge in western market supplies. This comfortably exceeded the growth in recycling from the traditionally price sensitive markets, a somewhat counterintuitive outcome given the normal price elastic response seen in the latter and the far higher markup structure seen in the industrialized world. The increase in western recycling was due to two main factors. First, an increase in collection points for old silver (a benefit of the rapid expansion of outlets dealing in scrap gold), and, second, the combined impact of elevated metal prices and consumers looking at means to generate cash in an anemic economic environment.

Last year, however, this supply from parts of the western world (chiefly the United States) declined notably as much of the available 'close to market' items had already been recycled during the record price levels seen in 2011. Partly offsetting these falls was a surge in recycling of silver items from India, where a weaker domestic currency saw near record silver prices achieved, encouraging a wave of consumer liquidations, especially in the fourth quarter.

Perhaps surprisingly, the recovery from old photographic materials, which up until the late 2000's was the largest contributor to scrap supply, was only moderately lower in 2012, with the steady flow of old X-ray film offsetting a significant drop in the treatment of liquids and consumer products. Importantly, the rate of X-ray recycling is one area that remains completely price inelastic as their release to the market is often driven by health regulations which control the tenure or holding of archived X-rays.

European silver scrap defied the global trend of a 1.6% decline as it grew by 4.8% to a record (basis our series) of 55.9 Moz (1,739 t). Support for a decent rise comes from reports that several refineries raised or were working at full capacity, and there is little evidence, for most, that this was due to their taking in more mine production. However, we should add a note of caution: a substantial and possibly higher percentage of metal recovered was from material imported from outside of Europe, and scrap is allocated by country of generation, not of refining. With that in mind, there do look to have been gains in locally generated industrial scrap. One such area within that is electronic scrap, where refining capacities have risen notably. The contribution to our scrap number would not have grown exactly in tandem, however, as yields continue to fall and imports rose.

World Scrap Supply



Source: Thomson Reuters GFMS

The picture across the continent and within the various other source areas, however, was far from uniform. For example, some countries saw a marked rise in coin scrap as the value of the metal content began to exceed the face value. However, other countries saw notable losses in this category as 2011's price spike looks to have teased out the bulk of near market supplies. This is suggested by secondary market coin dealers in some instances offering better margins than refiners, even though investment demand (primary market) fell.

The contribution from photographic scrap also fell, in part as the silver yield of old X-rays continues to slide. However, the scale of the drop does not look as marked as in 2011, although the picture is complicated by timing mismatches between film collection and actual refining. A steeper fall looks to have been recorded in jewelry and silverware, largely as a result of near market stock depletion, a driver suggested by many countries seeing the drop in receipts from this source accelerate as the year progressed. That said, volumes were sustained by higher reported receipts of lower grade silverware; this would typically comprise silver bonded or even plated pieces, often being disposed of since they were no longer wanted by hotels, clubs and so forth, even if the value of the contained silver was limited.

Old silver scrap supply in the **United States** is estimated to have declined by almost 10% last year, chiefly as a result of the drop in the contribution from high grade scrap (mainly jewelry and silverware). This in turn was largely down to the depletion of near-market stocks and a drop in distress selling. We would ascribe less importance to the 11% drop in the (annual average) silver price as

Table 4 - Supply of Silver from the Recycling of Old Scrap (million ounces)

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Europe										
Germany	19.0	19.2	17.6	15.1	15.1	14.6	12.6	14.9	16.7	21.6
Italy	3.6	3.3	4.3	5.5	5.6	5.9	5.8	6.5	9.7	9.9
UK & Ireland	13.0	12.4	11.6	10.9	11.2	10.9	10.2	9.6	11.3	9.8
France	4.1	3.8	4.1	4.5	4.6	5.1	5.5	6.2	7.0	5.9
Spain	0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.7	1.3	1.3
Netherlands	1.4	1.4	1.4	1.3	1.1	1.1	1.0	1.1	1.2	1.2
Austria	1.5	1.6	1.3	1.3	1.2	1.2	1.1	1.1	1.2	1.2
Sweden	1.0	1.0	1.0	0.9	0.9	0.9	0.8	0.8	0.9	0.9
Belgium	0.6	0.6	0.7	0.6	0.6	0.6	0.6	0.6	0.7	0.7
Denmark	0.5	0.6	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Portugal	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
Czech & Slovak Republic	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
Finland	0.4	0.4	0.4	0.4	0.3	0.3	0.3	0.3	0.4	0.4
Norway	0.5	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Switzerland	0.3	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.2
Other Countries	1.1	1.1	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Total Europe	**48.4**	**47.5**	**45.6**	**43.8**	**44.0**	**43.8**	**41.0**	**44.9**	**53.4**	**55.9**
North America										
United States	58.8	55.6	57.0	53.2	53.6	55.4	54.4	64.8	76.4	68.9
Mexico	1.8	1.9	2.1	2.3	2.7	3.1	3.2	4.0	4.5	4.4
Canada	1.5	1.4	1.5	1.4	1.6	1.7	1.5	1.6	1.8	1.6
Total North America	**62.1**	**58.9**	**60.5**	**57.0**	**57.9**	**60.2**	**59.1**	**70.4**	**82.7**	**74.9**
Latin America										
Brazil	1.2	1.0	1.0	1.0	1.0	1.0	1.1	1.4	1.6	1.6
Argentina	0.6	0.6	0.6	0.8	0.6	0.5	0.4	0.6	0.7	0.7
Chile	0.4	0.4	0.5	0.5	0.5	0.5	0.5	0.6	0.7	0.6
Other Countries	0.8	0.8	0.9	1.1	1.0	1.0	1.0	1.3	1.6	1.5
Total Latin America	**3.0**	**2.8**	**3.1**	**3.4**	**3.2**	**3.0**	**2.9**	**3.8**	**4.6**	**4.4**
Middle East										
Saudi Arabia	0.7	1.3	1.6	1.8	1.9	1.9	1.9	2.2	2.3	2.2
Turkey	1.7	1.5	1.3	1.1	1.0	1.1	1.1	1.0	1.2	1.0
Egypt	1.1	1.4	1.4	1.5	1.5	1.7	1.8	2.0	0.9	0.8
Oman	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Other Countries	0.4	0.5	0.4	0.5	0.5	0.5	0.5	0.6	0.7	0.6
Total Middle East	**4.1**	**4.8**	**4.9**	**5.1**	**5.0**	**5.4**	**5.5**	**6.1**	**5.3**	**4.8**
Indian Sub-Continent										
India	9.5	11.7	17.2	22.7	16.1	13.8	15.0	17.9	20.6	27.1
Other Countries	0.5	0.5	0.5	0.5	0.6	0.6	0.6	0.8	1.0	1.0
Total Indian Sub-Cont.	**9.9**	**12.2**	**17.7**	**23.2**	**16.7**	**14.4**	**15.6**	**18.8**	**21.6**	**28.1**
East Asia										
China	13.1	15.2	17.5	20.4	22.5	22.7	25.3	29.2	31.9	30.9
Japan	29.9	28.3	27.4	26.0	25.7	23.7	21.3	20.9	23.0	21.3
South Korea	7.1	7.2	7.3	7.7	7.8	7.7	8.4	9.4	10.0	9.1
Taiwan	2.5	2.7	2.7	2.8	2.9	3.1	3.6	4.1	4.5	4.3
Thailand	2.1	2.4	2.2	2.6	2.7	2.9	3.1	3.7	3.7	3.2
Singapore	0.4	0.4	0.5	0.5	0.5	0.5	0.5	0.5	0.6	0.5
Hong Kong	0.4	0.4	0.4	0.4	0.5	0.5	0.5	0.5	0.5	0.5
Indonesia	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.4

Table 4 - Supply of Silver from the Recycling of Old Scrap (million ounces)

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Vietnam	0.3	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.4
Philippines	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Other Countries	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Total East Asia	**56.4**	**57.7**	**59.0**	**61.7**	**63.8**	**62.2**	**63.7**	**69.6**	**75.4**	**71.0**
Africa										
Morocco	0.5	1.3	0.6	0.9	0.9	0.9	1.0	1.0	1.1	1.1
Other Countries	0.5	0.6	0.6	0.6	0.6	0.6	0.6	0.7	0.7	0.7
Total Africa	**1.1**	**1.8**	**1.2**	**1.5**	**1.5**	**1.5**	**1.6**	**1.7**	**1.8**	**1.8**
Oceania										
Australia	2.1	2.0	1.8	1.7	1.7	1.6	1.6	1.6	1.6	1.4
Total Oceania	**2.1**	**2.0**	**1.8**	**1.7**	**1.7**	**1.6**	**1.6**	**1.6**	**1.6**	**1.4**
CIS										
CIS	9.0	10.9	9.0	8.9	9.3	8.7	8.8	12.1	11.7	11.5
Total CIS	**9.0**	**10.9**	**9.0**	**8.9**	**9.3**	**8.7**	**8.8**	**12.1**	**11.7**	**11.5**
World Total	**196.0**	**198.7**	**202.7**	**206.2**	**203.0**	**200.8**	**199.8**	**228.8**	**258.1**	**253.9**

gold scrap (overwhelmingly jewelry-sourced) in 2012 fell by a hefty 17%, despite a 6% rise in that metal's price. There was also another drop in the recycling of photographic scrap.

The contribution from industrial scrap was mixed. On the one hand, the recovery of silver from electronic scrap appears on balance to have fallen last year, as gross volumes remain restrained and as yields have continued to fall; new generation cellphones, for instance, were noted to have a sharply lower silver content. On the other hand, the contribution from the change-out of ethylene-oxide catalysts (EOs) was reportedly strong, especially during the first half.

In **India**, scrap supply surged by 31% to the highest in our records of 27.1 Moz (842 t) in 2012. It is of note that the bulk of these gains occurred in the final quarter of 2012 when the average local silver price hit an all-time high of Rs. 61,200/kg. Unlike gold, silver scrap supply was not just restricted to the carat jewelry sector; information received suggests that silver recovered from industrial products also jumped last year in response to a marked price rally.

Last year, silver scrap across East Asia fell by 6% to 71.0 Moz (2,208 t), the first decline since the recessionary impact of 2008. Despite the sizable drop, scrap supply for the region remained the second highest on record as strong growth in industrial fabrication (chiefly China) in recent years has delivered an uptick in the level of recycling.

Falls were recorded across all key markets, with **China**, as the second largest market globally, retreating (albeit only at the margin by 3%) for the first time in over a decade. Economic factors were largely to blame for the fall as softer end user demand, a function of a weaker domestic and global economic environment, extended the life cycle of silver contained in EO catalysts as well as dampened consumer sentiment to buy new electrical and electronic goods, therefore limiting the supply of old appliances to the recycling supply chain. A drop in industrial recycling also accounted for the sizable fall in both **South Korea** and **Taiwan** which declined by 9% and 5% respectively. Elsewhere, a weaker silver price explains the drop in both **Thailand** and **Indonesian** scrap flows, with consumers waiting for a return to higher prices before recycling

Scrap supply in **Japan** last year eased by 7% to 21.3 Moz (662 t). The decline was largely due to notably weaker electronics scrap, as notably weaker consumer sentiment, which discouraged the scrapping of old electronics and electrical products. By contrast, silver recovered from old X-ray films remained steady in 2012, thanks to regulations which dictate statutory obligations for hospitals to archive X-ray films.

6. Silver Bullion Trade

- ***Net UK bullion imports jumped to around 160 Moz (4,975 t), mainly due to increased inflows from Germany and a drop in exports to India, while Swiss shipments to India also declined.***

- ***North American bullion imports fell notably, with imports from Poland the chief contributor, as KGHM Polska Miedź re-routed its refined silver production to European destinations.***

- ***Indian silver bullion imports declined by almost 50%, driven by lower price expectations and, more importantly, increased domestic supply.***

- ***Continued sluggish domestic industrial demand led to another year of declines in bullion imports across much of East Asia (excluding China), while Thai inflows fell on persistently soft jewelry offtake.***

Europe

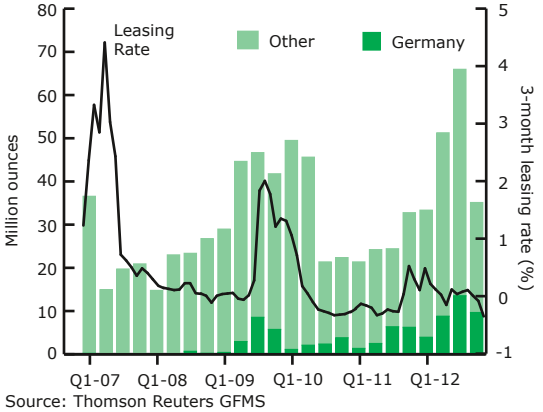
Europe traditionally is one of the world's main deficit regions as fabrication demand exceeds mine supply and locally generated scrap. Last year, however, this deficit was less marked; fabrication fell 14% to 126.7 Moz (3,940 t) while mine and scrap supply increased by 3% and 5% respectively to 111.8 Moz (3,477 t) combined, which cut the fundamental deficit to only around 15 Moz (460 t). Part of this resultant gap was covered by imported scrap, but that still left room for imports of refined bullion, doré and concentrates.

Flows of silver bullion into Europe mainly go to the London terminal market, whereas doré and concentrates chiefly find their way into Switzerland, which houses some of the world's largest refineries. Combined, this influx of material can exceed the apparent deficit, which in combination with sizable London and Zürich-based stocks means European exports can also prove substantial.

In 2012, **UK** exports of bullion fell by a considerable 59% to 37.0 Moz (1,151 t), mainly driven by a drop in shipments to India. (Shipments to India fell by 62% to 21.1 Moz (656 t), chiefly as a result of higher scrap and new import duties in that destination.) Exports to North America also saw a strong decline of almost 80% to 6.0 Moz (187 t), driven by a considerable drop in material requirements by the United States and higher US imports from Latin America.

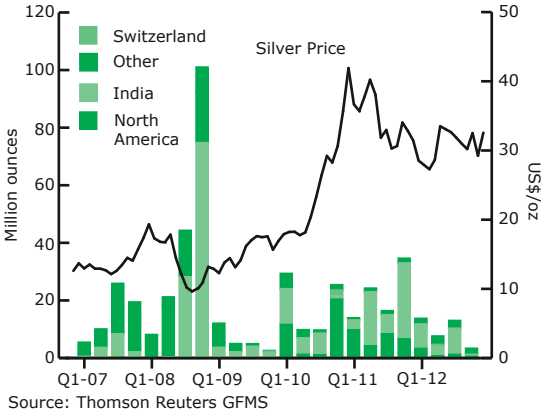
UK bullion imports registered a considerable 80% increase to 197.8 Moz (6,153 t) in 2012, predominantly driven by Germany and Taiwan. Inbound material from the former soared by 121% to 38.2 Moz (1,188 t), mainly due to a combination of lower domestic fabrication demand and increased scrap supply, motivating suppliers to ship their surplus material to the London terminal market. The second largest origin, Poland, recorded a still substantial rise of 33% to 28.5 Moz (886 t), which in turn was chiefly due to exported mine production going to the United Kingdom, rather than the United States. This means that net UK imports in 2012 at around 160 Moz (4,975 t) were eight times larger than in 2011.

UK Bullion Imports



Source: Thomson Reuters GFMS

UK Bullion Exports



Source: Thomson Reuters GFMS

As reported by country of origin, **Swiss** bullion imports in 2012 rose by 23% to 66.9 Moz (2,080 t). Most of the increase came from countries whose metal is likely to primarily be mine output, such as Chile, Kazakhstan and Mexico, which combined contributed to around 60% of the total increase. Others contributing to the rise included Belgium and to a lesser extent Italy, suggesting higher volumes of scrap derived supply. As not all origins report outflows, we believe that the true level of imports would have been somewhat higher, with the year-on-year increase perhaps a little stronger.

Swiss exports, as reported by country of origin, fell a considerable 31% to 30.4 Moz (946 t), predominantly driven by India, as flows recorded to that destination declined by 87% to 2.4 Moz (75 t). Last year, India changed its custom duty structure which motivated investors to bring forward some of their material requirements into the prior year. On top of that, the destination also saw higher mine supply and scrap in combination with periods of dishoarding. Exports to the United Kingdom in contrast rose a reported 3.7 Moz (114 t). However, we are led to believe that this figure (and therefore the above assembled Swiss total) understates the true scale of these flows.

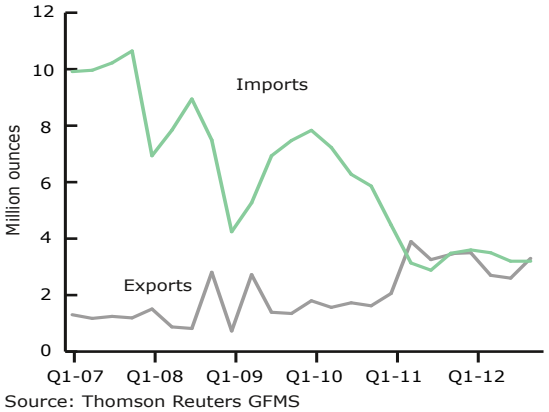
Official **German** figures showed bullion imports falling by one-third in 2012 to around 13 Moz (400 t). However, that number is greatly understated due to data suppression for certain origins. If we look at the data as supplied on exports to Germany, true German imports would be far higher at around 35 Moz (1,100 t), although they still fell (by around a quarter). That in turn reflects Germany's 17% drop in total fabrication on top of an almost 30% increase in scrap supply.

Germany's export figures showed a modest 1% drop in 2012 to 54.1 Moz (1,683 t). However, when we add data for those destinations that record inflows from Germany which are missing from the latter's statistics, true exports would have been around 58 Moz (1,800 t), but the year-on-year decline would have been a fraction greater. According to this analysis, net German exports rose by around 60% to approximately 23 Moz (720 t), the vast bulk of which was shipped to the United Kingdom, with fair sized volumes also going to Austria and Switzerland.

Silver bullion imports into **Italy** fell a modest 3% last year to 13.7 Moz (426 t), while exports also fell by 3% (to 12.2 Moz or 380 t), mainly due to a drop in US-bound shipments. These results meant net imports of just 1.5 Moz (46 t), which were clearly insufficient to cover fabrication demand of 26.3 Moz (817 t). The gap was, as last year, filled by domestically generated scrap and sizeable volumes of imported scrap. Since these two combined have grown larger than bullion imports, changes in the latter now provide little guide to what may be happening as regards domestic fabrication demand.

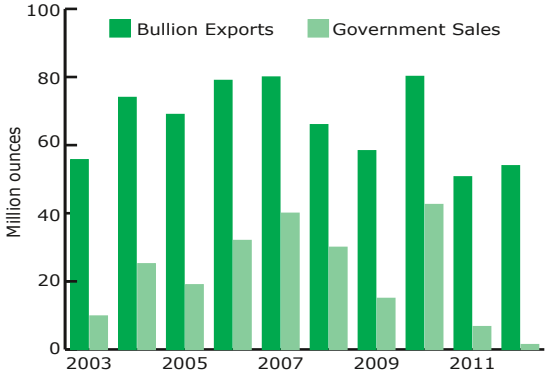
Turning to the **Commonwealth of Independent States** (CIS), estimates point to a modest rise of 6% in silver bullion exports last year. The increase was largely the result of notably higher exports from Kazakhstan, especially to Switzerland and the United Kingdom. In contrast, Russian figures show a marked decline in its bullion exports, chiefly due to considerably lower shipments to the United Kingdom, United States and India. Nevertheless, healthy gains elsewhere in the region helped to counter the Russian decline and bring about the above overall rise.

Official Italian Bullion Imports & Exports



Source: Thomson Reuters GFMS

CIS Bullion Exports & Russian Government Sales



Source: Thomson Reuters GFMS

The Americas

During 2012, silver bullion imports into the **United States** fell by an aggregate 28.7 Moz (892 t). This represented a contraction of 14% from the record levels of 210.8 Moz (6,555 t) witnessed in 2011. The primary reasons behind the decline was a drop in silver fabrication demand, which fell by 8% to total 182.6 Moz (5,678 t) - a second consecutive year of decline, and a re-routing of Polish metal to London.

In 2011, the number of countries shipping metal to the United States grew markedly on the back of higher fabrication and the absence of shipments from the lead/zinc smelter, La Oroya, in Peru. This resulted in a general shortage of loco-United States silver in high purity form to feed demand. However, in 2012 this situation unwound somewhat; additional volumes were supplied from Mexico, up 14% and partially reflecting additional shipments of mine doré, while imports from Peru increased by 2.5 Moz (78 t). The latter development stemmed from the restart of La Oroya after a three year hiatus in operations. The combination of these factors saw a near elimination of imports from Germany, South Korea, Italy, Russia and Kazakhstan, with their decline totaling 20.4 Moz (635 t).

Furthermore, 2012 saw a similar drop in imports from Poland, which fell by 21.1 Moz (655 t) to a paltry 1.2 Moz (37 t), as KGHM Polska Miedź, one of the largest global miner/refiners of silver, re-routed sales of metallic silver from the United States to Europe, with a large portion destined for London. Over 2012 and early 2013, the company entered into European contracts for almost one year's worth of its annual silver supply, approximately 38.0 Moz (1,200 t).

In **Canada**, the story was largely similar, as imports also fell from the record high seen in 2011. The drop stood at 36%, or 17.5 Moz (971 t) and was partly the result of lower industrial fabrication. The main cut to imports was from Poland, seeing a fall of 14.4 Moz (447 t). However, with Canadian exports to the United States also down sharply, by 34%, this could represent a reduction in the amount of European metal imported through Canada yet ultimately destined for the US market. Alongside gold exports, Canadian exports of silver to the United Kingdom also rose last year, after a three year depression, by 5.4 Moz (168 t).

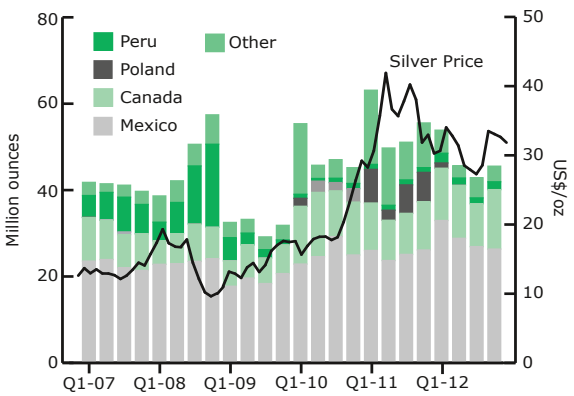
Chilean exports to Canada and the United States fell in 2012, but with a concurrent rise in exports to Switzerland, this represented a re-routing of the country's silver doré for refining.

Middle East and Indian Sub-Continent

Silver bullion imports into the **United Arab Emirates** (UAE) edged further down last year from 2011's already modest volumes. Imports from Russia were notably weaker, while imports from Hong Kong fell by almost a third. Bullion imports from Switzerland were also markedly weaker as shipments from this key entrepôt were often shipped directly to India rather than being vaulted or transshipped via Dubai. Despite the sharp drop in Indian demand last year, shipments to this key market still dominated export flows out of the UAE. However, the drop in regional demand saw flows to Zurich jump substantially, particularly at the start of the year and flows to Nepal also recorded healthy gains.

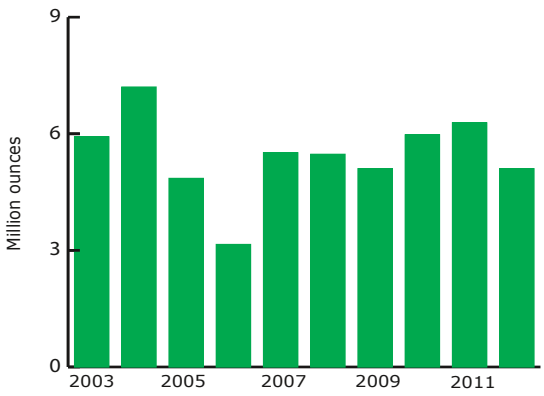
Being home now to three LBMA-accredited refineries, **Turkey** is rapidly becoming a major recipient for inflows

US Bullion Imports



Source: Thomson Reuters GFMS

Dubai Bullion Imports



Source: Thomson Reuters GFMS

of mine production. Last year, we estimate bullion imports (a combination of fine silver, scrap, and mined doré) surged to a six-year high of almost 6.1 Moz (190 t), a year-on-year increase of almost 60%. Imports were dominated by flows from the UAE (at almost half of the total), with flows from this market rising by over 40% last year. Inflows were also boosted by a material rise in supply from Slovakia, Egypt, and Morocco, with the latter increasing more than three-fold. Turning to exports, these rose by 8% last year to an estimated 6.8 Moz (212 t), dominated (at over 55%) by large bar shipments to Switzerland, with these flows jumping by almost a third. Direct shipments to India increased by 36% to 1.5 Moz (46 t), while exports to the UAE fell sharply.

Indian bullion imports roughly halved to 61.1 Moz (1,900 t) last year, their lowest level in three years. The decline has been primarily attributed to the imposition of an ad valorem customs duty of 6% as against a fixed rate of Rs. 1,500/kg that prevailed before January 16th 2012. With the ad valorem structure, stock piling was restricted as any downside from the purchase levels increased the risk on the duty that was already paid out. Another reason was supply-side factors with a record high for both scrap as well as silver mine production.

Looking at shipments from the various origins, greater China (China, Hong Kong and Taiwan) continued to be the largest regional supplier, accounting for over 30% of the total, but this share was lower than the 2010 result of more than 50%. This was followed by United Kingdom (18%) and South Korea (14%). South Korea and Belgium stood out last year as their exports to India jumped by 330% and 400% respectively, although that was primarily due to starting from a low base. Russia, which had been a major supplier in 2011, saw its supply

Indian Bullion Imports

Moz	2008	2009	2010	2011	2012
OGL^	160.3	40.1	95.7	130.0	58.9
Others**	2.0	1.2	1.8	1.4	2.2
Total Imports	**162.3**	**41.3**	**97.4**	**131.4**	**61.1**
Local Premium*	5%	5%	8%	5%	4%

^Open general licence

* average percentage above London price at the official exchange rate (excluding all local duties and taxes)

** includes Direct Imports, Non-Resident Indians, Special Import Licence, and Replenishment Imports (i.e. imports of silver bullion for manufacture and re-export).

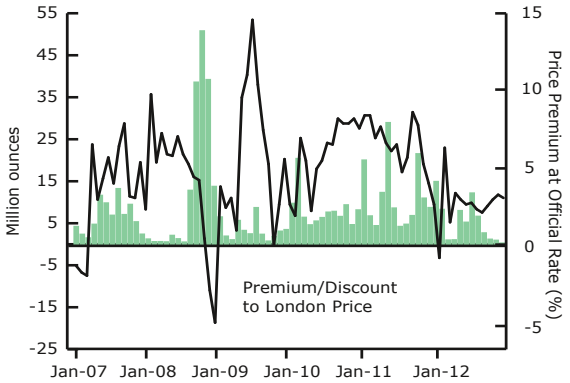
Source: Thomson Reuters GFMS

to India drop by more than 70%. A not dissimilar change related to Switzerland as its exports declined by more than 80%.

The broad trend in imports reflected investors' price expectations. Imports in January 2012 were up by more than 70% from December 2011 on expectations of an import duty hike, which resulted in higher forward premiums. After the duty was raised on January 16th, imports slowed and weakness persisted through to March. This was partly down to the heavy disinvestment that emerged by the end of the first quarter as prices gained by more than 10% in two months.

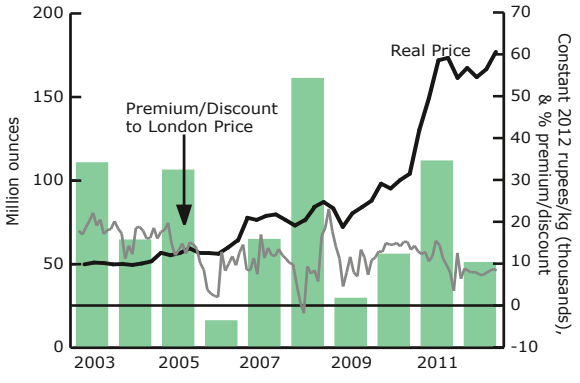
Investment revived in April but volatile prices with a weak price trend during May meant uncertainty over returns and this restricted imports during the rest of the second quarter. However, in July as prices approached the January lows, demand revived leading to almost 12.3 Moz (380 t) of imports. The marked price rally which then followed through until September revived investor interest, but the period saw stocks frequently exchange

Gross Monthly Indian Bullion Imports



Source: Thomson Reuters GFMS

Indian Bullion Imports



Source: Thomson Reuters GFMS

hands and this in turn kept fresh import demand tepid. This was also accentuated by underlying growth in mine output and more specifically a surge in scrap sales. Sustained prices above Rs. 60,000/kg during September and October led to the emergence of a consensus that the rally could be sustained until the Rs. 75,000/kg mark. However, that failed to result in additional imports, leading to gross imports of a mere 2.5 Moz (76 t) in the fourth quarter.

The supply from domestic miner and refiner Hindustan Zinc Ltd in 2012 reached 12.2 Moz (379 t), up by 80% from 2011. Its supply rose to a record in the fourth quarter, touching 3.8 Moz (117 t). Another source of bullion supply was silver as a by-product from the refining of copper concentrates, and this is estimated to have reached 1.7 Moz (52 t). Looking forward, we are likely to see a good amount of additional supply from doré coming from the MMTC-PAMP refinery, which is reported to have a capacity of 19.3 Moz (600 t) of silver.

East Asia

China's imports of silver discussed here consist of inflows of metal derived from base metal concentrates as well as the import of silver in bullion form. Nearly 92% of all the silver arriving in China in 2012 was in the form of concentrates, the import of which rose last year by 19% to a new historical high of 162.6 Moz (5,057 t) of contained silver. This augmented level of concentrates imports was in line with a long term upward trend that has seen volumes swell five-fold over the last decade. Growth in base metal demand as well as a growing refining capacity were the key drivers behind these higher imports.

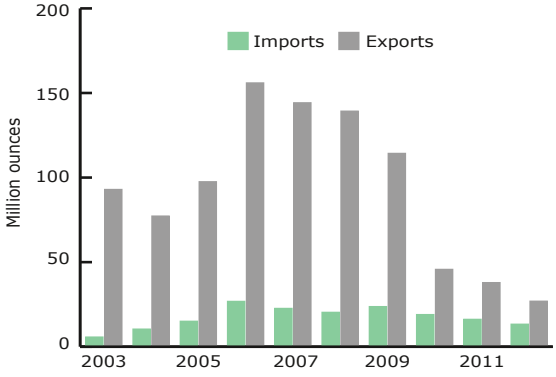
Imports of silver bullion rose last year by 17% to a calculated volume of around 6 Moz (190 t). Imports from Switzerland contributed around a third of the total, with Australia and Taiwan the next two largest origins.

Looking at bullion exports, official trade statistics reveal a continuation of a downward trend which took these outflows from a high of 144.2 Moz (4,484 t) in 2007 to 26.9 Moz (838 t) in gross weight terms last year. These export volumes in the past, particularly between 2006 and 2009 when average exports exceeded 128 Moz (4,000 t), were likely to have been inflated by round tripping between China and Hong Kong (designed to claim the VAT rebate on exports from China). This appeared to abate last year due to the absence of export tax rebates and weaker silver prices. Not surprisingly, Hong Kong was the main destination, with 80% of the metal shipped there, although there was also a notable increase in the flow to Thailand and a near tenfold growth in shipments to Taiwan (if from a low base). The main reason behind the decline in exports from China was a reduction in the premium between the Shanghai Gold Exchange and Shanghai Futures Exchange and international markets, making exports less attractive. In addition, the above lack of a VAT refund and a solid domestic market also inhibited the outflow from China.

According to official import statistics, silver bullion imports into **Hong Kong** fell by over a fifth last year to around 29 Moz (930 t). These were sourced overwhelmingly from the Chinese mainland, and while still constituting over half of total supply, fell 50% to just over 16 Moz (500 t), a far cry from the level of around 128 Moz (4,400 t) witnessed in 2006. The largest origin outside China remained South Korea, which saw deliveries surge to a little over 8 Moz (260 t), accounting for almost a third of total imports. Flows from Kazakhstan and Japan also recorded material gains. On the other hand, bullion inflows from Switzerland, Taiwan, and the United States all recorded notable falls.

Turning to exports, these declined by a tenth last year, chiefly as bullion flows to India shrunk by almost 60% in 2012. In contrast, deliveries to Taiwan increased by 18% last year, which meant it surpassed India as the principal home for exported silver. Elsewhere, shipments to Japan were significantly stronger, while flows to the United Kingdom and Thailand declined.

Chinese Official Bullion Imports and Exports



Source: Thomson Reuters GFMS

Singapore's imports last year are thought to have fallen by 12% to an estimated 3.8 Moz (119 t). The bulk, at around 60% of the total, was derived from inflows from South Korea, which surged almost 75% to over 2.3 Moz (73 t). This impressive rise in shipments partly offset substantive falls elsewhere, most notably from China/ Hong Kong, Germany, and the United States. Bullion exports were dominated by flows to India (at over half the total), although shipments to this market dropped by almost a tenth. In contrast, flows to Thailand recorded a material rise.

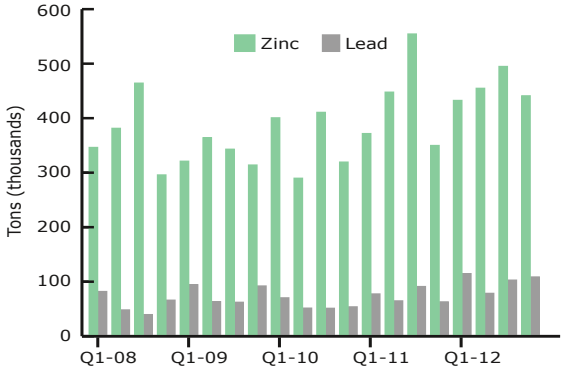
Last year, silver bullion imports into **Thailand** fell by over one-fifth to their lowest level in our data series which dates back more than 20 years. According to Thomson Reuters GFMS' analysis, imports slipped to under 10 Moz (300 t), primarily as a result of weaker demand from the jewelry fabrication sector, which suffered further attrition in export orders from the industrialized world as the uncertain economic environment curtailed sales.

Combined imports from Hong Kong and the Chinese mainland still dominated bullion imports (at over 50% of the total), although volumes from this key source declined by over 12% last year. Shipments from Switzerland jumped by almost 60% to over 3.2 Moz (100 t), while shipments from Indonesia surged from trivial levels in 2011 to over 0.7 Moz (22 t) last year. Inflows from South Korea were also stronger, increasing by 15%, while shipments from Taiwan slumped by 90% and Germany's contribution declined by 10% to an estimated 2.4 Moz (75 t).

Following the peak of 9.2 Moz (286 t) in 2006, **South Korean** imports continued their downward trend, registering a 44% drop last year to around 1 Moz (33 t). The decline was partly due to weakening industrial demand at home and abroad, as well as increasing domestic production (domestic silver production from base metal concentrates registered a 19% rise last year). Imports from Kazakhstan dominated the inflow (91% of the total), while shipments from China fell heavily. Exports, on the other hand, posted yet another rise (one of 21%), again in line with a decade long trend. South Korea exported 75.1 Moz (2,336 t) of bullion last year, with a drop in exports to Japan more than countered by significant growth in shipments to the United Kingdom, India and Hong Kong.

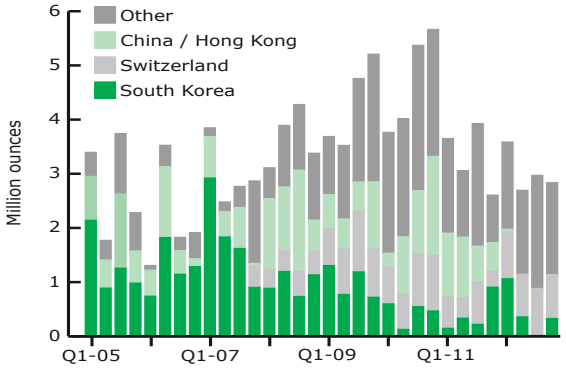
Japan's imports of silver bullion suffered a 12% decline to reach 50.2 Moz (1,562 t). As for their progress during the year, a weak first quarter for the inflow of metal was followed by a sharp rise in the second quarter, but the country then saw a drop in the second half of the year as a gloomy economic backdrop abroad and weakening domestic demand impacted imports. Turning to exports, as a result of weaker offtake in the domestic and foreign industrial markets, there was a significant (over 90%) jump in the outflow of bullion to 10.8 Moz (347 t). Most importantly, following a three year pause, exports to the United Kingdom resumed, with the London silver market absorbing almost 90% of the total outflow from Japan last year.

Korean Lead and Zinc Concentrate Imports



Source: WBMS

Thai Bullion Imports



Source: Thomson Reuters GFMS

7. Fabrication Demand

- ***World silver fabrication declined 7% last year to a three-year low of 846.8 Moz (26,339 t).***

- ***Every category of silver fabrication declined in 2012, with the greatest falls in percentage terms seen in photography and coin minting.***

- ***Industrial offtake retreated for the second year in succession, slipping 4% to 465.9 Moz (14,490 t), as a result of the fragile economic environment, together with further substitution and thrifting.***

- ***The modest 0.5% drop in global jewelry offtake owed much to further weakness in western consumption, with these declines offsetting gains from within the developing world.***

- ***Silverware fabrication fell by 7.1% last year, with gains in China overcome by losses in almost all other markets.***

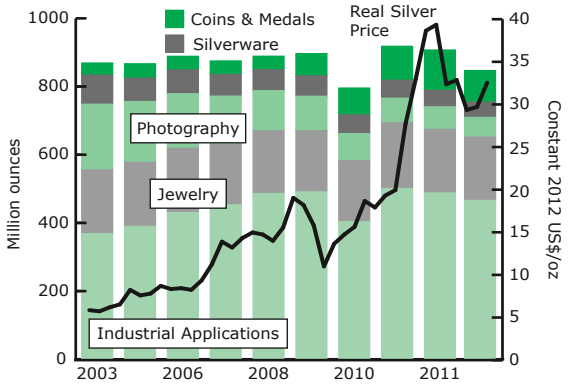
- ***Following a surge in offtake in 2011, coin minting dropped 21.7% last year. Despite the fall demand was the third highest in our 23-year data series.***

In 2012, global silver fabrication fell for the second year in a row, retreating by 6.6% to 846.8 Moz (26,339 t), a drop of over 70 Moz (2,200 t) from the record levels seen in 2010 and to the second lowest level in a decade.

Given the uncertainty stemming from the fragile economic environment in the Eurozone, combined with a slowdown in Chinese expansion and a slower than anticipated recovery in the United States, last year's 4% drop in **industrial** fabrication may not surprise. However, the fact that there were no individual fabrication segments that registered gains last year, especially in an environment of lower silver prices, may be of greater interest. Demand for silver used in photovoltaic (PV) cell fabrication suffered a fall last year as the economic distress led to the dismantling of subsidies in many European countries while thrifting, due to the elevated price level, was also a contributing factor.

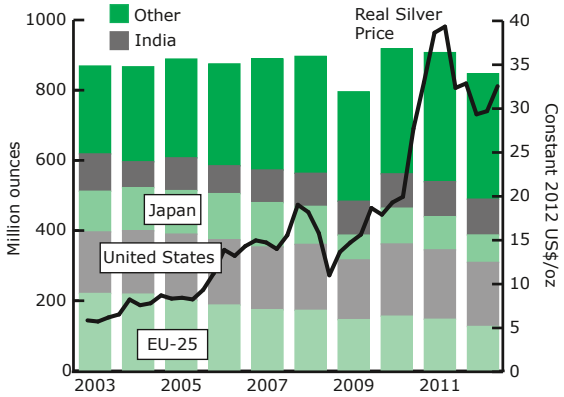
The largest percentage drop in 2012 was recorded in **coin** minting, which declined by almost 22% from the record level seen in 2011, with a drop in western investment demand the chief catalyst for the fall. **Photography** continued its downwards trajectory, gaining pace again last year to deliver a drop of 13% as a result of further gains by digital solutions. **Silverware** slipped 7% to the lowest level in our data series, while economic factors largely explain the 0.5% drop in **jewelry** fabrication last year, with sizable falls in western consumption offsetting healthy gains from key markets in the developing world.

World Silver Fabrication (by category)



Source: Thomson Reuters GFMS

World Silver Fabrication (by region)



Source: Thomson Reuters GFMS

Industrial Applications

• ***Industrial fabrication eased by 4%, chiefly as a result of economic problems in the industrialized world and ongoing substitution and thrifting.***

• ***Losses were mainly in Japan, Europe and North America, while China and India enjoyed gains.***

Industrial fabrication demand in 2012 fell by a modest 4%, but the decline was sufficient to bring about a three-year low of 465.9 Moz (14,490 t).

Much of the decline was driven by the challenging economic environment in the industrialized world, which weakened consumer purchases of electronics goods, encouraged an uncomfortable bout of de-stocking along the supply chain and led several large industrial users to postpone investments. The fact that economic problems centered on the Eurozone also created significant problems for silver as a lack of funding for subsidies and installations severely impacted this as the world's main region for the installation of PV capacity.

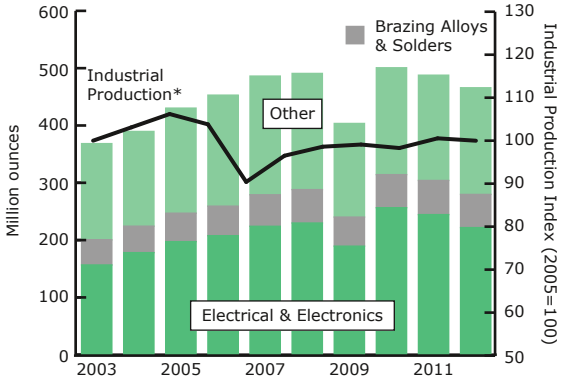
The second main driver of the overall decline was substitution and thrifting on the use of silver. This was particularly apparent in PV, which in conjunction with the above installation issues led to a drop in silver use in this field of some 10%. Other fields' losses were more as part of an ongoing, gradual process, with losses restrained by the sheer difficulty of replacing silver in many of its applications. We should also note that some of the losses in this field were driven by the high price of copper as this led to a shift from copper-silver alloys to aluminum variants. Counterbalancing these losses at a sectoral level were strong gains in other fields such as ethylene oxide catalysts and a greater use of electronics within the automobile industry.

On a regional level, much of the losses occurred in East Asia, where Japan suffered a decline of 16% due to additional losses stemming from a politically driven drop in exports to China, offshoring to low labor cost countries and periods of yen strength. This stood in sharp contrast to China's growth, although this was restricted to just 1% as a result of its exposure to sluggish western economies. The biggest standout, however, was India, where demand rose by 4% due to such factors as growth in the construction industry, and power generation and distribution. This all stood in marked contrast to the changes in fabrication in Europe (-10%) and North America (-4%), which suffered primarily and respectively from recession and lower PV demand.

Europe

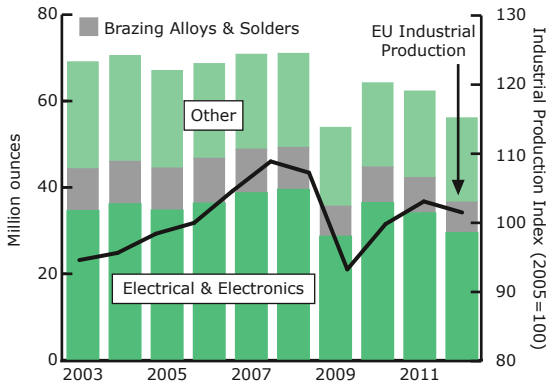
European silver industrial demand fell a marked 10% last year to a three-year low of 56.1 Moz (1,744 t), with essentially all countries in the region seeing losses. There were several factors behind this drop but perhaps the most important was the economic backdrop as many end-users reacted strongly to Eurozone developments in the second half, leading them to postpone re-ordering and/or to run down stocks. This manifested itself in most fabricators seeing stable to good conditions for the first half of 2012 and then a very weak fourth quarter, with some contacts seeing then a drop in orders of over 20%. The strength of this apparent overreaction is that most fabricators surveyed have reported a good start to 2013, not just in comparison to the weak closing months of 2012 but also to the more solid early months of 2012.

Components of Industrial Applications



*Advanced economies; Source: Thomson Reuters GFMS, OECD

EU Industrial Fabrication



Source: Thomson Reuters GFMS, OECD

Another factor driving losses was substitution and thrifting. However, there appears to have been no step-change in this area in 2012, with new techniques and materials leading to ongoing modest losses. One good example here is within brazing alloys where a greater percentage now have a silver content reduced to around 35-40%. Solders were a good example of substitution as there was a further shift to techniques with no metal joining involved at all. These were key reasons as to why overall brazing alloy/solder demand fell at a faster rate than total industrial demand. However, many fabricators were keen to stress that, for industrial demand, it is proving very difficult to move away from the use of silver and so the impact of this factor should not be overstated.

A third factor is that fabricators in Europe look to have lost a small amount of market share. To an extent, this has occurred directly within Europe as a result of silver semi-manufactured items being imported and displacing local offtake. However, an apparently more important development is a greater share of already assembled pieces that would contain silver being imported for use by local OEMs. One reported example of this is the automobile industry, where components are increasingly sourced overseas, often from East Asia, rather than being made within Europe.

The automobile industry was in fact one of the key drivers of the earlier noted variation between the various quarters; this did not come as a great surprise, however, as end use in this sector is reported to be one of the more volatile. Another sector showing weakness was heating/ventilation/air-conditioning, an outcome in part attributed to poor ultimate demand in the Middle East/ North Africa as political problems in the region rumble on. In contrast, the tool industry and some sectors of the construction industry saw steadier consumption over the year. The qualification for the latter chiefly relates to a geographical divergence as this sector reflected a broader development, namely consumption in northern Europe faring far better than in southern and eastern Europe. Fabrication patterns did not entirely match this, however, as German fabricators saw notable losses in their exports to their less robust neighbors.

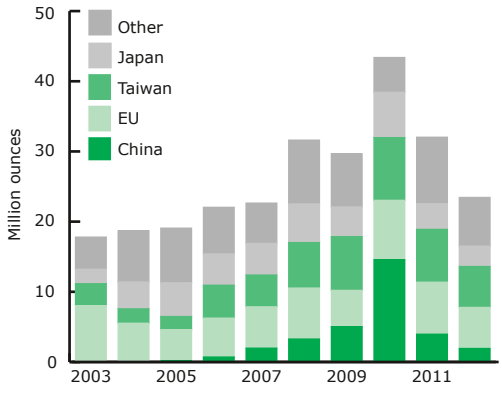
North America

Industrial silver fabrication in the **United States** last year eased by 4% to 115.9 Moz (3,605 t). This outcome is fractionally stronger than we estimated in October last year but the decline still placed volumes below pre-slump (2008) levels, if above their 2009 trough.

This overall decline was chiefly down to substantial losses in the PV sector. As for the quantification of the decline here, we can begin with the proxy of silver powder exports which fell by 28% in gross weight terms last year. However, industry sources report that the actual drop in silver use within the United States (for the manufacture of powder and pastes) would have been greater still. Nonetheless, it is important to remember that volumes were still the third highest on record.

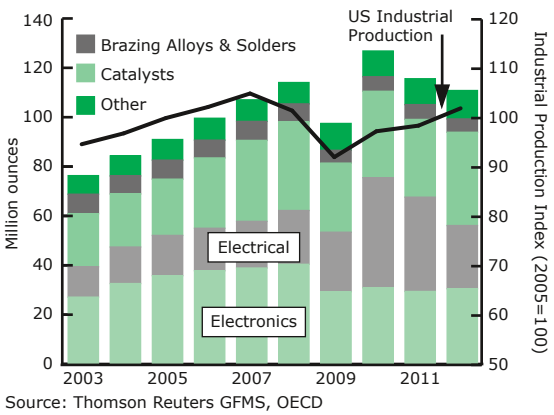
The above decline in turn was chiefly down to substitution and thrifting in silver use. There was further thrifting on the front side of the cells but it appears that more of the damage was due to aggressive thrifting on the rear side. Within both, new techniques mean that the lines are thinner in width and capable of being produced at a more constant thickness, where the loss of redundant peaks of earlier technologies represent a reduction in silver

US Silver Powder Exports



Source: Thomson Reuters GFMS

US Industrial Fabrication



Source: Thomson Reuters GFMS, OECD

Table 5 - World Silver Fabrication (including the use of scrap - million ounces)

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Europe										
Germany	39.1	40.4	40.5	41.0	40.2	40.9	33.0	38.3	33.8	29.3
Italy	55.8	55.4	50.8	46.7	44.0	39.7	35.3	36.0	28.8	26.3
UK & Ireland	43.4	51.6	42.8	32.6	25.1	23.3	18.9	20.4	22.3	20.5
Belgium	29.3	27.6	26.2	28.7	27.3	23.9	19.0	17.1	13.8	12.8
France	26.3	13.0	12.5	12.7	13.2	13.5	10.3	11.8	11.2	10.2
Austria	1.2	1.3	1.3	1.2	1.2	9.0	10.1	12.2	19.0	9.9
Poland	3.8	4.3	4.7	4.8	4.4	4.2	3.5	3.6	3.1	3.1
Switzerland	3.0	3.1	3.3	3.1	3.1	3.1	2.8	3.0	3.0	2.9
Spain	4.8	6.3	5.6	5.0	4.5	4.3	4.0	4.3	3.3	2.9
Netherlands	1.9	2.5	2.2	2.0	2.0	2.0	1.7	1.9	1.8	1.8
Portugal	2.7	4.1	1.7	1.5	1.4	1.4	1.3	1.3	1.3	1.3
Greece	2.9	2.8	2.6	2.5	2.3	2.2	1.8	1.5	1.3	1.2
Norway	2.0	2.1	1.8	1.7	1.3	1.3	1.0	1.0	1.1	1.1
Sweden	1.2	1.2	1.2	1.2	1.1	1.1	0.9	1.0	0.9	0.9
Denmark	0.7	0.7	0.7	0.7	0.7	0.6	0.6	0.6	0.6	0.6
Czech & Slovak Republic	0.7	0.7	0.6	0.7	0.6	0.6	0.5	0.6	0.5	0.5
Yugoslavia (former)	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Hungary	0.4	0.4	0.4	0.2	0.2	0.3	0.3	0.3	0.3	0.3
Finland	0.4	0.4	0.4	0.4	0.3	0.3	0.3	0.3	0.2	0.2
Romania	0.4	0.4	0.4	0.4	0.3	0.3	0.2	0.2	0.2	0.2
Cyprus & Malta	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.3	0.2	0.2
Other Countries	0.1	0.1	0.1	0.2	0.2	0.2	0.1	0.2	0.1	0.1
Total Europe	**220.7**	**218.9**	**200.4**	**187.7**	**173.9**	**172.7**	**146.1**	**156.0**	**147.2**	**126.7**
North America										
United States	175.3	180.3	189.4	185.8	179.2	187.9	170.3	205.7	197.7	182.6
Canada	2.5	3.5	4.0	5.7	8.0	12.4	13.0	21.5	26.2	21.4
Mexico	20.2	21.9	22.3	18.9	18.5	17.5	16.4	17.3	16.0	15.5
Total North America	**198.1**	**205.8**	**215.7**	**210.4**	**205.8**	**217.8**	**199.7**	**244.4**	**240.0**	**219.5**
Latin America										
Brazil	6.6	7.3	7.5	4.7	7.2	6.9	6.4	7.7	7.4	7.3
Argentina	2.4	2.5	2.6	1.9	1.8	1.4	1.1	1.2	1.2	1.2
Dominican Republic	0.4	0.4	0.5	0.6	0.6	0.9	1.5	1.4	0.9	0.9
Peru	0.7	0.7	0.6	0.7	0.7	0.7	0.8	0.8	0.7	0.7
Colombia	0.7	0.7	0.7	0.7	0.7	0.6	0.6	0.6	0.6	0.6
Chile	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
Other Countries	0.9	1.1	1.0	1.1	1.1	1.4	1.4	1.5	1.3	1.3
Total Latin America	**12.1**	**13.1**	**13.3**	**10.2**	**12.5**	**12.4**	**12.2**	**13.7**	**12.4**	**12.4**
Middle East										
Turkey	9.4	10.3	9.9	8.9	8.0	8.4	7.1	6.5	6.0	6.1
Israel	2.6	2.7	2.8	2.8	2.8	2.6	2.2	2.2	1.8	1.7
Iran	1.5	1.5	1.6	1.6	1.6	1.5	1.4	1.4	1.3	1.2
Dubai	0.5	0.5	0.6	0.6	0.6	0.6	0.7	0.9	1.1	1.2
Saudi Arabia	0.6	0.6	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.9
Egypt	1.8	2.0	1.8	1.7	1.7	1.6	1.4	1.4	0.6	0.9
Other Countries	0.7	0.7	0.8	0.7	0.8	0.7	0.7	0.8	0.8	0.8
Total Middle East	**17.1**	**18.4**	**18.0**	**16.9**	**16.1**	**16.3**	**14.3**	**13.8**	**12.5**	**12.8**
Indian Sub-Continent										
India	106.4	73.9	93.4	79.4	93.0	94.2	96.6	97.8	99.8	102.0

Table 5 - World Silver Fabrication (including the use of scrap - million ounces)

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Bangladesh & Nepal	4.5	4.2	3.7	3.6	3.6	3.7	3.6	3.5	3.3	3.2
Other Countries	2.1	2.3	2.4	2.4	2.4	2.3	2.2	2.0	1.8	1.7
Total Indian Sub-Cont.	**113.0**	**80.4**	**99.4**	**85.4**	**99.0**	**100.2**	**102.3**	**103.3**	**104.8**	**107.0**
East Asia										
China	76.4	87.9	96.0	105.6	120.2	131.1	128.1	146.8	161.5	167.2
Japan	116.0	123.0	124.1	131.7	126.4	108.4	70.6	102.1	94.6	78.1
South Korea	22.2	23.6	25.5	27.1	29.0	30.7	24.5	29.9	30.3	29.8
Thailand	36.6	37.0	37.0	37.0	36.7	33.6	30.7	30.7	25.1	21.0
Taiwan	11.0	10.6	12.0	13.2	14.7	15.5	12.5	15.3	15.9	14.4
Indonesia	4.7	5.8	5.1	5.7	5.5	5.4	5.4	6.2	6.9	7.5
Hong Kong	3.2	3.4	3.5	3.8	4.0	3.9	3.2	3.7	3.7	3.6
Vietnam	0.9	1.0	1.0	1.1	1.2	1.3	1.3	1.4	1.6	1.6
Singapore	0.2	0.2	0.2	0.2	0.2	0.2	0.6	0.7	0.9	1.0
Myanmar, Laos & Cambodia	1.0	0.9	0.9	0.8	0.8	0.8	0.8	0.9	0.9	0.9
Malaysia	0.7	0.7	0.7	0.7	0.6	0.6	0.6	0.7	0.7	0.8
Other Countries	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Total East Asia	**273.1**	**294.4**	**306.2**	**327.2**	**339.6**	**331.9**	**278.5**	**338.6**	**342.4**	**326.2**
Africa										
Morocco	0.6	0.6	0.6	0.6	0.6	0.6	0.5	0.6	0.6	0.6
Tunisia	0.3	0.4	0.4	0.3	0.4	0.4	0.3	0.3	0.3	0.3
South Africa	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	0.2	0.2	0.2
Other Countries	0.4	0.4	0.4	0.4	0.4	0.5	0.4	0.4	0.4	0.4
Total Africa	**1.7**	**1.8**	**1.8**	**1.8**	**1.9**	**1.9**	**1.7**	**1.8**	**1.7**	**1.7**
Oceania										
Oceania	6.2	5.7	3.9	4.3	6.4	8.7	9.1	11.6	14.2	9.5
Total Oceania	**6.3**	**5.8**	**3.9**	**4.3**	**6.5**	**8.7**	**9.1**	**11.6**	**14.2**	**9.5**
CIS										
CIS	26.7	28.2	29.7	31.0	33.6	34.5	31.4	34.6	31.8	31.1
Total CIS	**26.7**	**28.2**	**29.7**	**31.0**	**33.6**	**34.5**	**31.4**	**34.6**	**31.8**	**31.1**
World Total	**868.8**	**866.7**	**888.6**	**874.9**	**888.9**	**896.4**	**795.4**	**917.9**	**907.1**	**846.8**

use. No doubt further attrition remains possible in this field, but most of our contacts felt that the bulk of such technology driven losses could be behind us.

Offtake in 2012, however, was also affected by Eurozone troubles, which undermined the installation of new capacity and by corporate restructuring among panel makes in East Asia, as many cell producers went bankrupt last year. Other drivers than thrifting are certainly required as the performance of the PV sector varied considerably on a quarterly basis; the downturn in PV was very much focused on the first half of 2012, after a downturn had emerged in late 2011, but further into 2012, volumes began to recover (and some contacts report a decent start to 2013). This is again reflected in the proxy of powder exports, which on a calculated basis fell by 44% year-on-year in the first quarter, but rose by 1% in the fourth. We should also point out that such changes were largely a function of a high level of volatility in demand in 2011, with 2012 offtake more stable.

Of course, end use in PV was not the sole point of weakness. Another was brazing alloys and solders, whose fabrication is estimated to have fallen by just over 10% to only just above the 2009 trough. That silver use is struggling in this field is chiefly down to substitution and thrifting. End use in air-conditioning was reportedly very weak, for instance, on account of a shift from copper-silver alloys to aluminum, chiefly on account of the high copper price. This development is important not only for immediate offtake but also for after market service, which uses all silver alloys (rather than silver-

Table 6 - Silver Fabrication: Industrial Applications (including the use of scrap - million ounces)

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Europe										
Germany	21.7	23.5	23.9	25.5	27.4	27.5	20.2	26.5	25.4	21.7
UK & Ireland	14.9	15.5	12.4	12.5	12.0	12.1	9.1	10.2	11.3	10.6
Italy	10.2	11.5	10.9	10.9	11.3	11.2	9.0	9.9	9.2	8.6
France	13.8	10.3	10.2	10.4	10.7	10.8	7.5	8.8	8.0	7.2
Switzerland	2.3	2.4	2.6	2.5	2.5	2.5	2.2	2.4	2.4	2.3
Netherlands	1.5	1.6	1.6	1.6	1.6	1.6	1.3	1.5	1.5	1.4
Spain	1.2	2.1	1.9	1.9	1.9	1.9	1.7	1.8	1.4	1.2
Poland	0.7	0.7	0.7	0.7	0.8	0.8	0.7	0.7	0.7	0.7
Austria	0.5	0.6	0.6	0.6	0.6	0.5	0.5	0.5	0.5	0.5
Norway	0.6	0.8	0.7	0.6	0.5	0.5	0.4	0.4	0.4	0.4
Sweden	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Czech & Slovak Republic	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.3	0.3	0.3
Belgium	0.3	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.2
Other Countries	0.7	0.7	0.7	0.7	0.8	0.8	0.6	0.7	0.7	0.7
Total Europe	**69.0**	**70.5**	**67.0**	**68.6**	**70.8**	**71.0**	**53.9**	**64.2**	**62.3**	**56.1**
North America										
United States	86.8	94.2	100.8	106.8	114.6	121.3	101.0	130.9	120.1	115.9
Mexico	3.1	3.0	3.2	3.1	3.3	3.1	2.7	2.9	2.8	2.7
Canada	0.5	0.6	1.0	1.7	2.7	2.4	1.3	1.9	1.9	1.8
Total North America	**90.4**	**97.8**	**105.0**	**111.6**	**120.6**	**126.9**	**105.0**	**135.8**	**124.8**	**120.4**
Latin America										
Brazil	3.0	3.7	4.5	2.9	4.0	3.9	3.5	4.2	4.2	4.2
Argentina	0.6	0.6	0.9	1.0	1.1	1.0	0.8	0.9	0.9	0.9
Colombia	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1
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	0.3	0.4	0.4	0.4
Total Latin America	**4.3**	**5.0**	**6.0**	**4.6**	**5.7**	**5.5**	**4.8**	**5.7**	**5.7**	**5.6**
Middle East										
Turkey	1.4	1.5	1.5	1.6	1.6	1.6	1.3	1.4	1.5	1.4
Israel	0.8	0.8	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.7
Oman	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
Other Countries	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Middle East	**2.4**	**2.5**	**2.5**	**2.6**	**2.7**	**2.7**	**2.2**	**2.4**	**2.4**	**2.3**
Indian Sub-Continent										
India	44.4	34.2	50.2	51.0	58.5	59.1	58.2	57.9	61.1	63.3
Pakistan	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Total Indian Sub-Cont.	**44.7**	**34.5**	**50.5**	**51.3**	**58.8**	**59.4**	**58.5**	**58.2**	**61.4**	**63.6**
East Asia										
China	42.6	49.1	54.8	60.2	69.6	79.8	75.1	86.5	90.6	91.2
Japan	60.4	73.7	84.1	89.5	88.9	73.7	45.6	79.0	71.6	60.0
South Korea	17.5	19.0	20.8	22.3	24.1	25.9	19.7	24.5	24.5	23.9
Taiwan	10.7	10.3	11.6	12.7	14.2	15.0	12.1	14.7	15.4	13.9
Hong Kong	2.9	3.1	3.2	3.4	3.6	3.5	2.8	3.3	3.3	3.2
Other Countries	0.5	0.6	0.6	0.6	0.6	0.8	1.0	1.4	1.6	1.7
Total East Asia	**134.6**	**155.7**	**175.1**	**188.7**	**201.1**	**198.8**	**156.3**	**209.4**	**206.9**	**193.9**

Table 6 - Silver Fabrication: Industrial Applications (including the use of scrap - million ounces)

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Africa										
Morocco	0.2	0.3	0.3	0.3	0.3	0.3	0.2	0.3	0.3	0.3
South Africa	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Other Countries	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Total Africa	**0.5**	**0.6**	**0.6**	**0.6**	**0.6**	**0.6**	**0.6**	**0.6**	**0.6**	**0.6**
Oceania										
Oceania	2.2	2.2	2.0	2.1	2.1	2.1	1.9	2.0	2.1	2.1
Total Oceania	**2.2**	**2.2**	**2.0**	**2.1**	**2.1**	**2.1**	**1.9**	**2.0**	**2.1**	**2.1**
CIS										
CIS	20.3	20.9	21.6	22.9	23.9	23.9	20.5	22.5	21.6	21.3
Total CIS	**20.3**	**20.9**	**21.6**	**22.9**	**23.9**	**23.9**	**20.5**	**22.5**	**21.6**	**21.3**
World Total	**368.4**	**389.7**	**430.3**	**453.0**	**486.2**	**490.9**	**403.6**	**500.8**	**487.8**	**465.9**

copper). Several other brazing areas, however, actually saw stability or modest growth last year. The sub-sector of solders had already seen a heavy shift to non-metal alternatives, particularly in the field of plumbing, and so losses here were proportionately less important.

Although demand from both PV and brazing/alloy solders fell, there was a strong counterbalance coming through from buoyant end use in the ethylene oxide (EO) sector, with some contacts reporting a record year in 2012 (and ongoing robust conditions in early 2013). Part of the reason for this was the occurrence of change-outs of existing catalysts that had been postponed from 2011, on top of the installation of planned new catalysts. The bulk of this new end use is reported to have come from the Middle East and East Asia.

Areas of electronics fabrication outside of PV, principally silver-bearing contacts, also registered growth in 2012. The increase was not great, however, because of ongoing thrifting and substitution, together with a sluggish start to the year but this turnaround at least means that gains are reported to have continued on into 2013. One important driver of the increase last year in this field was the recovery in the US housing market, with housing starts up 28% and new home sales up 20%.

United States Industrial Production

(Index, 2005 = 100)

2008	2009	2010	2011	2012
101.2	89.8	94.9	98.1	101.6

Source: OECD

India

Last year, industrial silver fabrication rose by a modest 4% to 63.3 Moz (1,969 t). This new record high figure is all the more impressive given that this positive outcome was achieved amid a slowdown in Indian GDP growth, which dropped to a decade low of 5.3% in 2012. It is important to highlight that our historical series has been marked lower by a small amount, based on information gathered from meetings with a number of the key industrial fabricators in the local market.

Two areas, namely plating and brazing alloys & solders, are responsible for this downward revision. As regards the former, our feedback from contacts in the industry have unanimously pointed to increasingly fierce competition from China with its economies of scale, and our sources within the industry feel that this is difficult to achieve in India due to labor's strong bargaining power. As such, demand in this category has been trimmed by 5 Moz (150 t) per annum over 2007-11.

A larger downwards revision has been made to silver used in brazing alloys and solders, as annual demand is now estimated to have amounted to 2.5-3.0 Moz in recent years, instead of roughly 6 Moz (180 t) as suggested in our previous *Surveys*. Key to this has been previously poor infrastructure implementation (despite governments' ongoing initiatives to promote infrastructure projects), which therefore impaired silver usage in construction.

Looking at trends in 2012 in detail, our analysis starts with "authentic" industrial uses, namely electrical and electronics application, and brazing alloys and solders,

Indian Vehicle Production

(units, 000s)

2008	2009	2010	2011	2012
2,095	2,464	3,247	3,579	4,115

Source: Global Insight

whose combined offtake is estimated to have risen by nearly 10% to a record high of 22.4 Moz (697 t). The bulk of the increase was attributed to healthy gains in the electrical and electronics industry helped by a robust increase in domestic vehicle production (which grew by 15% to a new record in 2012). Meanwhile, higher industrial offtake was also underpinned by continued growth in power generation, transmission and distribution across the country. To illustrate, in 2012, India added about 19 GW of power capacity last year, with further robust growth of 76 GW of new capacity expected in the latest five year plan. Meanwhile, brazing alloys and solders demand also reported some modest gains, driven by the government's push on infrastructure construction.

Turning to the price sensitive areas, demand remained little changed, although its share of total industrial offtake weakened to the lowest on our record of 65%, against the peak of 87% seen in 2001. Starting with silver offtake in the jari market, given high price sensitivity, it is not surprising that volumes remained sluggish last year amid an elevated local silver price environment. However, there were growing signs of stabilization on the back of substitution gains from gold. The volume of end-use has dropped to such an extent that the government of Tamil Nadu relaxed the usage of gold and silver in 'Kancipuram silk saris' (a brand that has a dominant market share in silk saris in south India) since December 2011; it was reduced to 40% silver from 57%. Elsewhere, demand for silver in plating continued to slide in 2012, as high manufacturing costs discussed above saw domestic players continue to lose market share to China.

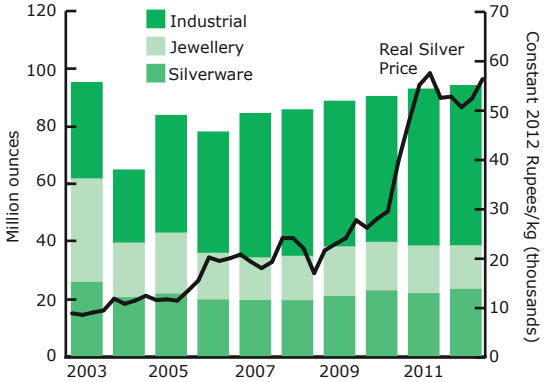
Finally, silver foil (varak as said in India) posted a double-digit fall to just above 2 Moz (60 t) in 2012, almost entirely driven by price-sensitive losses in the decoration of sweets. By contrast, usage of silver foil in other areas, including tobacco products, ayurvedic medicines and health drinks, posted decent growth in 2012. This reflected an ongoing change in lifestyles in the country where many are encouraged to consume ayurvedic products which are considered as an energizer and an effective way to boost immunity.

East Asia

Japanese industrial demand in 2012 slipped by 16% to 60.0 Moz (1,867 t), a level last visited in 2003 and a third below the record level registered in 2006. There were a number of reasons behind this fall in offtake.

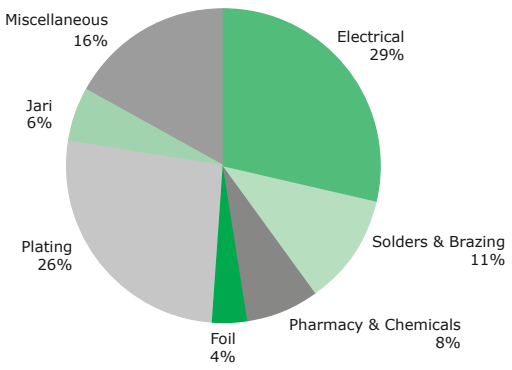
First, domestic consumer spending remained weak, as evidenced by poor demand for electronics products and household appliances. This was in turn the result of the country's ongoing struggling economy which fell back into a recession later in the year. Second, lower fabrication was in part driven by weak external orders, as the country posted a record trade deficit last year. This was mainly due to Japanese exporters being hit by sluggish demand from debt-laden Europe and still fragile consumer spending in the United States. Shipments to China, the country's largest trading partner, also suffered a heavy fall, particularly in second half of the year after Chinese consumers staged a boycott of Japanese products in response to the island disputes in the East China Sea.

Indian Fabrication



Source: Thomson Reuters GFMS

Indian Industrial Fabrication, 2012



Source: Thomson Reuters GFMS

Japanese Industrial Production

(Index, 2005 = 100)

2008	2009	2010	2011	2012
103.8	81.7	94.8	92.4	92.1

Source: OECD

Japanese Non-Photographic Nitrate & Contact Production

(million ounces)

	2009	2010	2011	2012
non-photo nitrates	12.9	19.6	17.4	11.1
contacts	4.8	9	8.4	3.3

Source: Thomson Reuters GFMS

A stronger Japanese yen for much of the year also put sustained pressure on the country's export sectors. However, the strength of the yen and a drop in price volatility meant that pressure to manage inventory receded somewhat for silver consuming manufacturers. Nevertheless, as demand remained poor, there was clearly a degree of cautiousness among fabricators. In addition, given that the absolute silver price remained elevated, thrifting and substitution continued last year.

Furthermore, it is of note that the low fabrication figure was driven by an acceleration of offshore relocations by Japanese companies last year. Unlike their American and European counterparts, Japanese enterprises had been slow to move their factories overseas in the previous decade, despite growing manufacturing costs at home. However, the marked strength of the yen in recent years and, more importantly, major supply chain disruptions in the aftermath of the tragic earthquake and tsunami in March 2011 clearly led to a re-think. This was particularly noticeable in consumer electronics as a number of leading companies announced their plans to relocate some of their activities abroad, with a growing intention to source components from overseas suppliers.

Turning to individual sector's performance, the electrical and electronics sector shrank by 16% to 39.0 Moz (1,213 t). Within this sector, silver consumed by the automobile industry (where silver's heat conductivity is utilized in windscreen heating systems for example) posted a decent increase in 2012, albeit from a low base in 2011 when production was disrupted by the earthquake and tsunami. By contrast, demand for silver powder from the photovoltaic sector dropped, largely due to lower orders from Europe and North America. In addition, improving thin film (which contains little or no silver) technology also reduced silver volumes while silver coated copper flake began to make inroads into the thick film segment. Some losses, however, were offset by a lift in local feed-in-tariffs (FiTs) to ¥42 per kWh in June 2012, which continued to encourage solar cell installations in Japan.

Offtake in the brazing alloys and solders sector declined last year by 18% to 2.5 Moz (77 t) while silver consumed in other segments (such as silver used in catalysis during the production of ethylene oxide) weakened by a similar percentage to 18.5 Moz (577 t). In both cases, lackluster domestic consumption and a drop in overseas demand were the chief culprits behind lower offtake. While the ramping up of post-disaster reconstruction efforts mitigated some losses in brazing alloy and solder demand, the scale of such rebuilding nevertheless lagged behind expectations.

Turning to this year, we expect offtake to recover by a small amount, as the ongoing monetary easing by the Bank of Japan will keep the yen relatively weak, which should help the export sector. Further support should also stem from a gradual recovery in demand from western countries, while exports to China are also likely to improve. Despite the latest 10% cut to the country's FiT for solar power on April 1st, this is unlikely to have a major impact on the solar sector, as the absolute level will continue to be among the highest in the world.

Chinese silver industrial offtake maintained positive growth last year; with another increase (of 1%), fabrication demand rose to a fresh all-time high of 91.2 Moz (2,837 t) in 2012.

Japanese Industrial Fabrication

Source: Thomson Reuters GFMS, OECD

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 photographic applications. This versatility means that there are few substitute metals in most applications, particularly in high-tech uses in which reliability, precision and safety are critical.

Industrial

Silver possesses a number of technological qualities which make it ideal for a range of industrial applications. In particular, silver is the pre-eminent electrical and thermal conductor of all metals, which makes it essential in many electrical applications, including conductors, switches, contacts and fuses. This includes the use of silver in electronics in the preparation of thick-film pastes, including silver-palladium for use as silk-screened circuit paths, in multi-layer ceramic capacitors, in the manufacture of membrane switches, silvered film in electrically heated automobile windshields and in conductive adhesives.

Contacts provide junctions between two conductors that can be separated and through which a current can flow, and also accounts for a sizable proportion of electrical demand. Silver provides both exceptional conductivity and ease of electro-deposition from a double-alkali metal cyanide, such as potassium or silver cyanide, or by using silver anodes, at relatively low cost. Silver is also widely used as a coating material in optical data storage media, including DVDs. Conductive silver inks, made from silver paste, are printed onto a variety of devices, including photo voltaic cells, solid state lighting devices, sensors, radio frequency identification tags and plasma display panels.

Batteries, both rechargeable and non-rechargeable, are manufactured with silver alloys (increasingly silver-zinc) as the cathode and this is regarded as a rapid growth area. 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 electrical products, although demand from the laptop and automotive industries is growing rapidly. 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.

Silver is also employed as a bactericide and algicide in an ever increasing number of applications, including water purification systems, surface treatments and disinfectants. Silver, usually in the form of mesh screens but also as crystals, is also 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. 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 and automobile industries.

Photography

The photographic process is based on the presence of light-sensitive silver halide crystals, prepared by mixing a solution of soluble silver, chiefly 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 interupts 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.

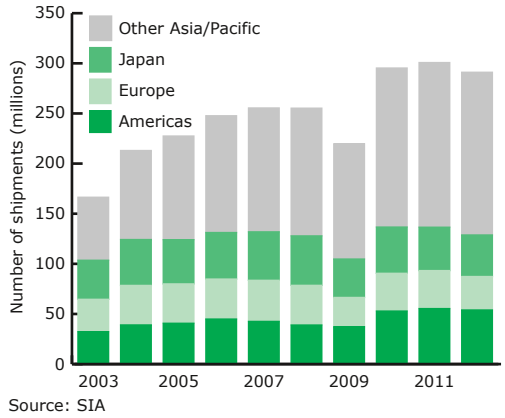
Jewelry and Silverware

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 amounts 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 is still used in some circulating coins and especially in American, Australian, Canadian, Austrian and Mexican bullion coins for investors.

Global Semi-conductor Billings



Source: SIA

Looking at the largest source of demand, namely the electrical and electronics sector, offtake remained steady at 40.7 Moz (1,265 t) in 2012. The flat year-on-year performance was largely driven by falling exports to mature economies, although losses were broadly offset by continued, yet slower, growth in domestic demand for personal electronic products on the back of rising disposable incomes. In particular the smart phone and tablet markets were areas of growth, although the rise of these markets also came at the expense of more traditional products.

Within the electronics sector, offtake was underpinned by further growth in the Chinese automobile industry where total car production for the first time exceeded 19 million units in 2012. This sector continued to consume electric and electronic components in response to increasing requirements on safety as well as passenger comfort, which necessitated the use of sensors, contacts, switches and electronic circuits in climate controls and other modules. Silver industrial fabrication received a further boost from stricter electronic engine and exhaust performance monitoring and a growing popularity of electric and hybrid vehicles among the general public.

Turning to the Chinese photovoltaic industry, it is important to highlight here the major difference between consumption and fabrication of silver powder for this sector in China. Although global solar-cell production has been heavily concentrated in China, the domestic PV industry has, for many years, relied on imported silver powder (principally from the United States and Japan), due to stringent quality requirements. As the Chinese PV industry faced a number of headwinds last year including a slowdown in solar cell installations in Europe and a growing trade dispute between China and Europe, this reduced imports of silver powder. By contrast, domestic production of silver powder for the local PV industry is estimated to have remained broadly flat in 2012, if at a still relatively low level. This was helped by increasing efforts made by domestic silver semis manufacturers to move into high value-added segments.

Looking at silver brazing alloy and solder demand, offtake is estimated to have risen by 3% to 31.4 Moz (975 t) in 2012, against an average annual increase of 11% over 2003-11. The noticeable slowdown was partly a result of the Chinese government's continued efforts to cool the property sector in order to cap the soaring house prices. Meanwhile, production of white goods dropped last year, due to lackluster domestic consumption (itself largely a result of the termination of the government's subsidies in the home appliance sector at end-2011) coupled with poor external demand. Offsetting this weakness was solid growth in the railroad sector which added 2,723 kilometers of high-speed railway lines.

As regards prospects for this year, industrial fabrication demand in China is set to deliver another solid performance. This is based on a gradual pick-up in GDP growth, as stimuli measures introduced in late 2012 will continue to boost infrastructure investment. Lower levels of downstream product inventories in such areas as air-conditioners and white goods in late 2012 may well stimulate restocking this year, as China's exports to western countries start to recover, while domestic consumption continues to strengthen. Finally, new sizable ethylene oxide production capacity installations scheduled for this year should add further push to silver offtake from the chemical sector.

Industrial fabrication in **Hong Kong** slipped by an estimated 3% in 2012 to 3.2 Moz (100 t). Following 10% growth in 2011, Hong Kong exports were only marginally higher last year, despite a slight pick-up at the end of the

Global Billings

(semi-conductor shipments per year, millions)

	World	Americas	Europe	Japan	Other Asia
2011	300.8	55.6	37.9	43.5	164.2
2012	291.1	54	33.4	41.4	162.3
Change	-9.7	-1.4	-4.5	-1.8	-1.9
Change %	-3%	-3%	-12%	-4%	-1%

Source: SIA

Table 6a - Silver Fabrication: Electrical and Electronics (including the use of scrap - million ounces)

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
United States	39.5	47.4	52.1	55.0	57.7	62.2	53.4	74.6	67.0	56.1
China	18.8	21.6	24.0	26.4	32.2	36.1	32.0	39.1	40.6	40.7
Japan	30.2	38.0	43.7	46.0	44.8	38.7	28.2	51.1	46.2	39.0
India	5.1	5.7	10.2	10.8	14.1	15.0	16.1	17.1	17.8	19.5
Germany	16.2	17.7	18.3	19.7	21.4	21.7	15.7	21.3	20.3	17.2
South Korea	10.7	11.6	12.9	13.8	14.7	15.9	12.5	16.1	16.0	15.8
Taiwan	9.0	8.4	9.4	10.3	11.7	12.3	9.9	12.1	12.7	11.3
France	9.5	8.1	8.0	8.2	8.5	8.6	5.7	6.9	6.1	5.3
UK & Ireland	5.9	6.1	4.5	4.4	4.5	4.7	3.4	3.9	4.0	3.9
Hong Kong	2.7	3.0	3.0	3.3	3.5	3.3	2.7	3.1	3.1	3.0
Italy	2.9	3.8	3.5	3.6	3.9	4.1	3.4	3.9	3.3	2.8
Mexico	1.9	1.8	2.1	2.0	2.1	2.1	1.8	1.9	1.8	1.8
Brazil	1.2	1.7	2.1	0.9	1.5	1.5	1.2	1.6	1.6	1.6
Turkey	1.0	1.0	1.0	1.0	1.1	1.1	0.9	0.9	1.0	0.9
Singapore	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.5	0.6	0.7
Australia	0.7	0.7	0.7	0.7	0.7	0.7	0.6	0.7	0.7	0.7
Netherlands	0.5	0.5	0.5	0.5	0.5	0.5	0.4	0.5	0.5	0.5
Switzerland	0.5	0.5	0.4	0.4	0.4	0.5	0.4	0.5	0.5	0.5
Spain	0.0	0.3	0.3	0.3	0.4	0.3	0.3	0.3	0.3	0.2
Other Countries	0.5	0.5	0.5	0.5	0.5	0.5	0.4	0.5	0.4	0.4
World Total	**156.7**	**178.2**	**197.3**	**207.8**	**224.1**	**229.8**	**189.5**	**256.5**	**244.5**	**221.8**

Table 6b - Silver Fabrication: Brazing Alloys and Solders (including the use of scrap - million ounces)

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
China	14.4	16.5	18.5	19.4	21.3	25.9	26.6	28.6	30.5	31.4
United States	7.9	7.3	7.7	7.2	7.7	7.2	5.2	5.9	6.0	5.3
India	2.0	2.2	2.4	2.3	2.2	2.2	2.2	2.6	2.7	2.9
Japan	3.3	3.7	3.8	3.9	4.0	3.7	2.3	3.4	3.0	2.5
Germany	3.1	3.2	3.2	3.4	3.6	3.4	2.3	2.8	2.8	2.3
South Korea	1.4	1.6	1.9	2.0	2.4	2.6	2.1	2.3	2.4	2.2
UK & Ireland	2.8	3.0	2.9	3.1	2.4	2.3	1.8	2.3	2.4	2.2
Canada	0.3	0.4	0.8	1.5	2.4	2.2	1.1	1.7	1.7	1.6
Italy	2.0	2.0	2.2	2.4	2.5	2.4	1.7	1.8	1.7	1.6
Switzerland	1.4	1.4	1.5	1.4	1.4	1.4	1.2	1.3	1.3	1.3
Taiwan	1.1	1.1	1.1	1.2	1.3	1.2	1.0	1.2	1.3	1.2
Brazil	0.7	0.7	0.8	0.8	0.8	0.8	0.9	1.0	1.0	1.0
Australia	0.6	0.6	0.5	0.5	0.5	0.5	0.5	0.5	0.6	0.6
France	0.8	0.7	0.8	0.8	0.9	0.8	0.5	0.6	0.6	0.5
Spain	0.9	0.8	0.6	0.6	0.6	0.6	0.6	0.6	0.5	0.4
Mexico	0.5	0.5	0.5	0.5	0.5	0.5	0.4	0.4	0.4	0.4
Netherlands	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Indonesia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.2
Other Countries	0.2	0.2	0.2	0.2	0.2	0.3	0.2	0.3	0.3	0.3
World Total	**43.7**	**46.2**	**49.6**	**51.5**	**55.0**	**58.3**	**50.7**	**57.7**	**59.6**	**57.9**

New Uses of Silver in Industrial Applications

The myriad of well established industrial applications using silver have been outlined elsewhere in this chapter. There are, however, a significant number of 'new' uses for silver emerging that, while perhaps still in their development stage or period of early adoption and yet to impact markedly on silver demand, hold the potential to become significant end-users of the metal in future years. To this end, we would appear to be some way from seeing one of these emerging areas of demand making a similar impact to photovoltaic which, until just a few years ago, was considered a new use of silver. It is important to note that, while the silver consumption per unit may be small, their collective use may, over time, amount to substantial volumes.

Silver's main uses, both new and established, are often focused on utilizing its biocidal or conductive properties. Many of these new applications can use 'nanosilver' which, although not a new substance in the strict sense of the word, has only recently gained commercial recognition, appearing in a wide range of products including textiles, food packaging and medical uses. The main difference with 'ordinary' silver is particle size: nanosilver typically measures between 1-100 nanometers. Nanosilver essentially replicates silver's established properties, but often performs them using a far smaller quantity of metal, owing to the greater surface area of each silver particle which enhances its potency. In most of the uses outlined below, nanosilver, in time, may become a substitute for ordinary silver.

Looking firstly at potential biocidal applications, these are already in use across a diverse array of products, including medical instruments, glass and tapware, stationary and even playground equipment. Some of the more notable applications in recent years has been in textiles (underwear, socks, towels and bed linen), medical products (such as wound dressings, clotting agents and creams), kitchen utensils (including bench tops and serving equipment), white goods and increasingly water purification devices. Another area that is already in commercial use and is expected to gain market share due to its environmental standing is use as a wood preservative.

Potential growth sectors stemming from silver's conductive properties include radio frequency identification tags (RFID) and printed inks in a wide range of application including solid state lighting (SSL), chiefly organic LEDs (OLEDs). Batteries also present future advancement opportunities, with silver oxide batteries already used widely for laptops and tablets due to their long life and high energy-to-weight ratio. The automotive industry should also deliver further draw down on fresh silver stocks used for high capacity silver-zinc and silver-cadmium batteries as the take up of hybrid and fully electric vehicles gathers momentum. Finally, silver used as a high temperature superconductor (often silver-jacketed superconducting oxide wires) is expected to rise for applications requiring low levels of resistance such as magnetic energy storage (SMES), and power storage.

year, as offtake continued to be dragged down by waning demand from the Eurozone as a result of the fragile economic environment. In the key US market, demand for items such as telecommunications and audio-visual products (large-screen televisions for example) tended to level off. As a result, demand from the Chinese mainland, which absorbed over 60% of Hong Kong's overall electronics exports (largely for electronic inputs for export processing production), eased and this helps explains the slight fall in demand last year.

In **South Korea**, silver consumption in industrial applications posted a modest 3% decline to 23.9 Moz (742 t) in 2012, a function of weakening export orders coupled with sluggish domestic consumption. As regards the former, given the country's heavy reliance on exports (which contributed to 57% of last year's GDP), industrial offtake certainly suffered falling orders from its traditional trading partners in western countries, with total exports to the Eurozone alone posting a sharp 12.5% contraction. By contrast, exports to China, the country's largest trade partner, remained essentially flat in 2012, as exports at the margin benefit from a boycott of Japanese products by the Chinese government in response to island disputes. On the domestic front, as economic growth grew at its slowest pace in three years, this certainly weighed on consumer sentiment, which in turn curtailed household spending.

Looking at individual sectors, silver used in electronics and electrical applications remained relatively steady last year. This is largely due to further growth in domestic silver powder production for the photovoltaic sector, reflecting ongoing efforts by South Korean manufacturers to expand their business into more value-added silver products. Furthermore, steady vehicle production also provided some support for silver demand. Solders and brazing alloys, by contrast, dropped by almost 8% to 2.2 Moz (68 t) last year, pulled lower by sluggish local GDP growth along with continued pressure from thrifting and

Global Photovoltaic Market

Demand for silver consumed by the photovoltaic (PV) industry has been driven by a tremendous increase in the uptake of renewable energy over the last decade. The rapid acceleration in fabrication demand for solar module production has been largely driven by the introduction of subsidies and guaranteed feed-in-tariffs (FIT) aimed at motivating companies and individuals to invest in solar cell technology. In addition, a large portion of demand in Europe and North America was derived from legislation which imposed a duty on fossil fuel reliant energy suppliers to increase the share of renewable energy into their portfolio.

There are two main types of solar cells: thick film and thin film. In terms of silver usage, the thick film, which is based on mono or polycrystalline silicon, is the key to the metal's demand. The amount of silver required to generate one MW of electricity has declined from 120 kg five years ago to around 65 kg last year as a result of continuous thrifting and substitution. Silver is used in the form of paste on both the front and rear side of each cell. As for thin films, these include copper indium gallium selenide (CIGS), cadmium telluride (CdTe) and amorphous silicon (a-Si). Of these, we understand that only a-Si uses silver, albeit with very low quantities (less than 1% of that used in thick film). Historically, despite higher costs, thick film has dominated the solar cell market, due to its roots in the established semiconductor industry and its high efficiency. In the last few years, however, improved technology has seen thin film achieve significant improvements in efficiency, with some modules almost replicating the efficiency seen in thick film.

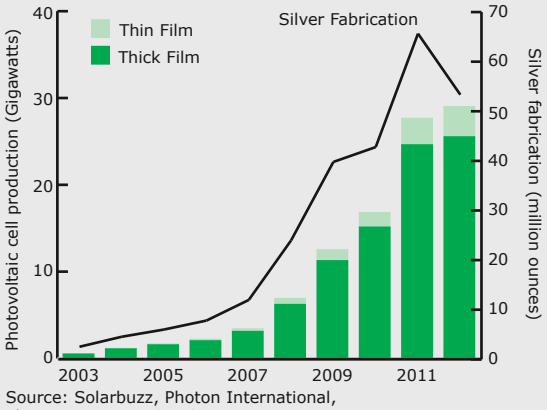
Last year witnessed a surprise slowdown in cell production growth from the solar sector, retreating from an average annual increase of almost 70% over the 2007-2011 period to an estimated rise of 5% in 2012. While falling short of industry forecasts, solar panel installations are still estimated to have achieved yet another annual record, exceeding 29 GW for the first time. In spite of Europe's diminishing incentive and subsidy schemes, this region continued to dominate global demand consuming nearly 60% (16.48 GW) of total installations. Elsewhere, Asia followed in second place with 8.69 GW, preceding the Americas with 3.68 GW or 13% of the total.

Turning to recent market developments, following the explosive growth in PV installations in recent years, the supply side of the value chain has been hindered by excess inventory, particularly in China which (with Taiwan) accounts for over 60% of global PV cell production. The drop in module prices, coupled with cuts in feed-in-tariffs programs in key markets, has led to significant strains. Indeed, these factors combined with the fragile financial environment, has resulted in insolvencies, plant closures, and weak balance sheets. Some high profile bankruptcies in the western world provoked trade tensions between China, the United States and the European Union and led to anti-dumping tariffs on China-made solar modules. Regardless of the outcome of the disputes, the supply side of the solar industry is likely to continue to suffer due to the magnitude of overcapacity and the speed with which feed-in-tariffs are being scaled back in Europe and other key markets.

In terms of demand for silver paste, we estimate offtake retreated 10% to 53.3 Moz (1,659 t). The decline was partially due to a large stock build of PV at the end of 2011, as well as thrifting and the expansion and adoption of thin film technology.

Looking ahead it appears that the main threat to solar demand is the lack of incentives and subsidies. Given continuing economic problems in Europe, it is widely expected that the level of government compensation there will continue to contract. On the other hand, China's drive to embrace a much wider share of renewable energy is likely, over time, to elevate China to the status of the largest PV market, possibly even offsetting the expected decline from Europe. Additionally, demand growth from the Middle East, Africa and Latin America will also add support. On the technology front, high-conductivity materials like aluminum or copper, the redesign of cell architecture, and conductive paste reformulation, will continue to pose a threat to silver demand. However, given silver's electrochemical properties, demand for the white metal in this segment is not under threat of sudden collapse.

Photovoltaic Production



Source: Solarbuzz, Photon International, Thomson Reuters GFMS

substitution. Other applications (such as silver use in chemical catalysts) slipped by a few percent in 2012.

Looking ahead, we expect industrial offtake to recover lost ground this year, as an improving outlook for the US economy and a gradual pick-up in economic growth in China are likely to revive the country's export sectors. Further support could also come from new renewable energy plans for 2013, which should add momentum in domestic solar panel installations and give an additional boost for silver powder production.

After hitting a record high in 2011, industrial fabrication eased by 10% in **Taiwan** to 13.9 Moz (431 t) in 2012. Nevertheless, it is of note that the bulk of the decline was concentrated in the first half of the year, as a gradual recovery towards year-end helped to mitigate some of the losses. Falling orders from the United States, Europe and China all contributed to last year's fall. In particular, easing demand for solar installations in western markets reduced demand for crystalline silicon wafers and module fabrication within the photovoltaic industry. Support from domestic consumption also remained weak, as GDP growth slowed noticeably, with consumer expenditure being further restrained by the increase in energy prices and rising concerns about the national pension system.

That said, there were some areas that remained resilient last year, as evidenced by the ongoing strength of the semiconductor industry in Taiwan, thanks to still strong demand for smart phones, tablet PCs and other mobile devices on a global basis. Furthermore, Taiwanese chip makers also benefited from the ongoing shake-up in the Japanese semiconductor industry, as the latter continued to struggle with costly restructuring.

Photography

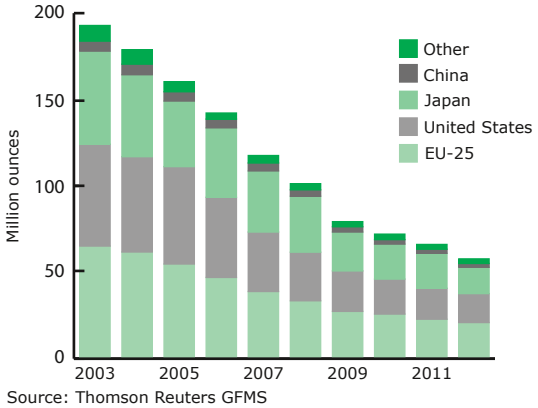
- ***Silver use in photographic applications fell to a 13-year low.***

Photographic fabrication in 2012 slipped by 13% to 57.8 Moz (1,797 t), or just 25% of the volume recorded at its peak in 1999. This slide has been overwhelmingly due to the displacement of conventional silver halide technology by digital alternatives and this process has cut photography's share of total fabrication from 26% at its peak to just 7% last year.

Some might have been expecting that the pace of decline might slow as the bulk of these structural changes should now be behind us. However, last year's drop was not that dissimilar to the phase when losses were at their steepest; this was from 2005-09, when the annual decline averaged 15%. That said, the average absolute loss in that earlier period of 19.9 Moz (619 t) a year was far more undermining to the overall market than last year's drop of 8.3 Moz (260 t). We should, however, point out that much of this maintenance of a steep slope was down to sharp losses in Japan; if we exclude that country, the drop for the rest of the world in 2012 was more in line with a 'bottoming out' story at 7%.

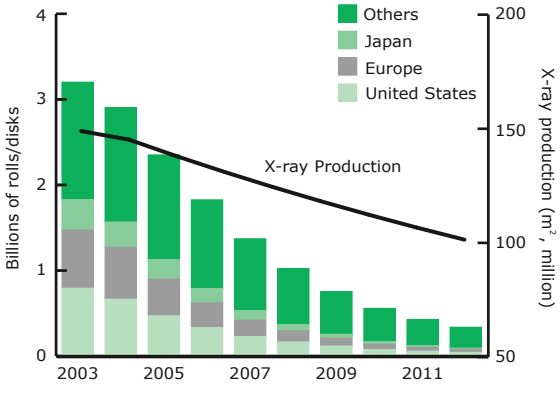
Not all areas were uniformly weak. End use in the medical sector (primarily X-rays) held up fairly well, in part because of constrained funding for digital switch-overs. Some countries also saw robust demand from the instant photo sector. This all stood in sharp contrast to the consumer film sector, which continued to suffer double-digit percentage losses, due to such changes as internet photo sharing and laser photo printing.

World Photographic Fabrication



Source: Thomson Reuters GFMS

Consumer Film Sales & X-ray Production



Source: Photofinishing News Inc.

Table 7 - Silver Fabrication: Photographic Use (including the use of scrap - million ounces)

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Europe										
EU-25	65.0	61.6	54.7	46.9	38.9	33.5	27.4	25.8	22.9	20.9
Romania	0.2	0.2	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Total Europe	**65.2**	**61.8**	**54.8**	**47.0**	**38.9**	**33.5**	**27.4**	**25.8**	**22.9**	**20.9**
North America										
United States	58.9	55.2	56.4	46.4	34.4	28.1	23.4	20.2	17.9	16.8
Total North America	**58.9**	**55.2**	**56.4**	**46.4**	**34.4**	**28.1**	**23.4**	**20.2**	**17.9**	**16.8**
Latin America										
Brazil	2.2	2.2	1.4	0.0	1.4	1.3	1.0	1.4	1.2	1.1
Argentina	1.5	1.5	1.3	0.5	0.3	0.0	0.0	0.0	0.0	0.0
Total Latin America	**3.7**	**3.7**	**2.7**	**0.5**	**1.7**	**1.3**	**1.0**	**1.4**	**1.2**	**1.1**
Indian Sub-Continent										
India	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Sri Lanka	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0
Total Indian Sub-Cont.	**0.5**	**0.5**	**0.5**	**0.5**	**0.5**	**0.4**	**0.3**	**0.3**	**0.3**	**0.3**
East Asia										
Japan	53.9	47.4	38.0	40.2	35.4	32.4	22.5	20.3	20.3	15.2
China	5.8	6.1	5.4	5.0	4.6	3.7	3.1	2.6	2.4	2.2
Total East Asia	**59.7**	**53.6**	**43.3**	**45.3**	**40.0**	**36.1**	**25.6**	**22.9**	**22.6**	**17.4**
Oceania										
Australia	2.1	1.5	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Total Oceania	**2.1**	**1.5**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**
CIS										
CIS	2.8	2.7	2.6	2.4	2.1	1.8	1.5	1.4	1.2	1.2
Total CIS	**2.8**	**2.7**	**2.6**	**2.4**	**2.1**	**1.8**	**1.5**	**1.4**	**1.2**	**1.2**
World Total	**192.9**	**178.8**	**160.3**	**142.2**	**117.6**	**101.3**	**79.3**	**72.1**	**66.1**	**57.8**

European photographic demand fell once more last year, continuing the string of consecutive losses in place since the 1998 peak and cutting the 2012 figure to just 27% of the record high. That said, last year's drop of 8% was slower than the prior five years' average of 13%. This result is in turn largely due to fabrication's bias towards the medical sector, where end-use in X-rays proved comparatively stable as many countries' economic problems meant limited funds to convert hospital and clinic facilities to digital from analog. End-use in consumer film, however, remained extremely weak, with sales of 24 exposure rolls last year falling by 21%*. This means that digital inroads have now cut their sales to just 4%* of the peak recorded in 2001.

Sales of 24 exposure rolls in the **United States** fell at a yet steeper pace of 25%* in 2012. It might be expected that the pace of this digitally-driven decline would be starting to lessen, but last year's drop actually represented an acceleration on the average for the 10 years before of 27%*. However, that sector is ceasing to be of importance, with sales of these rolls equal (as in Europe) to just 4%* of their peak in 2001. Such changes were an integral part of the decision taken by Eastman Kodak in January 2012 to file for Chapter 11 bankruptcy protection in the United States. In contrast, silver's end use in both the motion picture industry and in the medical sector was far more robust, in part as financing to effect conversion to digital remains constrained. As a result, we estimate that US photographic demand slipped by a relatively restrained 6% to 16.8 Moz (521 t).
(*source: Photofinishing News)

Film & Paper Consumption & Photographic Fabrication

	2009	2010	2011	2012	yoy %
Film**	753	557	427	336	-21.2%
Paper^	997	911	831	783	-5.7%
Fabrication*	79	72	66	58	-12.6%

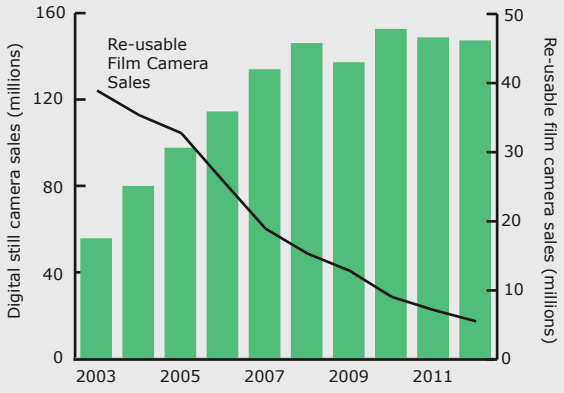
**Million of rolls, ^millions square meters, *Moz

Source: Photofinishing News Inc., Thomson Reuters GFMS

Digital Technology and the Photographic Market

Since its peak in 1999, demand for silver in photographic applications experienced a period of uninterrupted losses through to last year. To put this into perspective, demand has contracted by nearly 75% between 1999 and 2012, to its lowest point of 57.8 Moz (1,797 t) last year. The main driver of this downward trajectory has been the rapid penetration of digital technology in all photo-related areas. Indeed, figures produced by Photofinishing News reveal that sales of re-usable film cameras fell from almost 39 million units in 2003 to just 6 million units last year. In contrast, the uptake of digital still cameras (DSCs) soared from around 55 million units to 147 million units over the same period. It is worth pointing out that, while the market for DSCs has come under pressure in the past couple of years, the main reason behind this is growing competition from other consumer goods, especially the rapid growth of smartphones with cameras. The stagnation of DSC sales therefore represents no alleviation of pressure on conventional silver halide demand.

Digital and Film Camera Sales

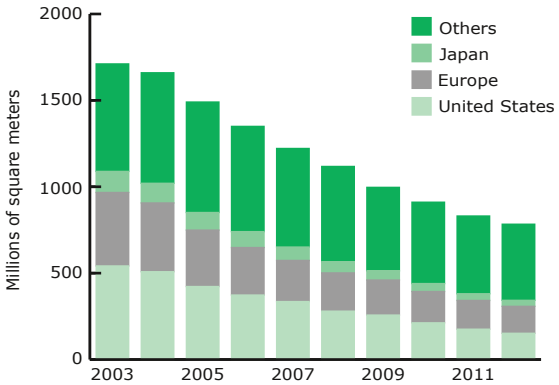


Source: Photofinishing News Inc., Thomson Reuters GFMS

Demand for silver from the photographic sector in **Japan** dropped by a major 25% to 15.2 Moz (474 t) last year, the lowest on our 23-year data series and less than a quarter of the peak seen at the start of the new millennium. Similar to previous years, last year's decline was largely related to the continued structural decline following the introduction of digital technologies. Within this sector, the consumer film segment accounted for the bulk of losses in 2012, as growing internet photo sharing along with ink and laser photo printing displaced demand for photo paper. That said, the scale of the fall in this area seems to have remained somewhat restrained, as more conservative consumers continued to print their images on photo paper. In addition, part of these losses were compensated for by a resurgence in the popularity of instant photography. In the medical sector, silver use in X-rays was also weaker in 2012, driven by the ongoing conversion to digital systems in hospitals in Japan. Finally, demand from the archive film sector delivered a solid performance as this is proving to be the most long lasting information storage medium, outlasting ever-changing magnetic and optical storage technologies.

Photographic demand for silver in **China** remained on its secular declining trajectory in 2012, posting a 7% drop to 2.2 Moz (69 t). The growing preference for digital technologies at the consumer level once again was the key driver behind the fall, although, similar to Japan, part of these losses were offset by the ongoing expansion of Polaroid–like instant cameras which has gained growing interest among the younger generation. Lower fabrication demand was also driven by the ongoing digitalization in cinemas across China, as the share of new screen installations that boast digital technologies is estimated to have approached 90% in China. Elsewhere, silver use in X-rays held up well last year, as rapid urbanization and improving health coverage generated demand for conventional X-rays in more rural areas. This helped to offset losses stemming from digitalization in hospitals in larger cities.

World Color Photographic Paper Consumption



Source: Photofinishing News Inc.

Jewelry

• Jewelry fabrication dipped 0.5% last year to 185.6 Moz (5,771 t) despite lower silver prices.

Jewelry fabrication in 2012 slipped just 0.5% to 185.6 Moz (5,771 t). The fall was the second in a row but it is of note that jewelry demand has now tracked broadly sideways for most of the last decade as robust gains in some markets have offset losses in others. Last year was no exception in that regard. Thailand saw the largest absolute decline, while Italy also recorded a sizable fall. Both suffered as lower consumption in many countries hit their exports, while there was also some market share loss. One reported winner on that score was China, which together with strong domestic consumption meant its fabrication continued to grow. India also returned to growth, thanks largely to strong local sales. However, perhaps of more interest is the major upward revision to our fabrication series for both India and China as fresh field research has shown that we were too conservative previously as regards domestic consumption.

Europe

European jewelry fabrication in 2012 fell by 6% to 27.5 Moz (854 t), which left the total at almost half the levels seen a decade earlier. Losses were the norm for almost all countries, chiefly through lower domestic consumption, but most of the overall decline was down to Italy, which also saw a drop in its extra-European exports.

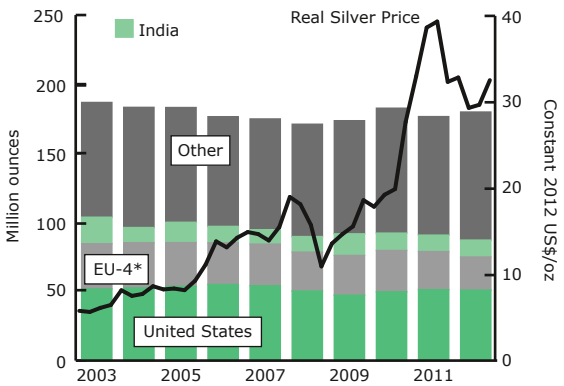
Italian offtake in 2012 fell by 8% to 15.1 Moz (469 t). A significant contributor to this was the drop in domestic consumption, which we estimate at around 15% in fine weight terms. That result might seem to conflict with talk of widespread switching from gold to silver. There was also considerable interest shown in silver by local brands, including those at the bottom who previously had been steel focused and some at the top, often those diversifying into jewelry from just clothing. However, the typical pieces favored here were light weight, high design and gemset, which meant that sales in value terms performed far better than they did in fine weight terms.

In contrast, sales at the bottom end were hit hard by losses to costume jewelry, in particular brass and bronze. Such a move was in turn largely the product of still high silver prices (the euro price only fell 4%) and consumer spending falling by 4%. We should also be careful with official data on the jewelry sector as this could paint a falsely optimistic picture; this has occurred as the crackdown on tax avoidance (such as the reduction in the maximum for cash payments) is felt to have driven a shift from the unofficial to the official segment.

Weak consumption elsewhere was also key to the drop in Italian jewelry exports, which we estimate at just under 7%. Given a troubled economic backdrop, it might surprise that shipments to the rest of the EU also fell by just under 7%. However, once we adjust for export/re-import schemes, the drop stands at 13%. Furthermore, exports to southern European countries typically fell by over 20%, while those to northern Europe only dipped a few percent.

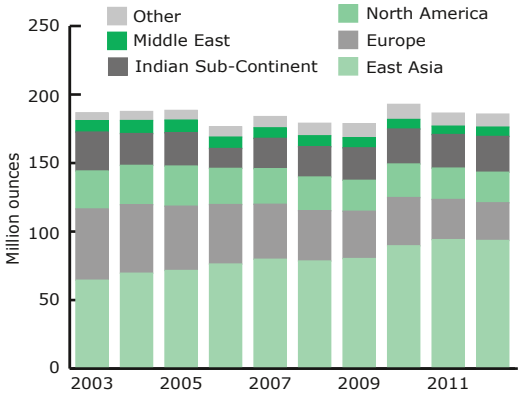
The more robust state of the US economy was instrumental in keeping losses for Italy's shipments to there to a few percent (while its exports to Canada actually rose). That a fall still occurred was in part due to a shift to non-precious metal jewelry, but, as we believe that US consumption was broadly stable last year, this

World Jewelry Consumption



*Germany, Italy, UK, France;
Source: Thomson Reuters GFMS

World Jewelry Fabrication



Source: Thomson Reuters GFMS

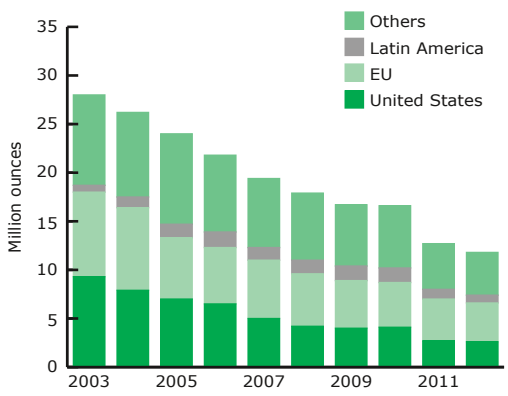
implies further market share loss for Italy, chiefly to rivals in East Asia. Heavy losses in Latin America were also blamed on a shift to other origins and it is of note that this occurred despite some Italian exporters reporting more shipments to Latin America going direct, rather than via the United States. Market share loss is also implicit for exports to China/Hong Kong, which fell by 3% even though the mainland's consumption rose last year.

Positive news was thin on the ground, with the only rise of substance in (true) exports being those bound for Dubai. In addition, after steep losses in the first quarter, the situation improved, with the fourth quarter notably healthier. Lastly, we should note that, due to changes such as the drop in average weights and a move to a greater percentage being plated (typically with gold or rhodium), margins rose markedly. This meant exporters' added value fared far better than changes in fine weight.

Europe's second largest fabricator, **Germany**, saw a slight loss of 2% to 3.6 Moz (113 t). This more resilient result was in part due to domestic jewelry consumption faring respectably; imports (in gross weight terms) for instance only fell 2%. This in turn was due to a more robust economy (final consumer expenditure rose by 0.6% last year), together with a shift by consumers from gold to silver. Jewelry exports also saw a dip of just 3% in gross weight terms, a result in part due to a greater emphasis on the top end and branded segments.

There was an important change in the **French** market last year; after more than a decade of gains, consumption fell by 5% in pieces terms (source: Société 5), and the drop in fine weight terms would have been greater than that due to the ongoing shift from plain to gemset items.

Official Italian Jewelry Exports*



Source: Thomson Reuters GFMS;* finished pieces only

Soft consumer spending no doubt contributed here and some also feel France's rapid adoption of 9-karat gold was also to blame. Local fabrication, however, was not unduly hit, thanks to its greater focus on the brands and top end.

UK jewelry consumption also fell last year, although by far less than the 21% drop in hallmarking statistics. This divergence chiefly reflects a greater proportion of pieces sold falling below the minimum weight threshold. The actual drop would instead be broadly in line with the 7% drop in imports (gross weight). That a decline occurred was in turn chiefly due to poor economic prospects and a shift to non-precious metal jewelry.

Last year, **Russian** jewelry fabrication dropped by 5% to 2.6 Moz (80 t), marking the second straight year of weaker output. One of the key factors affecting the silver jewelry market in 2012 was the ongoing strong competition from foreign jewelry producers. In addition, last year's losses were also attributed to a lower domestic consumption, which was hit by the weaker economic environment and elevated silver prices in local terms.

North America

US silver jewelry consumption in 2012 is believed to have held broadly steady in fine weight terms and, in doing so, kept the country by some margin as the world's largest silver jewelry market. This outcome of broad stability, however, might seem slightly disappointing, given widespread reports of heavy swings by both retailers and consumers from gold to silver, chiefly on account of gold's still rising price. We would certainly not dispute this trend but it is important to review how this affected the market in fine weight terms. Many of those consumers switching to silver typically opted for high design, often gemset and/or plated pieces, as they were more in line with their anticipated spend than mass market generic items. Furthermore, the retailers making the move were usually those pushing private label assortments and/or gold-bonded or gold-plated silver, as they were keen to avoid being seen to have downgraded to product offerings. This did much to boost the value of sales but less for their fine weight, as average weights fell markedly.

In contrast, mainstream silver jewelry sales were undermined by shifts to non-precious metal jewelry. Brass and to a lesser extent bronze attracted much attention here, while tungsten and cobalt are also reported to have made considerable inroads. This

Table 8a - Silver Fabrication: Jewelry and Silverware (including the use of scrap - million ounces)

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Europe										
Italy	45.3	43.4	39.5	35.4	32.3	28.1	25.9	25.8	19.3	17.4
Germany	7.7	7.3	6.8	6.8	6.5	6.2	5.3	5.4	5.1	4.7
Poland	2.9	3.1	3.4	3.6	3.2	3.1	2.4	2.5	1.9	2.0
Other Countries	15.9	14.6	13.4	12.8	11.4	11.2	10.1	9.9	9.8	9.2
Total Europe	**71.8**	**68.3**	**63.1**	**58.5**	**53.5**	**48.5**	**43.8**	**43.6**	**36.1**	**33.3**
North America										
Mexico	15.6	16.2	16.4	14.0	13.6	13.0	12.0	12.3	11.5	11.7
United States	15.1	15.4	15.7	15.0	14.2	13.0	11.6	12.9	11.9	11.0
Canada	1.7	1.6	1.4	1.2	1.1	1.0	0.9	0.9	0.9	0.9
Total North America	**32.4**	**33.2**	**33.5**	**30.1**	**28.9**	**26.9**	**24.6**	**26.1**	**24.3**	**23.6**
Latin America										
Total Latin America	**4.0**	**4.4**	**4.6**	**5.0**	**5.1**	**5.6**	**6.3**	**6.5**	**5.5**	**5.6**
Middle East										
Turkey	7.9	8.7	8.3	7.2	6.2	6.7	5.6	4.9	4.3	4.5
Other Countries	6.6	7.0	7.0	6.9	7.0	6.7	6.2	6.1	5.2	5.3
Total Middle East	**14.5**	**15.7**	**15.3**	**14.1**	**13.2**	**13.4**	**11.8**	**11.1**	**9.5**	**9.7**
Indian Sub-Continent										
India	61.7	39.4	42.9	28.1	34.2	34.8	38.1	39.6	38.4	38.5
Bangladesh & Nepal	4.5	4.2	3.7	3.6	3.6	3.7	3.6	3.5	3.3	3.2
Other Countries	1.7	1.9	1.9	1.9	1.9	1.9	1.9	1.7	1.5	1.4
Total Indian Sub-Cont.	**67.9**	**45.5**	**48.5**	**33.7**	**39.8**	**40.4**	**43.5**	**44.8**	**43.2**	**43.1**
East Asia										
China	25.8	30.3	33.9	38.8	43.4	44.8	46.9	54.0	62.8	65.2
Thailand	36.2	36.9	36.8	36.8	36.5	33.3	30.4	30.5	24.8	20.7
Indonesia	4.1	5.2	4.5	5.1	4.8	4.8	4.8	5.4	6.1	6.7
South Korea	4.6	4.7	4.7	4.8	4.9	4.8	4.8	5.4	5.8	5.9
Other Countries	5.1	5.4	5.8	5.7	5.9	5.8	5.9	6.4	6.6	6.8
Total East Asia	**75.9**	**82.5**	**85.7**	**91.2**	**95.5**	**93.5**	**92.8**	**101.6**	**106.0**	**105.3**
Africa										
Total Africa	**1.2**	**1.2**	**1.2**	**1.2**	**1.3**	**1.3**	**1.2**	**1.2**	**1.1**	**1.1**
Oceania										
Total Oceania	**0.7**	**0.8**	**0.7**	**0.7**	**0.7**	**0.7**	**0.7**	**0.7**	**0.8**	**0.8**
CIS										
Russia	2.6	3.6	4.4	4.6	6.6	7.8	8.5	9.3	7.7	7.3
Other Countries	0.7	0.7	0.7	0.7	0.8	0.8	0.7	0.6	0.6	0.5
Total CIS	**3.3**	**4.3**	**5.2**	**5.4**	**7.4**	**8.6**	**9.1**	**10.0**	**8.3**	**7.9**
World Total	**271.8**	**255.8**	**257.9**	**239.9**	**245.4**	**238.9**	**233.7**	**245.6**	**234.8**	**230.4**

Jewelry & Silverware

Although the *World Silver Survey* has featured separate jewelry and silverware series for the past seven years, we continue to show the two together in Table 8a above for comparative purposes. As the data above shows, jewelry and silverware's combined offtake in 2012 fell by 1.9% to 230.4 Moz (7,167 t). Last year's losses were largely attributed to silverware, where ongoing structural losses, mainly in the industrialized world, combined with high and volatile silver prices, pushed the global total below 45 Moz (1,400 t), the lowest point since 1990. In contrast, jewelry offtake remained broadly flat last year, thanks to healthy gains in China and India, which partly offset losses in western markets. In addition, jewelry and silverware's combined share of global fabrication, which accounted for about a third of the total a decade ago, fell further last year, to 27%, largely due to the sharp decline in silverware's share.

highlights the extent to which it is silver's high absolute price that is key to determining trends in consumption, rather than any year-on-year change in the price. A fall in silver prices can also coexist with this swing as caution among retailers based on status concerns often meant an initial reluctance to adopt these novel items.

One trend that was reported to have grown in scale last year was the corporate gifting of silver jewelry, often taking the form of a very light weight chain being given for free to a consumer with the purchase of say a pendant. This introduces a potential statistical anomaly in that apparent consumption would include such gifting, whereas actual sales might not.

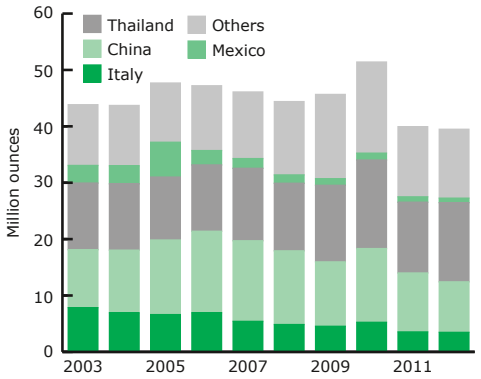
Evidence for broad stability in consumption comes from our analysis of the trade data, which implies that jewelry imports on a fine weight basis rose a fraction. The year, however, began with losses (attributed by some to an over-enthusiastic build up in stocks in late 2011) but 2012 ended with a firm fourth quarter. As for the performance at a country level, the largest supplier, Thailand, saw strong gains, while number three, India, enjoyed a fair sized rise. In contrast, the second largest, China, suffered heavy losses and number four, Italy, saw a slight drop. This outcome for imports and overall consumption meant that silver jewelry fabrication within the United States in 2012 fell for the second consecutive year, declining by an estimated 7% to 10.3 Moz (321 t).

Another origin showing losses in the US import statistics is **Mexico**. However, the drop was small and may well include changes in the re-export of imported pieces. As such, we feel that this can coexist with talk of a slight rise in Mexican fabrication since local jewelry sales look to have benefited from both a drop in the silver price (by 6% in peso terms), a rise in the gold price and a buoyant economic outlook; fourth quarter GDP growth of 3.2% is projected to be followed by growth this year of 3.7%. Imports do not appear to have mopped up this rise in consumption as they fell notably last year.

Middle East

Jewelry fabrication in **Turkey** rose by an impressive 11% last year to 3.4 Moz (105 t), its first rise since 2008. This turnaround was the result of a combination of a stronger export sector and a rise in domestic consumption, with the latter largely because of gains at the expense of karat gold. Weaker metal prices (the Turkish Lira average

US Official Silver Jewelry Imports



Source: Thomson Reuters GFMS

price eased 5% last year) encouraged trade restocking, with this most apparent from early-May to mid-August as silver in domestic terms traded in a narrow band, bouncing off lows not seen since early 2011. Jewelry exports to Russia picked up strongly last year, especially for silver products based on popular gold designs. Shipments to the United States, however, remained moribund due to the elevated silver price and economic vulnerability. One way in which the fine metal contained in US-bound flows was undermined was through impressive gains in US demand for plated and bonded jewelry, with these product ranges also gaining some traction in Europe.

Following the near collapse of the **Egyptian** jewelry fabrication sector in 2011 due to the country's political unrest, demand picked up some lost ground last year, increasing by 40% to an estimated 0.7 Moz (22 t) - a level still well short of pre-crisis levels. Competition from imported products (mainly from Dubai) continued to win market share at the expense of locally produced items as consumers looked to the modern and intricate styles offered by the imported products.

Indian Sub-Continent

Indian jewelry fabrication in 2012 rose by a noteworthy 7% to 23.3 Moz (724 t), a level last visited in 2003. Before looking at last year's trends in details, it is worth highlighting that our fabrication series has undergone a major upwards revision. This is due to new information gathered during field research this year and in 2012, which has necessitated a thorough review of previous estimates. Specifically, feedback from the local jewelry trade indicates that our estimates for domestic consumption seem to have been overly conservative,

Westernization's Potential Impact on Emerging Market Jewelry Consumption

Across much of the developing world, silver jewelry has historically been linked to culture and long held traditions that supported demand for plain simple designs, with a low labor cost component and retail markup. These styles contrast greatly with what is commonly found across the western world, where small intricate designs often branded, combined with stones or mixed materials are often common place. In recent years, there has been a notable shift to a more western approach in consumer tastes from the developing world (chiefly China and India) and this focus box examines some of the possible implications of this changing trend.

Looking firstly at China, this market has gone through an extraordinary change in the last decade. Previously this market was dominated by fabricators producing significant volumes of unbranded jewelry, often of a low quality and with simple designs. With the beginning of silver's price ascent in the mid 2000s, attitudes started to change as consumers noticed their jewelry gaining in value over time, adding an investment aspect to silver jewelry. Perhaps of greater influence though, and a move that has shaped Chinese consumptions trends today, was the arrival of western jewelry products. Most importantly, they brought with them a different perception of silver that over time has been instilled in China whereby urban consumers are now looking for uniqueness of design, a high quality and innovation and, importantly, are prepared to pay for perceived, rather than intrinsic value.

Fundamentally, these changing trends could have potential ramifications on fabrication volumes. Indeed, as Chinese consumers migrate to smaller, more fashionable designs, the draw down on fresh silver stocks may well be impacted. However, given our forecast for healthy growth for Chinese jewelry offtake as discretionary expenditure increases and urban household income continues to rise, any significant impact is still several years away. In addition, the increase in stone set jewelry offtake may also limit the metal being returned to market for recycling as like western markets, with its higher markup structure, selling of old designs is often not as profitable.

Silver jewelry demand in India is also based around traditional values and is widely used for making toe rings and anklets as it is considered a taboo to wear gold jewelry on the leg. There are also intricate designs in bangles and necklaces which are aligned to certain communities or regions. However, these traditional designs are now seen as out of place among urban women where elegance and perceived value have taken precedence over the intrinsic value. To put things into perspective, a sterling silver bracelet weighing 27 grams is priced between Rs. 2,500 to Rs. 2,700 whilst the per gram rate is just Rs. 54, which in essence reveals a healthy mark up on fashion jewelry. Also of importance is the substitution effect due to higher prices in gold which is resulting in a shift from white gold to sterling silver jewelry studded with stones such as cubic zirconia in low-end products and diamonds in high-end variants.

This segment of the market, while still in its infancy, is rapidly gaining momentum through shop-in-shop formats, sales through e-commerce portals and small format stores, with higher margins being an incentive to push sales. Looking ahead, with the rising urban population, which is almost a third of the total, there is going to be a gradual shift away from traditional jewelry consumption and its sales will be restricted to just 'compulsory' purchases.

Illustrations of Recent Trends

Clockwise from top left: Esse by Pranda Group, Kuhjohl's sterling silver ring made with Swarovski zirconia and sterling silver bracelet by Orosil Smiths India, silver necklace & pendant with Swarovski crystals by Silver Dragon Jewelery. Lucera's sterling silver earrings from Gitanjali Gems & Jewellery

as offtake has been helped by healthy demand in rural households, thanks to growing disposable incomes on the back of a sustained rise in crop yields along with higher agricultural commodity prices in recent years. As such, our estimates for 2004-10 have been lifted by an average of 6.4 Moz (200 t) per annum.

Looking at developments in 2012, with only modest overall gains in exports, the bulk of the increase in jewelry fabrication last year was accounted for by the ongoing strength of domestic consumption. Consistent with the trend seen in previous years, retail sales were underpinned by rising incomes, although demand growth in rural areas seems to have been restrained by poor agricultural output. Perhaps more importantly, silver jewelry continued to enjoy substitution gains from gold, as the local gold price posted a series of record highs in 2012. Although last year saw a shift towards lighter silver pieces with more contemporary designs at the expense of traditional heavy items, the growing popularity of silver jewelry in urban areas was sufficient to drive overall volumes higher in 2012.

One reason for this is that silver jewelry sales have been assisted by heavy marketing campaigns by major jewelry brands. This is stark contrast to five years ago when recognition of branded silver jewelry was almost non-existent among the general public. As these promotions targeted high silver purity pieces (over 90%), they also helped push fine silver volumes higher. That said, the preference for high content silver jewelry was still restricted to larger cities in India. Our information suggests that in northern and eastern parts of the country, under-karating was still widely prevalent in 2012.

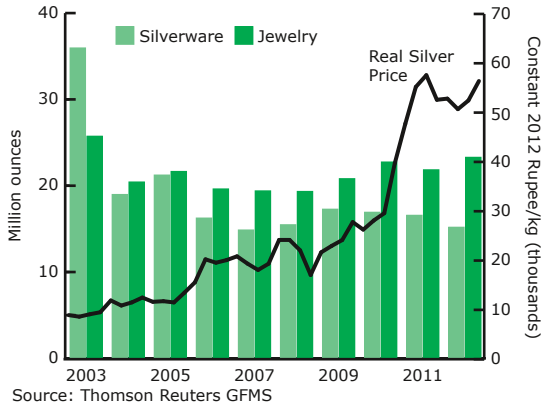
Another development that helped to sustain jewelry sales was interest in gold plated silver jewelry, particularly those with designs that pertain to various local cultures (for instance 'jhumka' drop earrings). Silver diamond jewelry has also began to make inroads into the high-end segment, albeit from a very low base.

East Asia

Thailand's silver jewelry fabrication fell by more than 17% last year to an estimated 18.9 Moz (588 t). The double-digit decline follows a similar fall in 2011 and reflects the broader trend that has emerged in recent years, with Thai fabrication offtake slumping over 40% from the record level recorded in 2006. At that time, Thailand was the number one ranked nation for silver jewelry production, but it now sits in third position, behind China and India.

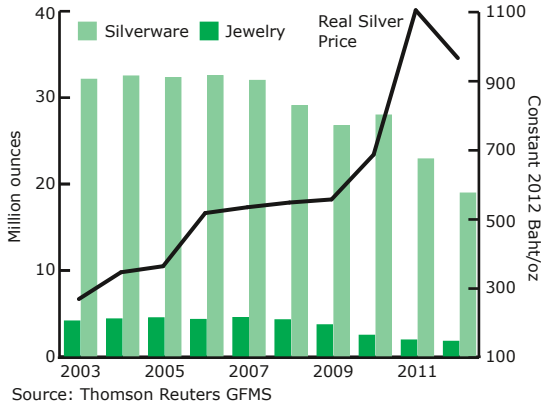
Much of the fabrication losses can be explained by weaker exports, with customs figures showing a gross weight drop of 30% last year. The macro economic backdrop again played a central role in 2012, with shipments to most western countries down sharply. The United States remains the largest market for Thai fabricators (at almost 40% of total exports), with this market again disappointing, dropping by more than one-fifth. The removal of the Generalised System of Preferences (GSP) in July last year, which essentially removes or reduces customs duties into the United States, may have explained the drop, though shipments in the first six months were also sluggish, declining by more than 20% year-on-year. Elsewhere, exports were mainly weaker, with Western Europe accounting for much of the fall.

Indian Jewelry and Silverware Fabrication



Source: Thomson Reuters GFMS

Thai Jewelry and Silverware Fabrication



Source: Thomson Reuters GFMS

Table 8 - Silver Fabrication: Jewelry (including the use of scrap - million ounces)

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Europe										
Italy	35.7	34.2	31.5	28.2	25.8	22.6	21.3	21.8	16.5	15.1
Germany	3.6	3.7	3.8	3.8	3.9	3.9	3.7	3.8	3.7	3.6
France	2.4	2.0	1.5	1.6	1.7	1.6	1.7	1.9	2.2	2.0
Poland	2.8	3.0	3.3	3.5	3.2	3.0	2.4	2.4	1.9	1.9
Portugal	1.5	1.4	1.2	1.1	1.0	1.1	1.0	1.0	1.0	1.0
Spain	1.7	1.4	1.4	1.3	1.1	1.1	1.2	1.1	1.1	1.0
Greece	1.0	1.0	1.1	1.1	1.0	1.2	1.0	0.9	0.8	0.8
UK & Ireland	1.2	1.2	1.0	1.0	0.5	0.4	0.4	0.4	0.4	0.3
Sweden	0.4	0.4	0.4	0.4	0.4	0.3	0.3	0.3	0.3	0.3
Switzerland	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Denmark	0.3	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.2
Cyprus & Malta	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Norway	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1
Finland	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Austria	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other Countries	0.6	0.6	0.6	0.6	0.7	0.7	0.6	0.6	0.6	0.6
Total Europe	**52.0**	**50.0**	**46.9**	**43.4**	**40.1**	**36.7**	**34.5**	**35.2**	**29.3**	**27.5**
North America										
Mexico	13.0	13.6	14.0	12.0	12.2	11.8	11.1	11.6	11.0	11.2
United States	13.4	13.8	14.1	13.5	12.9	12.0	10.7	12.0	11.1	10.3
Canada	1.4	1.4	1.2	1.0	0.9	0.8	0.8	0.8	0.8	0.8
Total North America	**27.7**	**28.7**	**29.3**	**26.4**	**26.0**	**24.6**	**22.6**	**24.5**	**22.9**	**22.3**
Latin America										
Brazil	1.2	1.3	1.4	1.5	1.5	1.5	1.7	1.9	1.8	1.9
Peru	0.3	0.3	0.3	0.4	0.3	0.4	0.5	0.5	0.5	0.5
Argentina	0.1	0.2	0.2	0.3	0.3	0.3	0.2	0.3	0.3	0.3
Colombia	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Ecuador	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.2
Other Countries	0.8	1.0	1.1	1.2	1.2	1.8	2.5	2.5	1.8	1.9
Total Latin America	**2.8**	**3.1**	**3.4**	**3.8**	**3.8**	**4.4**	**5.3**	**5.6**	**4.7**	**4.8**
Middle East										
Turkey	5.0	6.0	5.7	4.8	4.1	4.5	3.9	3.4	3.1	3.4
Saudi Arabia	0.5	0.5	0.5	0.6	0.6	0.6	0.6	0.7	0.8	0.8
Egypt	1.4	1.5	1.4	1.3	1.4	1.3	1.2	1.1	0.5	0.7
Israel	0.4	0.4	0.4	0.4	0.5	0.5	0.4	0.4	0.3	0.3
Other Countries	1.1	1.1	1.2	1.2	1.2	1.2	1.2	1.4	1.5	1.6
Total Middle East	**8.3**	**9.5**	**9.2**	**8.3**	**7.7**	**8.0**	**7.3**	**7.0**	**6.1**	**6.8**
Indian Sub-Continent										
India	25.7	20.4	21.6	11.9	19.4	19.3	20.8	22.7	21.8	23.3
Bangladesh & Nepal	1.9	1.9	1.8	1.7	1.8	1.9	1.9	1.9	1.9	2.0
Other Countries	0.8	0.8	0.9	0.9	0.9	0.9	1.0	0.9	0.8	0.8
Total Indian Sub-Cont.	**28.4**	**23.2**	**24.3**	**14.5**	**22.1**	**22.1**	**23.7**	**25.5**	**24.5**	**26.1**
East Asia										
China	20.7	24.0	26.7	30.3	34.3	36.1	40.0	46.4	54.4	56.6
Thailand	32.1	32.5	32.3	32.5	32.0	29.1	26.7	28.0	22.9	18.9
Indonesia	3.5	4.5	3.7	4.4	4.2	4.2	4.2	4.7	5.5	6.2
South Korea	3.9	4.0	3.9	4.0	4.2	4.1	4.2	4.7	5.2	5.4

Table 8 - Silver Fabrication: Jewelry (including the use of scrap - million ounces)

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Japan	1.5	1.8	2.0	1.9	2.1	2.0	2.1	2.2	2.2	2.3
Vietnam	0.8	0.9	0.9	1.0	1.1	1.2	1.2	1.4	1.5	1.5
Myanmar, Laos & Cambodia	0.7	0.7	0.6	0.6	0.6	0.6	0.6	0.7	0.7	0.8
Malaysia	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.7	0.7
Hong Kong	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Taiwan	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Other Countries	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Total East Asia	**64.5**	**69.6**	**71.6**	**76.3**	**79.8**	**78.5**	**80.3**	**89.6**	**94.1**	**93.5**
Africa										
Morocco	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.2
Tunisia	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Algeria	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Other Countries	0.3	0.3	0.3	0.3	0.3	0.4	0.3	0.3	0.3	0.3
Total Africa	**0.9**	**0.9**	**0.9**	**0.9**	**1.0**	**1.0**	**0.9**	**0.9**	**0.9**	**0.9**
Oceania										
Australia	0.7	0.7	0.7	0.6	0.6	0.6	0.6	0.7	0.7	0.8
Total Oceania	**0.7**	**0.7**	**0.7**	**0.7**	**0.7**	**0.7**	**0.7**	**0.7**	**0.8**	**0.8**
CIS										
Russia	0.9	1.2	1.5	1.6	2.3	2.5	3.0	3.3	2.7	2.6
Other Countries	0.5	0.5	0.5	0.6	0.6	0.6	0.5	0.5	0.4	0.4
Total CIS	**1.4**	**1.8**	**2.1**	**2.2**	**2.9**	**3.1**	**3.5**	**3.8**	**3.1**	**3.0**
World Total	**186.8**	**187.6**	**188.4**	**176.5**	**183.8**	**179.1**	**178.7**	**192.8**	**186.5**	**185.6**

Less blame can be placed on market share losses last year with Hong Kong/China silver jewelry imports into the United States also declining year-on-year. The focus instead should be directed to the weak economic environment, especially in Europe, and the impact that this had on consumer sentiment and, by extension, discretionary spending. The greatest casualty was sales at the low-end of the market, with those Thai fabricators focused on this segment reporting the sharpest declines.

In contrast, those producing branded high end items indicated sales had fallen only marginally. This was partly due to consumers migrating down from gold to high end light-weight silver designs. Behind this decline in wholesale export orders was growing pressure to reduce item weights in an effort to meet retail price points as requested by retailers. Indeed, items weights at the low-end of the market (a wholesale cost of less than $5) have seen a third of the total weight shaved off by the use of hollow designs and of synthetic stones. In addition, rising demand for silver plated designs (mainly brass) have also impacted this segment, helping to drive down fine silver offtake, as the lower price point of these products have enticed price motivated consumers.

Thai fabricators, struggling to persevere in a difficult market have also had to content with rising costs. In April last year, minimum wages were lifted 40%, with this increase impacting severely on overheads and reducing profitability. Moreover, field research visits last year found this issue was raised consistently as one of the toughest challenges facing the industry and, with further increases already taking place in early 2013, it will again be a major hurdle this year.

Turning briefly to domestic demand, sales of silver jewelry recovered some lost ground after falling heavily in 2011 following the severe flooding experienced across much of the south of the country. Mainly supported by tourist visitors and the luggage trade, sales received some benefit from people trading down from gold to silver, although the latter is still is not widely accepted by Thai nationals (outside the larger cities) given their investment driven relationship with gold.

Jewelry fabrication in **South Korea** grew for the fourth consecutive year, rising by 4% to 5.4 Moz (169 t) in 2012. The modest increase in jewelry offtake was largely driven by decent growth in domestic consumption, thanks to price-led substitution gains at the expense of gold. Indeed, the marked rally in the local gold price in recent years along with weak consumer sentiment has put sustained pressure on karat gold jewelry sales. In the wake of sluggish gold sales, local jewelry fabricators continued to move to cheap alternatives which could allow them to adopt more contemporary designs to attract interest in urban areas. As such, rhodium or gold plated silver jewelry (usually combined with new materials such as leather, gems or even glass) started to gain market share last year.

Jewelry fabrication in **Indonesia** rose for the third year in a row to a new record of 6.2 Moz (192 t) in 2012. The healthy 12% gain was primarily a function of a rise in domestic consumption, with silver benefiting from price-led substitution gains from gold. Indeed, while gold consumption has been retreating in recent years as prices have continued to push higher, silver products have been winning market share, thanks to their lower entry costs. Local fabricators, who had previously produced gold items, have increasingly been switching part or all of their production to the more affordable white metal. As with most other developing world markets, Indonesian silver fabrication is being driven predominately by the youth demographic who are migrating to silver for its more affordable fashion jewelry. That trend means demand is still largely centralized in the larger urban markets and the lack of a reliable buy back policy also deters many in rural areas from purchasing silver.

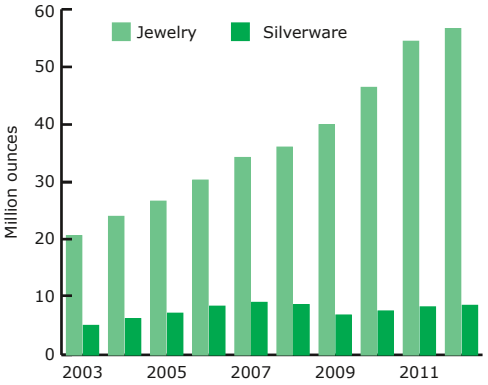
The decade-long upwards trend in silver jewelry fabrication in **China** continued last year. With a further increase of 4% to a new record high of 56.6 Moz (1,762 t), the country continued to consolidate its position as the world's largest jewelry market in 2012. It should be noted that Thomson Reuters GFMS' back series on Chinese jewelry and silverware have been raised by a fair amount since the publication of World Silver Survey 2012, reflecting a reassessment of domestic consumption in the late 2000s.

The ongoing strength of jewelry fabrication was partly attributed to steady GDP growth in China, which continued to drive up disposable income and encourage consumer spending. Although fears of a "hard landing" and lackluster property and equity markets certainly had a negative impact on the broad jewelry sector in mid-2012 in China, silver jewelry demand turned out to hold up well, thanks to its low pricing points at the retail level and a growing consumer base in urban areas. Indeed, the preference for "white look" jewelry has seen silver continue to gain interest from budget conscious young generations where affordability and fashion aspects are of key importance rather than the metal's intrinsic value. Meanwhile, improved technology has also allowed silver jewelry to adopt more contemporary styles in recent years, as local silver fabricators has duplicated popular designs normally found in 18-karat white gold or platinum in the more affordable silver to attract new customers.

Furthermore, continued urbanization along with the ongoing expansion in the number of new jewelry retail spaces across China have also helped to sustain this strong increase in domestic jewelry demand. It is of note that growth in new silver jewelry shops has been particularly apparent in China over the last few years, thanks to silver jewelry's low manufacturing costs and high margins, which have reduced capital financing requirements.

Turning to the country's exports sector, similar to Italy and Thailand, weak consumer spending in the industrialized world clearly had a negative impact on the business, with the country's total silver jewelry exports falling by 28% to 8.8 Moz (275 t) in 2012, the lowest figure in five years.

Chinese Jewelry and Silverware Fabrication



Source: Thomson Reuters GFMS

Table 9 - Silver Fabrication: Silverware (including the use of scrap - million ounces)

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Europe										
Italy	9.6	9.1	8.0	7.2	6.6	5.5	4.6	4.0	2.8	2.3
Germany	4.1	3.5	3.0	2.9	2.7	2.3	1.6	1.6	1.4	1.1
Greece	1.9	1.7	1.5	1.4	1.2	1.0	0.8	0.6	0.5	0.5
Norway	1.1	1.0	0.9	0.9	0.6	0.7	0.5	0.5	0.4	0.4
Sweden	0.5	0.5	0.5	0.4	0.4	0.4	0.3	0.3	0.3	0.3
Denmark	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Other Countries	2.3	2.1	2.0	1.8	1.6	1.6	1.2	1.2	1.1	1.0
Total Europe	**19.8**	**18.3**	**16.2**	**15.1**	**13.4**	**11.8**	**9.3**	**8.4**	**6.8**	**5.8**
North America										
United States	1.8	1.6	1.5	1.4	1.4	1.0	0.9	0.8	0.8	0.7
Mexico	2.7	2.6	2.5	2.0	1.4	1.2	0.9	0.7	0.5	0.5
Canada	0.3	0.3	0.3	0.2	0.2	0.1	0.1	0.1	0.1	0.1
Total North America	**4.7**	**4.5**	**4.3**	**3.6**	**2.9**	**2.3**	**1.9**	**1.6**	**1.4**	**1.3**
Latin America										
Colombia	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.2
Peru	0.3	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.1	0.1
Other Countries	0.5	0.6	0.7	0.7	0.7	0.7	0.6	0.5	0.4	0.4
Total Latin America	**1.2**	**1.2**	**1.2**	**1.3**	**1.3**	**1.2**	**1.0**	**0.9**	**0.8**	**0.8**
Middle East										
Turkey	2.9	2.8	2.6	2.4	2.1	2.2	1.8	1.5	1.3	1.1
Israel	1.4	1.4	1.5	1.5	1.4	1.3	1.1	1.0	0.7	0.6
Egypt	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.1	0.1
Other Countries	1.6	1.7	1.7	1.7	1.7	1.7	1.5	1.4	1.3	1.2
Total Middle East	**6.2**	**6.2**	**6.1**	**5.8**	**5.5**	**5.4**	**4.5**	**4.1**	**3.3**	**3.0**
Indian Sub-Continent										
India	35.9	19.0	21.2	16.2	14.9	15.5	17.3	16.9	16.6	15.2
Bangladesh & Nepal	2.6	2.3	1.9	1.9	1.9	1.8	1.7	1.6	1.4	1.3
Other Countries	1.0	1.0	1.1	1.1	1.0	1.0	0.9	0.8	0.7	0.6
Total Indian Sub-Cont.	**39.5**	**22.3**	**24.2**	**19.2**	**17.8**	**18.4**	**19.8**	**19.3**	**18.6**	**17.1**
East Asia										
China	5.1	6.3	7.2	8.4	9.1	8.7	6.9	7.6	8.3	8.6
Thailand	4.1	4.4	4.5	4.3	4.5	4.3	3.7	2.5	1.9	1.8
Indonesia	0.7	0.8	0.8	0.7	0.6	0.6	0.7	0.7	0.6	0.5
South Korea	0.7	0.7	0.8	0.7	0.7	0.7	0.6	0.6	0.6	0.5
Other Countries	0.8	0.8	0.8	0.7	0.7	0.7	0.6	0.6	0.5	0.5
Total East Asia	**11.4**	**12.9**	**14.0**	**14.9**	**15.7**	**15.0**	**12.5**	**12.0**	**11.9**	**11.8**
Africa										
Africa	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.2
Total Africa	**0.3**	**0.3**	**0.3**	**0.3**	**0.3**	**0.3**	**0.3**	**0.3**	**0.2**	**0.2**
Oceania										
Oceania	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Oceania	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
CIS										
CIS	1.9	2.5	3.1	3.2	4.5	5.4	5.7	6.2	5.2	4.9
Total CIS	**1.9**	**2.5**	**3.1**	**3.2**	**4.5**	**5.4**	**5.7**	**6.2**	**5.2**	**4.9**
World Total	**85.1**	**68.3**	**69.6**	**63.4**	**61.5**	**59.8**	**55.0**	**52.8**	**48.3**	**44.9**

Silverware

• ***Global silverware fabrication declined for the seventh consecutive year, due to elevated metal prices coupled with slower global economic growth.***

Global silverware fabrication slipped by a further 7% to 44.9 Moz (1,396 t) in 2012, the lowest in our data series going back to 1990 and less than 40% of the peak registered in 1997. Much of the historic fall was attributed to a secular downtrend in the developed world, with the situation being exacerbated last year by sluggish economic growth, as this curtailed discretionary consumer spending. Elevated prices also had a negative impact on demand in many key developing countries. The only notable exception was China where demand rose by 3%, thanks to robust domestic sales.

Europe

Silverware fabrication saw another year of sizeable losses in 2012 as demand fell 14% to 5.8 Moz (182 t), or less than 30% of offtake a decade earlier. Much of the historic slide was driven by societal changes, such as the decline of formal dining or gifting of silverware at weddings. With the bulk of this behind us, it had been expected that the slide in demand might begin to bottom out. However, this failed to occur last year (the drop in 2012 was broadly in line with the average for the five prior years), chiefly as a result of a poor economic backdrop and still elevated prices (it is worth remembering here that the euro silver price only fell by 4% in 2012).

This continuance of heavy losses was to an extent due to a marked decline not only being recorded in traditional flatware but also in areas once comparatively resilient such as photoframes. The latter showed a clear link to the price as there was a marked switch to yet thinner walled frames and from sterling silver to plated or bonded items. Not all was gloomy, however, as top end sales were robust, as were exports to some emerging markets.

Since peaking in 2010, silverware fabrication in **Russia** suffered another fall last year, dropping by 5% to 4.8 Moz (148 t), although the extent of the decline was far less severe than in 2011. Last year's losses were mainly attributed to weaker local consumption due to a softer economic environment, which to some extent limited growth in disposable incomes, and the elevated silver price level, which saw a shift away from heavy items.

North America

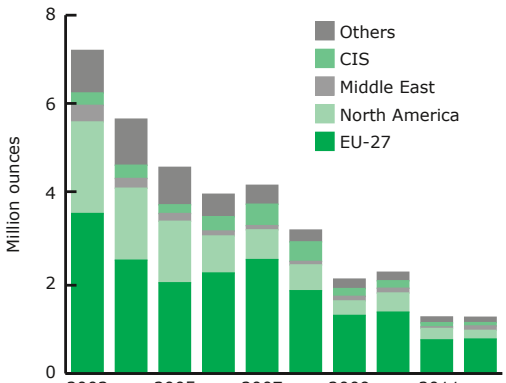
US silverware demand continued its slide in 2012 as it fell 14% to 0.7 Moz (21 t). Silverware imports fell even more heavily; as reported by origin, these slipped by 31% in gross weight terms (although we feel doubtful accuracy makes that a likely overstatement). Much was due to ongoing losses in traditional, especially heavy, flatware. In contrast, the drop for more modern items, particularly those likely to be gifted such as lighter photoframes, was restrained.

Middle East

In 2012, the 13% fall in **Turkish** silverware fabrication, to 1.1 Moz (34 t), marked the fourth successive year of losses, with output at a record low based on our data series. This means the sector as a whole has been in decline for much of the last decade or so, sliding from a high in 2003 of 2.9 Moz (91 t). Aside from structural changes to domestic demand, a weaker export sector also contributed to the drop in demand as did Turkey's more sober economic performance last year. All this easily outweighed the 5% drop in the annual average Turkish Lira silver price.

Israel's silverware fabrication declined 14% last year, slipping for the sixth year in succession to 0.6 Moz (19 t). Demand for Judaic purchases domestically witnessed only modest attrition. However, of greater consequence to fabricators was the drop in demand from key export markets (chiefly the United States) as economic factors significantly impacted consumption rates. In addition, migration to plated items in a bid to reduced retail price points also reduced fine silver offtake and helps explain the drop in 2012.

Italian Silverware Exports



Source: Istat

Indian Sub-Continent

Indian silverware fabrication dropped for the third year in a row in 2012, falling by 8% to a five-year low of 15.2 Moz (472 t). However, the country remained comfortably the world's largest silverware market last year. By contrast, local consumption at the retail level in 2012 looks to have continued the positive growth trend that began in 2010. Such a divergent trend between fabrication and consumption highlighted a major rise in stock levels held by the trade in previous years which reduced incentives to replenish inventory amid an elevated and volatile silver price environment in 2012.

The bulk of growth in retail sales last year was concentrated the high end segment where demand tends to be less price sensitive. For instance, some retailers report that growth in sales of utensils (usually with silver purity of over 85%) remained steady among the wealthy elite. By contrast, demand from the middle class weakened last year, as elevated silver prices and increasing budget constraints continued to encourage a shift to lower purity items. Meanwhile, rising prices also restrained purchases from the low income group, as many were obliged to refurbish old silverware instead of purchasing new items, except in some southern Indian areas where the general public still preferred to buy high purity pieces.

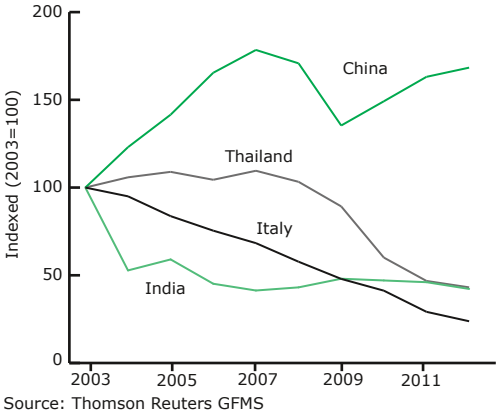
East Asia

Silverware fabrication in **Thailand** last year suffered another fall, although the extent of the decline, a drop of some 8% to 1.8 Moz (55 t), was far less severe than in recent years. However, this reflected the long term secular demand trend that has seen consumers (especially in industrialized nations) turn away from silver to more modern alternatives. Indeed, this culturally driven substitution, combined with the acute rise in the silver price, remains the chief driver for the recent slump in offtake. It is worth reflecting on the impact these changes have had on what was once a flourishing fabrication segment. In just the last six years, Thailand's demand for silver in this sector has fallen by a considerable 60%. This was driven predominately by falling export demand, although domestic offtake (especially from the back backer trade) has also retreated due to the price impact. According to official trade statistics, Thailand's exports surprisingly were stronger last year, reversing several years of declines, with a healthy rise in shipments to the United States and France accounting for most of the gains.

China once again defied the global trend in 2012, as silverware fabrication posted a 3% increase to 8.6 Moz (267 t), although the total remained below the peak seen in 2007.

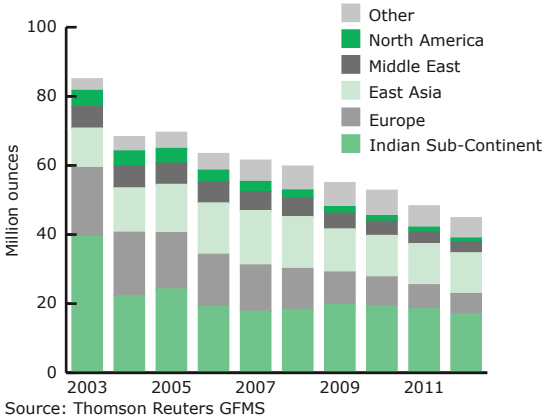
Similar to other key producers, the silverware export sector in China also suffered from weak demand in western countries, as our estimate shows a 39% fall in exports in 2012. Nevertheless, these losses were more than offset by robust domestic demand. Similar to the jewelry sector, sales of silverware on the domestic front saw further gains in 2012, thanks to healthy GDP growth coupled with ongoing gains in disposal incomes. In particular, consumption in recent years has been boosted by a rising middle class in China, as this has led to greater demand for tableware in urban households and for silver giftware. This was also supported by the cost of gold gift items having risen sharply.

Main Global Silverware Fabricators



Source: Thomson Reuters GFMS

World Silverware Fabrication



Source: Thomson Reuters GFMS

8. Appendices

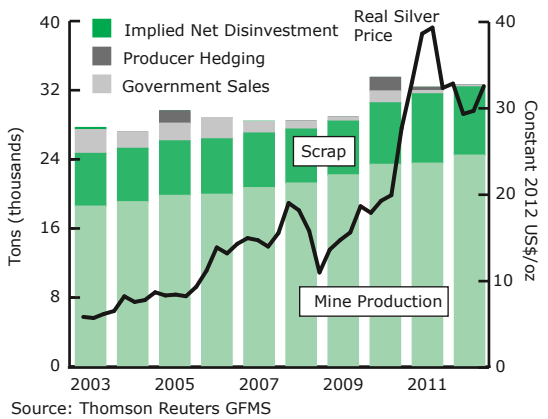
Contents

Appendix 1

Table 1 - World Silver Supply and Demand (tons) Thomson Reuters GFMS/ The Silver Institute

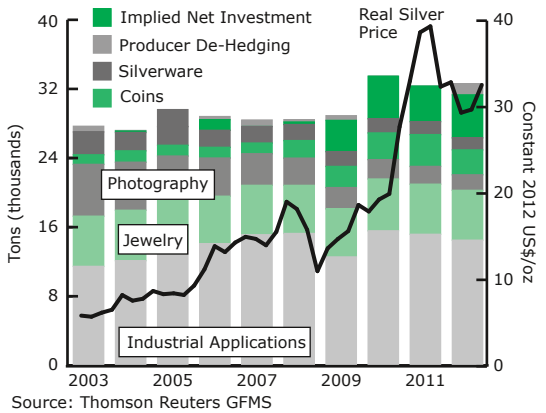
	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Supply										
Mine Production	18,575	19,085	19,821	19,947	20,718	21,244	22,196	23,413	23,546	24,478
Net Government Sales	2,759	1,924	2,051	2,441	1,322	949	485	1,375	374	229
Old Silver Scrap	6,097	6,179	6,304	6,413	6,315	6,247	6,216	7,118	8,028	7,897
Producer Hedging	-	-	1,427	-	-	-	-	1,569	381	-
Implied Net Disinvestment	244	-	-	-	44	-	-	-	-	-
Total Supply	**27,675**	**27,188**	**29,603**	**28,801**	**28,398**	**28,439**	**28,898**	**33,474**	**32,330**	**32,604**
Demand										
Fabrication										
Industrial Applications	11,459	12,120	13,385	14,090	15,124	15,268	12,553	15,576	15,173	14,490
Photography	5,999	5,562	4,987	4,423	3,658	3,151	2,467	2,242	2,057	1,797
Jewelry	5,809	5,834	5,858	5,489	5,718	5,570	5,559	5,997	5,800	5,771
Silverware	2,646	2,123	2,164	1,973	1,913	1,860	1,711	1,642	1,502	1,396
Coins & Medals	1,110	1,318	1,246	1,237	1,235	2,031	2,450	3,092	3,681	2,884
Total Fabrication	27,023	26,957	27,640	27,212	27,649	27,880	24,740	28,550	28,213	26,339
Producer De-Hedging	653	62	-	362	750	269	541	-	-	1,289
Implied Net Investment	-	168	1,963	1,228		- 291	3,616	4,924	4,116	4,976
Total Demand	**27,675**	**27,188**	**29,603**	**28,801**	**28,398**	**28,439**	**28,898**	**33,474**	**32,330**	**32,604**
Silver Price (London US$/oz)	4.879	6.658	7.312	11.549	13.384	14.989	14.674	20.193	35.119	31.150

World Silver Supply



Source: Thomson Reuters GFMS

World Silver Demand



Source: Thomson Reuters GFMS

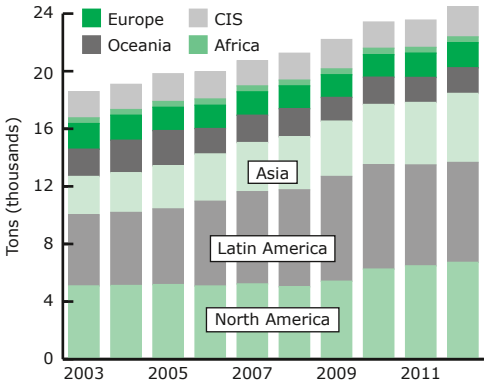
Table 2 - World Silver Mine Production (tons) Thomson Reuters GFMS / The Silver Institute

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Europe										
Poland	1,376	1,362	1,261	1,260	1,233	1,212	1,220	1,171	1,269	1,283
Sweden	307	291	284	266	294	263	270	285	283	306
Spain	2	0	5	2	2	2	5	23	33	39
Portugal	22	25	0	10	28	41	22	23	31	34
Greece	4	0	0	25	35	35	29	27	25	33
Bulgaria	22	19	21	18	14	11	15	13	17	19
Romania	29	28	27	15	3	0	3	7	16	12
Macedonia	5	3	7	11	8	9	9	9	9	9
Ireland	9	7	7	5	5	5	3	1	1	2
Serbia and Montenegro	1	1	1	1	1	1	1	1	1	1
Italy	2	0	3	3	1	0	0	0	0	0
Other Countries	0	0	0	0	0	0	0	1	1	0
Total Europe	**1,779**	**1,736**	**1,617**	**1,617**	**1,624**	**1,581**	**1,577**	**1,561**	**1,686**	**1,738**
North America										
Mexico	2,569	2,569	2,894	2,970	3,135	3,236	3,554	4,411	4,778	5,046
United States	1,240	1,250	1,220	1,140	1,260	1,120	1,250	1,270	1,120	1,013
Canada	1,276	1,295	1,063	969	829	669	608	573	582	663
Total North America	**5,085**	**5,114**	**5,177**	**5,079**	**5,225**	**5,026**	**5,412**	**6,254**	**6,480**	**6,722**
Latin America										
Peru	2,921	3,060	3,191	3,456	3,501	3,681	3,844	3,640	3,414	3,461
Bolivia	491	434	399	472	525	1,114	1,326	1,274	1,214	1,234
Chile	1,312	1,360	1,379	1,602	1,936	1,404	1,301	1,276	1,273	1,151
Argentina	138	145	187	211	252	333	555	721	703	750
Guatemala	0	0	10	50	88	100	129	195	273	205
Honduras	54	50	54	56	54	59	58	58	49	51
Dominican Republic	0	0	0	0	0	0	18	19	19	27
Ecuador	1	1	11	13	13	13	13	15	16	17
Colombia	10	9	7	8	10	9	11	15	24	15
Brazil	7	8	9	10	11	11	11	12	12	12
Nicaragua	2	3	2	3	3	3	4	7	7	8
Other Countries	3	3	6	6	6	5	6	6	4	7
Total Latin America	**4,938**	**5,073**	**5,256**	**5,887**	**6,400**	**6,733**	**7,275**	**7,239**	**7,007**	**6,938**
Asia										
China	1,828	1,967	2,102	2,361	2,466	2,638	2,699	3,013	3,253	3,640
India	91	105	102	183	178	212	193	255	234	394
Turkey	113	126	162	187	235	314	389	384	291	237
Indonesia	297	266	308	246	268	248	240	209	186	138
Islamic Rep. of Iran	82	84	90	100	90	98	106	106	101	101
Papua New Guinea	63	54	68	51	44	50	67	67	92	82
Philippines	10	9	19	24	28	14	34	41	46	51
Thailand	18	16	20	17	13	13	21	23	24	36
Mongolia	34	36	36	37	36	35	34	34	33	32
North Korea	25	25	25	29	29	29	25	26	27	27
Japan	83	54	32	34	14	12	12	11	24	24
Dem. Rep. of Laos	1	3	6	6	4	7	15	17	18	20
Other Countries	19	18	17	13	12	11	10	11	11	14
Total Asia	**2,665**	**2,763**	**2,987**	**3,286**	**3,418**	**3,681**	**3,844**	**4,196**	**4,340**	**4,796**

Table 2 - World Silver Mine Production (tons) Thomson Reuters GFMS / The Silver Institute

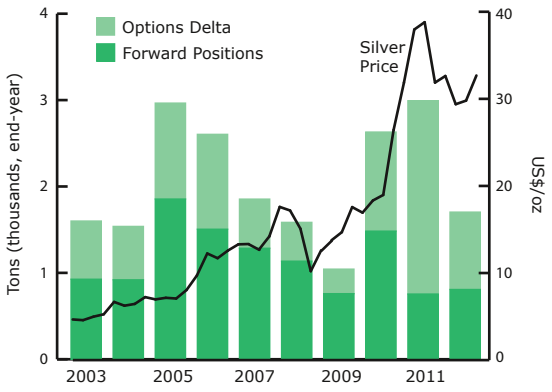
	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Africa										
Morocco	209	225	247	237	215	242	276	307	248	232
South Africa	87	71	88	93	86	84	92	93	92	90
Dem. Rep. of the Congo	36	34	0	34	70	34	1	7	11	14
Tanzania	8	13	13	12	11	9	11	12	13	13
Zambia	6	8	10	9	8	9	12	13	12	12
Botswana	4	4	4	4	4	5	5	5	5	7
Mali	2	2	2	3	3	2	3	2	2	3
Ghana	2	1	2	2	2	2	2	2	2	2
Namibia	29	27	30	35	8	8	0	0	0	0
Other Countries	9	8	6	4	4	3	4	6	13	33
Total Africa	**394**	**393**	**402**	**433**	**411**	**399**	**404**	**446**	**399**	**405**
Oceania										
Australia	1,864	2,222	2,407	1,728	1,879	1,926	1,631	1,880	1,725	1,770
New Zealand	30	30	46	35	19	32	14	14	14	12
Fiji	1	2	1	1	0	0	0	0	0	0
Total Oceania	**1,895**	**2,254**	**2,454**	**1,764**	**1,898**	**1,959**	**1,645**	**1,894**	**1,739**	**1,782**
CIS										
Russia	918	941	1,010	972	910	1,132	1,312	1,145	1,198	1,400
Kazakhstan	802	703	812	796	708	629	614	548	547	545
Armenia	41	40	37	39	37	40	49	54	74	81
Uzbekistan	53	60	65	64	79	53	52	59	59	59
Kyrgyzstan	1	1	1	6	6	10	9	10	10	6
Tajikistan	4	4	1	1	1	1	1	1	2	2
Other Countries	1	1	1	1	2	2	2	6	6	5
Total CIS	**1,820**	**1,751**	**1,928**	**1,880**	**1,743**	**1,866**	**2,039**	**1,823**	**1,895**	**2,098**
World Total	**18,575**	**19,085**	**19,821**	**19,947**	**20,718**	**21,244**	**22,196**	**23,413**	**23,546**	**24,478**

World Silver Mine Production



Source: Thomson Reuters GFMS

Silver Producer Hedging: Outstanding Positions



Source: Thomson Reuters GFMS

Table 3 - Silver Fabrication: Coins and Medals Including the Use of Scrap (tons)

Thomson Reuters GFMS / The Silver Institute

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
United States	452	483	517	548	497	790	1,067	1,296	1,487	1,210
Canada	10	40	51	89	133	281	336	580	729	582
Austria	13	15	18	17	17	259	296	360	571	289
China	72	72	57	50	81	88	94	116	180	265
Australia	40	40	32	43	109	182	201	272	350	204
Germany	301	301	303	272	195	223	232	200	102	90
Mexico	47	85	81	58	51	43	52	64	52	35
Spain	34	70	54	46	38	34	32	41	21	21
Other Countries	141	212	134	115	115	132	139	163	188	188
World Total	**1,110**	**1,318**	**1,246**	**1,237**	**1,235**	**2,031**	**2,450**	**3,092**	**3,681**	**2,884**

Table 4 - Supply of Silver from the Recycling of Old Scrap (tons)

Thomson Reuters GFMS / The Silver Institute

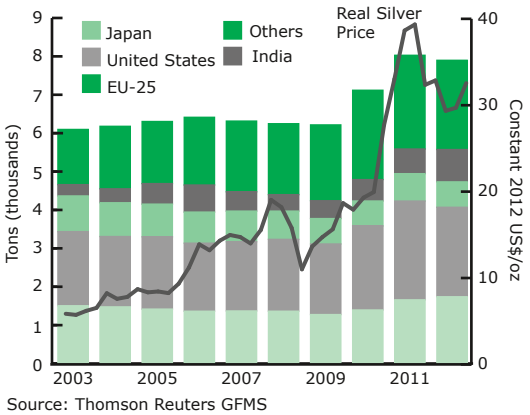
	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Europe										
Germany	592	598	546	470	471	455	391	465	519	672
Italy	112	104	133	170	175	183	181	203	303	309
UK & Ireland	404	386	360	340	348	340	316	298	350	305
France	126	118	127	139	142	158	170	193	217	182
Spain	14	14	13	13	12	14	16	23	40	41
Netherlands	44	45	42	40	35	34	32	35	38	39
Austria	48	50	40	40	38	36	33	35	38	37
Sweden	32	32	31	29	28	27	26	26	28	28
Belgium	20	20	20	20	20	19	18	20	21	22
Denmark	17	17	16	16	16	15	14	16	17	17
Portugal	14	14	13	13	13	12	12	12	14	14
Czech & Slovak Republics	13	14	14	14	14	13	12	13	14	14
Finland	13	12	12	11	11	10	10	10	11	11
Norway	14	10	9	9	8	9	9	10	10	10
Switzerland	10	10	10	8	8	8	7	7	7	7
Other Countries	34	34	32	31	32	31	30	30	32	32
Total Europe	**1,506**	**1,476**	**1,418**	**1,363**	**1,370**	**1,363**	**1,276**	**1,395**	**1,660**	**1,739**
North America										
United States	1,828	1,728	1,772	1,656	1,667	1,724	1,692	2,015	2,375	2,143
Mexico	55	60	64	72	84	95	98	123	140	136
Canada	47	44	46	44	50	52	48	51	57	51
Total North America	**1,930**	**1,832**	**1,882**	**1,772**	**1,801**	**1,871**	**1,838**	**2,189**	**2,572**	**2,330**
Latin America										
Brazil	36	32	32	32	32	32	34	42	51	50
Argentina	20	20	20	24	20	16	14	19	23	22
Chile	12	12	14	16	16	16	14	18	21	20
Other Countries	25	24	29	33	30	30	30	39	49	47
Total Latin America	***93***	***88***	***95***	***105***	***98***	***94***	***91***	***118***	***143***	***138***
Middle East										
Saudi Arabia & Yemen	23	40	50	56	58	59	60	69	73	68

Table 4 - Supply of Silver from the Recycling of Old Scrap (tons)

Thomson Reuters GFMS / The Silver Institute

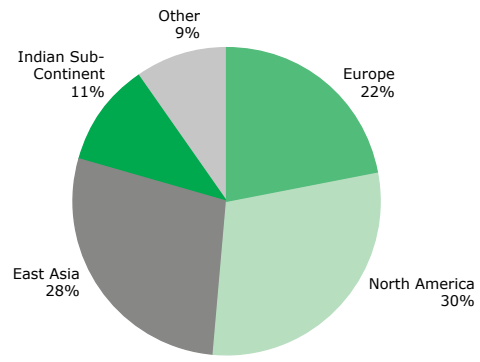
	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Turkey	52	47	41	35	30	36	33	32	36	32
Egypt	35	42	43	46	48	52	55	62	27	23
Oman	5	5	5	6	6	6	6	7	7	7
Other Countries	11	15	13	15	16	16	16	19	21	20
Total Middle East	**126**	**149**	**152**	**158**	**157**	**168**	**171**	**189**	**164**	**150**
Indian Sub-Continent										
India	294	363	535	705	502	429	465	558	642	842
Other Countries	15	15	16	17	17	17	20	26	31	31
Total Indian Sub-Cont.	**309**	**378**	**551**	**722**	**519**	**446**	**485**	**584**	**673**	**873**
East Asia										
China	407	473	544	636	700	705	787	909	992	962
Japan	930	880	852	810	800	736	662	649	714	662
South Korea	220	225	226	240	242	240	262	294	310	282
Taiwan	77	85	84	88	91	97	111	129	141	133
Thailand	66	74	69	80	85	91	96	115	116	99
Singapore	13	14	14	16	16	15	15	17	18	17
Hong Kong	12	13	13	14	14	14	14	15	16	16
Indonesia	10	11	11	12	12	12	12	13	15	14
Vietnam	10	10	11	11	12	12	11	12	13	11
Philippines	6	6	6	6	6	6	6	7	7	6
Other Countries	4	4	4	5	5	5	5	6	6	6
Total East Asia	**1,755**	**1,794**	**1,834**	**1,919**	**1,983**	**1,934**	**1,982**	**2,165**	**2,346**	**2,208**
Africa										
Morocco	16	40	19	29	28	29	31	32	35	35
Other Countries	17	17	17	18	18	18	18	20	22	22
Total Africa	**33**	**57**	**36**	**47**	**46**	**47**	**50**	**52**	**57**	**56**
Oceania										
Australia	65	64	55	53	52	51	49	49	49	45
Total Oceania	**65**	**64**	**55**	**53**	**52**	**51**	**49**	**49**	**49**	**45**
CIS										
CIS	280	340	280	276	288	272	275	375	364	358
Total CIS	**280**	**340**	**280**	**276**	**288**	**272**	**275**	**375**	**364**	**358**
World Total	**6,097**	**6,179**	**6,304**	**6,413**	**6,315**	**6,247**	**6,216**	**7,118**	**8,028**	**7,897**

World Silver Scrap Supply



Source: Thomson Reuters GFMS

World Scrap Supply, 2012



Source: Thomson Reuters GFMS

Table 5 - World Silver Fabrication Including the Use of Scrap (tons) Thomson Reuters GFMS / The Silver Institute

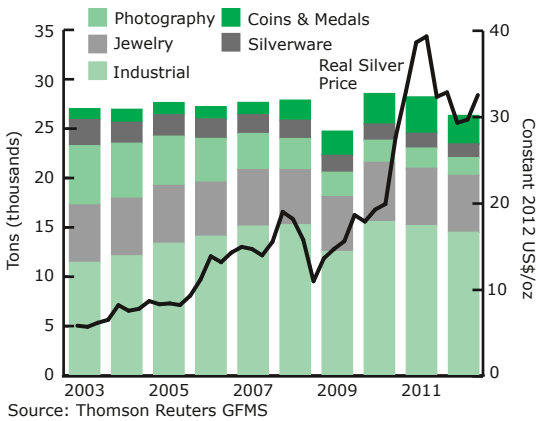
	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Europe										
Germany	1,216	1,257	1,260	1,275	1,249	1,271	1,028	1,193	1,052	911
Italy	1,736	1,722	1,579	1,451	1,368	1,235	1,097	1,119	896	817
UK & Ireland	1,350	1,604	1,330	1,013	780	725	588	634	694	637
Belgium	910	858	814	894	850	743	591	532	428	400
France	819	404	389	396	410	421	319	366	350	318
Austria	37	40	40	38	38	279	315	380	591	308
Poland	120	134	145	149	135	132	109	112	95	96
Switzerland	94	96	101	97	97	97	88	94	94	91
Spain	148	198	175	156	141	132	125	132	103	91
Netherlands	60	79	69	63	63	61	53	58	57	57
Portugal	82	127	54	45	43	42	40	41	40	39
Greece	90	86	82	77	70	68	56	46	40	37
Norway	62	65	56	52	40	40	30	33	34	34
Sweden	37	38	38	37	35	34	29	30	29	29
Denmark	22	21	21	21	21	20	18	19	18	18
Czech Republic	22	21	20	20	20	19	17	18	16	16
Yugoslavia	7	8	8	9	9	10	8	9	8	8
Hungary	13	13	12	7	7	9	8	8	8	8
Finland	13	12	12	13	10	10	8	8	8	8
Romania	12	12	12	12	8	8	6	7	7	7
Cyprus	9	9	9	9	9	9	8	8	7	7
Bulgaria	4	5	5	5	5	5	5	5	5	5
Total Europe	**6,865**	**6,807**	**6,232**	**5,839**	**5,410**	**5,372**	**4,544**	**4,852**	**4,578**	**3,940**
North America										
United States	5,454	5,608	5,891	5,778	5,575	5,843	5,297	6,399	6,150	5,678
Canada	78	109	126	178	250	386	404	667	816	664
Mexico	629	682	693	587	576	545	510	537	498	484
Total North America	**6,160**	**6,400**	**6,710**	**6,543**	**6,401**	**6,773**	**6,212**	**7,603**	**7,464**	**6,826**
Latin America										
Brazil	204	227	232	145	223	215	199	241	229	227
Argentina	74	78	80	60	56	44	34	39	39	38
Dominican Republic	11	13	17	19	20	28	46	42	29	30
Peru	23	21	19	22	21	23	25	26	22	22
Colombia	22	22	21	21	21	19	17	18	17	17
Chile	13	13	13	13	13	13	12	13	12	12
Other Countries	29	34	32	35	35	44	45	48	39	40
Total Latin America	**376**	**408**	**414**	**316**	**389**	**385**	**379**	**426**	**386**	**386**
Middle East										
Turkey	294	321	309	276	247	262	221	201	187	191
Israel	81	83	86	88	87	82	69	67	56	52
Iran	45	47	50	49	49	48	44	43	40	38
Dubai	16	16	17	18	18	19	21	27	34	37
Other Countries	97	104	100	96	98	95	91	92	71	80
Total Middle East	**532**	**572**	**561**	**526**	**500**	**506**	**445**	**430**	**389**	**397**
Indian Sub-Continent										
India	3,309	2,298	2,904	2,470	2,893	2,930	3,004	3,043	3,103	3,174
Bangladesh & Nepal	140	132	116	113	113	114	112	108	102	101
Other Countries	66	71	73	74	75	71	67	63	56	53
Total Indian Sub-Cont.	**3,515**	**2,500**	**3,093**	**2,657**	**3,081**	**3,116**	**3,183**	**3,214**	**3,261**	**3,328**

Table 5 - World Silver Fabrication Including the Use of Scrap (tons)

Thomson Reuters GFMS / The Silver Institute

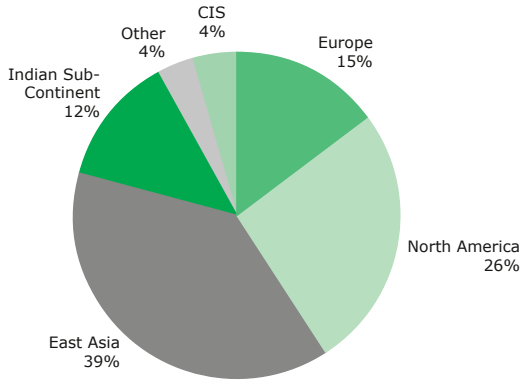
	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
East Asia										
China	2,378	2,733	2,985	3,286	3,737	4,078	3,983	4,567	5,024	5,199
Japan	3,607	3,826	3,860	4,097	3,932	3,372	2,195	3,175	2,942	2,431
South Korea	689	735	795	842	903	955	763	929	941	926
Thailand	1,138	1,151	1,150	1,150	1,140	1,046	954	956	781	653
Taiwan	343	331	372	409	458	483	390	474	496	449
Indonesia	146	181	159	178	170	168	167	193	216	234
Hong Kong	99	107	110	118	125	120	99	114	114	112
Vietnam	28	30	32	35	37	39	40	45	49	50
Singapore	6	6	6	6	6	6	18	23	27	31
Myanmar, Laos & Cambodia	32	28	28	26	26	26	26	28	28	28
Other Countries	29	30	29	28	28	28	28	29	31	33
Total East Asia	**8,494**	**9,157**	**9,525**	**10,176**	**10,563**	**10,322**	**8,663**	**10,531**	**10,648**	**10,145**
Africa										
Morocco	18	19	19	19	20	19	17	18	18	18
Tunisia	11	11	11	10	11	11	10	11	10	10
South Africa	8	8	8	8	8	8	8	8	8	8
Algeria	6	6	6	6	6	6	6	6	5	5
Other Countries	12	12	13	13	13	14	15	13	13	13
Total Africa	**54**	**57**	**58**	**57**	**59**	**60**	**54**	**56**	**54**	**54**
Oceania										
Australia	193	178	121	133	200	271	283	360	441	295
New Zealand	1	1	1	1	1	1	1	1	1	1
Total Oceania	**195**	**179**	**122**	**134**	**201**	**272**	**284**	**361**	**443**	**297**
CIS										
CIS	739	755	775	811	833	825	705	762	728	717
Total CIS	**831**	**878**	**925**	**963**	**1,046**	**1,074**	**977**	**1,076**	**990**	**967**
World Total	**27,023**	**26,957**	**27,640**	**27,212**	**27,649**	**27,880**	**24,740**	**28,550**	**28,213**	**26,339**

World Silver Fabrication



Source: Thomson Reuters GFMS

World Silver Fabrication, 2012



Source: Thomson Reuters GFMS

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

Thomson Reuters GFMS / The Silver Institute

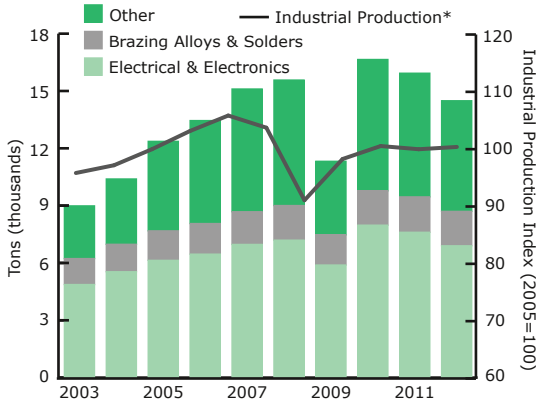
	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Europe										
Germany	675	730	744	794	851	856	630	824	791	674
UK & Ireland	464	483	385	388	372	378	282	316	351	331
Italy	318	357	338	340	352	350	281	307	287	267
France	430	320	317	322	334	336	232	274	249	223
Switzerland	72	76	81	77	77	76	69	75	74	71
Netherlands	47	48	49	49	49	49	40	47	46	45
Spain	38	65	60	58	59	58	53	55	45	38
Poland	21	22	22	23	24	25	21	23	22	22
Austria	17	17	17	17	17	17	15	16	16	16
Norway	19	26	22	17	16	15	11	13	12	12
Sweden	10	10	10	10	11	11	8	10	9	9
Czech Republic	9	8	8	9	9	9	7	9	8	8
Belgium	8	8	8	8	8	8	6	7	7	7
Other Countries	22	22	22	23	24	24	20	22	21	21
Total Europe	**2,148**	**2,193**	**2,085**	**2,135**	**2,202**	**2,208**	**1,675**	**1,997**	**1,937**	**1,744**
North America										
United States	2,699	2,931	3,134	3,323	3,565	3,774	3,140	4,073	3,737	3,605
Mexico	96	93	101	95	102	98	84	90	87	84
Canada	16	19	31	53	83	75	40	60	59	56
Total North America	**2,811**	**3,043**	**3,266**	**3,471**	**3,750**	**3,947**	**3,264**	**4,222**	**3,883**	**3,745**
Latin America										
Brazil	94	115	139	91	124	121	110	132	131	130
Argentina	20	20	28	32	34	32	24	28	28	27
Colombia	6	6	5	5	5	5	4	5	4	4
Ecuador	2	2	2	2	2	2	2	2	2	2
Other Countries	12	12	12	12	12	12	11	12	11	11
Total Latin America	**134**	**155**	**186**	**142**	**177**	**172**	**151**	**178**	**177**	**175**
Middle East										
Turkey	44	45	47	48	50	51	42	44	46	45
Israel	24	24	25	26	26	25	21	23	22	21
Oman	3	3	3	3	3	3	3	3	3	4
Other Countries	4	4	4	4	4	4	3	4	3	3
Total Middle East	**74**	**77**	**79**	**81**	**83**	**83**	**70**	**75**	**75**	**73**
Indian Sub-Continent										
India	1,381	1,063	1,561	1,586	1,818	1,837	1,810	1,801	1,900	1,969
Pakistan	8	9	9	10	10	10	9	9	9	8
Total Indian Sub-Cont.	**1,389**	**1,072**	**1,570**	**1,596**	**1,828**	**1,847**	**1,819**	**1,810**	**1,909**	**1,977**
East Asia										
China	1,324	1,528	1,706	1,873	2,165	2,483	2,336	2,690	2,818	2,837
Japan	1,879	2,292	2,614	2,783	2,764	2,293	1,418	2,456	2,226	1,867
South Korea	545	590	648	694	750	806	612	762	762	742
Taiwan	333	319	359	394	442	467	375	458	478	431
Hong Kong	90	97	99	107	113	109	88	102	102	99
Other Countries	17	19	19	19	20	24	32	45	50	54
Total East Asia	**4,188**	**4,844**	**5,445**	**5,869**	**6,254**	**6,183**	**4,861**	**6,512**	**6,435**	**6,030**

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

Thomson Reuters GFMS / The Silver Institute

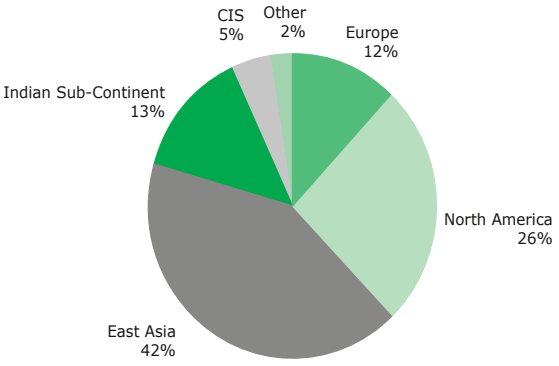
	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Africa										
Morocco	8	8	8	9	9	8	7	8	8	8
South Africa	4	4	4	4	4	4	4	4	4	4
Other Countries	5	6	6	6	7	7	6	7	7	7
Total Africa	**17**	**18**	**19**	**19**	**20**	**20**	**18**	**20**	**19**	**19**
Oceania										
Australia	68	69	63	65	66	65	58	63	66	65
Total Oceania	**66**	**68**	**69**	**63**	**65**	**66**	**65**	**58**	**63**	**66**
CIS										
CIS	630	650	672	712	744	744	637	700	672	663
Total CIS	**630**	**650**	**672**	**712**	**744**	**744**	**637**	**700**	**672**	**663**
World Total	**11,459**	**12,120**	**13,385**	**14,090**	**15,124**	**15,268**	**12,553**	**15,576**	**15,173**	**14,490**

Components of Industrial Demand



Source: Thomson Reuters GFMS, IMF; *Advanced economies

World Silver Industrial Fabrication, 2012



Source: Thomson Reuters GFMS

Table 6a - Silver Fabrication: Electrical and Electronics Including the Use of Scrap (tons)

Thomson Reuters GFMS / The Silver Institute

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
United States	1,228	1,474	1,622	1,710	1,796	1,935	1,660	2,320	2,085	1,745
China	584	672	748	821	1,001	1,122	994	1,216	1,263	1,265
Japan	940	1,181	1,360	1,432	1,394	1,204	877	1,588	1,438	1,213
India	159	177	318	335	440	468	502	531	553	607
Germany	503	551	569	613	665	674	488	664	631	534
South Korea	333	360	400	430	456	495	390	500	499	492
Taiwan	280	260	293	320	363	384	309	377	395	353
France	297	252	248	254	264	269	178	215	189	166
UK & Ireland	183	190	141	138	139	145	107	120	125	122
Hong Kong	85	92	94	101	108	104	83	97	97	94
Italy	90	118	108	112	121	127	107	121	103	86
Mexico	58	56	64	61	65	64	56	60	57	56
Brazil	38	52	66	27	48	46	37	50	49	49
Turkey	30	31	31	32	33	34	28	29	31	29
Singapore	-	-	-	-	-	-	12	16	20	23
Australia	21	21	22	23	23	22	20	22	22	21
Netherlands	16	16	17	17	17	17	13	16	15	15
Switzerland	14	14	13	13	13	15	13	14	15	14
Spain	-	10	10	10	11	11	8	10	8	7
Austria	7	7	7	7	7	7	6	7	6	6
Other Countries	7	7	7	7	7	7	6	7	6	6
World total	**4,873**	**5,542**	**6,138**	**6,462**	**6,971**	**7,149**	**5,893**	**7,979**	**7,606**	**6,900**

Table 6b - Silver Fabrication: Brazing Alloys and Solders Including the Use of Scrap (tons)

Thomson Reuters GFMS / The Silver Institute

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
China	448	512	574	604	664	805	826	890	949	975
United States	247	228	240	224	240	225	162	183	187	166
India	63	67	75	70	68	67	68	80	83	90
Japan	104	116	119	122	123	114	70	105	94	77
Germany	97	100	98	105	112	107	71	87	86	70
South Korea	44	50	59	64	74	81	64	72	74	68
UK & Ireland	86	92	90	95	76	72	57	72	76	67
Canada	9	12	24	46	76	68	34	53	53	50
Italy	63	64	67	74	78	75	52	57	54	50
Switzerland	42	42	48	44	44	42	38	41	41	39
Taiwan	33	35	36	39	40	39	31	38	39	38
Brazil	22	23	25	26	26	25	27	30	31	31
Australia	20	20	16	17	17	17	15	17	18	18
France	25	22	25	26	27	26	17	20	19	17
Spain	28	25	20	20	20	20	18	18	16	13
Mexico	17	16	16	15	16	15	12	13	13	12
Netherlands	7	8	7	7	7	7	6	7	7	7
Other Countries	5	5	5	5	5	10	8	14	15	15
World Total	**1,359**	**1,436**	**1,544**	**1,602**	**1,711**	**1,812**	**1,577**	**1,796**	**1,853**	**1,801**

Table 7 - Silver Fabrication: Photographic Use Including the Use of Scrap (tons)

Thomson Reuters GFMS / The Silver Institute

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Europe										
EU-25	2,023	1,916	1,700	1,458	1,209	1,043	852	803	711	651
Romania	5	5	5	5	-	-	-	-	-	-
Total Europe	**2,028**	**1,921**	**1,705**	**1,463**	**1,209**	**1,043**	**852**	**803**	**711**	**651**
North America										
United States	1,832	1,716	1,753	1,442	1,071	875	728	630	556	521
Total North America	**1,832**	**1,716**	**1,753**	**1,442**	**1,071**	**875**	**728**	**630**	**556**	**521**
Latin America										
Brazil	68	68	43	-	45	40	32	45	37	36
Argentina	48	48	40	16	8	-	-	-	-	-
Total Latin America	**116**	**116**	**83**	**16**	**53**	**40**	**32**	**45**	**37**	**36**
Indian Sub-Continent										
India	10	10	10	10	10	10	10	9	9	9
Sri Lanka	4	4	4	4	4	1	-	-	-	-
Total Indian Sub-Cont.	**14**	**14**	**14**	**14**	**14**	**11**	**10**	**9**	**9**	**9**
East Asia										
Japan	1,677	1,476	1,180	1,251	1,100	1,008	700	630	630	474
China	180	190	167	157	143	115	95	81	74	69
Total East Asia	**1,857**	**1,666**	**1,348**	**1,408**	**1,243**	**1,123**	**795**	**711**	**704**	**543**
Oceania										
Oceania	64	47	4	4	4	3	3	3	2	2
Total Oceania	**64**	**47**	**4**	**4**	**4**	**3**	**3**	**3**	**2**	**2**
CIS										
CIS	88	83	80	76	64	56	47	42	38	37
Total CIS	**88**	**83**	**80**	**76**	**64**	**56**	**47**	**42**	**38**	**37**
World Total	**5,999**	**5,562**	**4,987**	**4,423**	**3,658**	**3,151**	**2,467**	**2,242**	**2,057**	**1,797**

Table 8 - Silver Fabrication: Jewelry and Silverware Including the Use of Scrap (tons)

Thomson Reuters GFMS / The Silver Institute

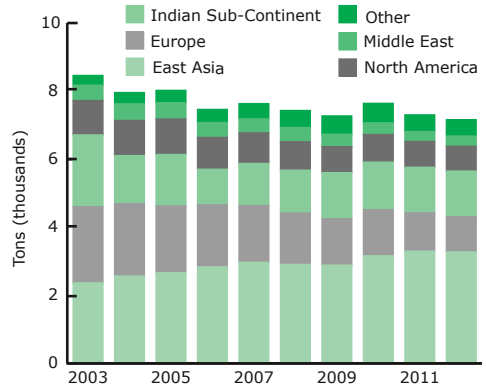
	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Europe										
Italy	1,408	1,348	1,230	1,101	1,006	875	806	802	599	540
Germany	240	226	213	210	203	193	166	169	159	147
France	81	69	55	57	59	57	59	64	73	67
Poland	91	95	105	111	101	95	76	77	61	62
Greece	90	86	82	77	70	68	56	46	40	37
Portugal	52	48	42	38	36	39	36	38	37	36
Spain	76	63	61	52	44	41	41	37	37	32
Sweden	26	27	27	26	24	22	20	20	19	19
Norway	42	37	32	34	25	26	19	20	18	18
UK & Ireland	50	48	43	41	26	23	21	21	20	18
Denmark	19	18	18	18	18	17	16	16	16	15
Switzerland	10	10	10	10	10	10	9	9	9	9
Cyprus	9	9	9	9	9	9	8	8	7	7
Finland	10	9	9	10	7	7	5	5	5	5
Austria	7	7	5	4	4	4	3	3	3	3
Other Countries	22	23	22	23	23	24	21	22	21	21
Total Europe	**2,235**	**2,124**	**1,963**	**1,821**	**1,665**	**1,510**	**1,361**	**1,357**	**1,123**	**1,035**
North America										
Mexico	486	504	511	434	423	404	374	383	359	364
United States	471	479	487	465	442	404	362	400	370	342
Canada	52	50	44	36	34	30	28	28	27	26
Total North America	**1,009**	**1,033**	**1,042**	**935**	**899**	**838**	**764**	**811**	**756**	**732**
Latin America										
Brazil	42	44	50	54	54	54	57	64	60	61
Peru	20	18	16	19	18	20	22	23	19	19
Colombia	16	16	16	16	16	14	13	14	13	13
Argentina	6	10	12	12	14	12	10	11	11	11
Ecuador	10	10	8	10	10	10	7	7	7	7
Other Countries	31	38	42	45	46	63	85	83	61	63
Total Latin America	**125**	**136**	**144**	**157**	**157**	**173**	**195**	**202**	**171**	**174**
Middle East										
Turkey	245	272	258	224	194	207	175	153	134	139
Israel	56	57	59	61	60	56	46	43	32	29
Saudi Arabia	18	19	21	21	22	22	23	25	26	28
Egypt	53	58	52	48	50	46	42	39	17	24
Other Countries	79	83	86	86	87	86	82	85	85	83
Total Middle East	**452**	**489**	**476**	**440**	**411**	**416**	**367**	**344**	**294**	**303**
Indian Sub-Continent										
India	1,918	1,225	1,333	874	1,065	1,083	1,184	1,233	1,194	1,196
Bangladesh & Nepal	140	132	116	113	113	114	112	108	102	101
Other Countries	54	58	60	60	61	61	59	54	47	45
Total Indian Sub-Cont.	**2,112**	**1,415**	**1,509**	**1,047**	**1,239**	**1,258**	**1,355**	**1,395**	**1,343**	**1,341**
East Asia										
China	802	943	1,054	1,206	1,348	1,392	1,457	1,681	1,952	2,029
Thailand	1,127	1,147	1,145	1,146	1,136	1,037	946	947	772	643
Indonesia	129	162	140	159	151	149	150	168	190	207

Table 8- Silver Fabrication: Jewelry and Silverware Including the Use of Scrap (tons)

Thomson Reuters GFMS / The Silver Institute

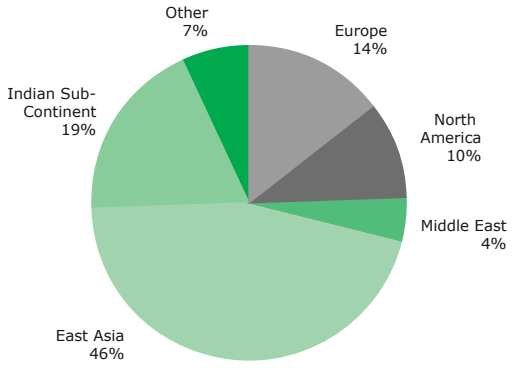
	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
South Korea	144	145	147	149	153	149	150	167	179	183
Japan	49	56	64	61	65	62	65	70	69	72
Vietnam	28	30	32	35	37	39	40	45	49	50
Myanmar, Laos & Cambodia	32	28	28	26	26	26	26	28	28	28
Malaysia	21	22	21	20	20	20	20	21	23	24
Taiwan	10	12	13	12	12	12	11	12	13	12
Other Countries	21	21	21	22	22	22	21	23	24	25
Total East Asia	**2,362**	**2,566**	**2,665**	**2,836**	**2,971**	**2,908**	**2,887**	**3,161**	**3,297**	**3,274**
Africa										
Morocco	10	11	11	11	11	11	9	10	10	10
Tunisia	10	10	10	9	10	10	10	10	9	9
Algeria	5	5	5	5	5	5	4	4	4	4
Other Countries	12	13	13	13	13	14	13	12	12	12
Total Africa	**37**	**39**	**39**	**37**	**39**	**40**	**36**	**36**	**35**	**36**
Oceania										
Oceania	23	24	23	22	22	21	22	23	25	26
Total Oceania	**23**	**24**	**23**	**22**	**22**	**21**	**22**	**23**	**25**	**26**
CIS										
Russia	55	80	112	138	144	205	241	263	291	240
Other Countries	20	21	22	23	23	25	25	21	20	18
Total CIS	**101**	**134**	**161**	**168**	**229**	**266**	**284**	**311**	**258**	**245**
World Total	**8,455**	**7,958**	**8,022**	**7,462**	**7,632**	**7,430**	**7,270**	**7,640**	**7,302**	**7,167**

World Jewelry & Silverware Fabrication



Source: Thomson Reuters GFMS

World Jewelry & Silverware Fabrication, 2012



Source: Thomson Reuters GFMS

Table 8a - Silver Fabrication: Jewelry Including the Use of Scrap (tons) Thomson Reuters GFMS / The Silver Institute

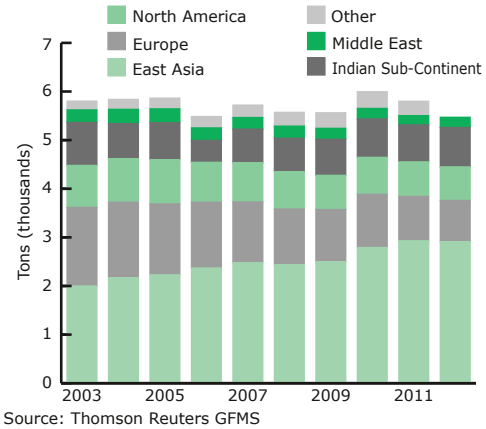
	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Europe										
Italy	1,110	1,065	980	876	802	703	663	679	512	469
Germany	113	116	118	119	120	122	115	119	115	113
France	74	62	48	50	52	49	54	59	68	63
Poland	88	92	102	108	98	92	74	75	58	60
Portugal	47	43	37	34	32	33	31	32	32	31
Spain	52	42	44	40	35	35	38	34	35	30
Greece	30	32	34	33	32	36	32	28	25	23
UK & Ireland	38	36	32	30	16	14	12	13	12	11
Sweden	12	12	12	12	11	10	9	10	10	10
Switzerland	7	7	7	7	7	7	7	7	7	7
Denmark	9	8	8	8	8	8	7	7	7	7
Cyprus	6	7	7	7	6	6	5	5	5	5
Norway	6	6	5	5	5	4	5	5	5	5
Finland	3	3	3	3	2	2	2	2	2	2
Austria	3	3	2	1	1	1	1	1	1	1
Other Countries	19	20	19	20	20	21	19	19	19	19
Total Europe	**1,617**	**1,554**	**1,458**	**1,351**	**1,248**	**1,143**	**1,072**	**1,095**	**911**	**854**
North America										
Mexico	403	423	434	372	380	368	346	362	342	348
United States	416	428	440	420	400	372	334	374	346	321
Canada	44	42	36	30	28	26	24	25	24	23
Total North America	**863**	**893**	**910**	**822**	**808**	**766**	**704**	**761**	**712**	**692**
Latin America										
Brazil	38	40	45	48	48	48	52	60	57	58
Peru	10	9	8	11	10	13	16	17	15	15
Argentina	4	7	7	8	9	8	7	8	8	8
Colombia	6	6	6	6	6	6	7	7	7	7
Ecuador	6	6	5	6	6	6	4	5	5	5
Other Countries	24	30	34	38	38	55	78	78	56	58
Total Latin America	**88**	**98**	**105**	**117**	**117**	**136**	**165**	**175**	**147**	**151**
Middle East										
Turkey	154	185	176	150	127	139	120	105	95	105
Saudi Arabia	15	16	17	18	18	18	20	21	23	26
Egypt	44	48	43	41	43	40	36	34	16	22
Israel	13	13	14	13	14	14	12	13	10	10
Other Countries	33	34	36	37	37	37	38	43	47	49
Total Middle East	**258**	**296**	**286**	**258**	**239**	**249**	**227**	**216**	**191**	**211**
Indian Sub-Continent										
India	800	635	673	369	603	601	647	707	679	724
Bangladesh & Nepal	58	60	56	54	55	58	60	59	59	61
Other Countries	24	26	27	27	28	29	30	29	26	26
Total Indian Sub-Continent	**883**	**721**	**756**	**451**	**686**	**687**	**738**	**794**	**763**	**810**
East Asia										
China	643	747	830	943	1,065	1,121	1,243	1,444	1,693	1,762
Thailand	999	1,011	1,005	1,012	995	904	832	870	712	588
Indonesia	108	139	117	137	131	129	129	146	172	192
South Korea	121	123	122	126	130	127	131	148	162	169
Japan	48	55	63	60	64	61	64	69	68	72

Table 8a - Silver Fabrication: Jewelry Including the Use of Scrap (tons)

Thomson Reuters GFMS / The Silver Institute

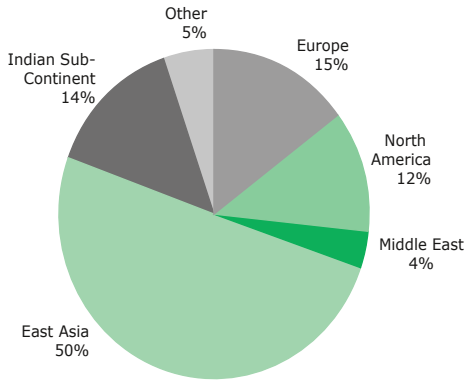
	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Vietnam	26	27	29	33	34	37	38	42	47	48
Myanmar, Laos & Cambodia	23	20	20	19	19	19	19	22	23	24
Malaysia	19	20	19	19	18	19	19	20	21	23
Hong Kong	7	7	7	8	8	8	8	9	10	11
Taiwan	7	8	9	9	9	8	8	9	10	10
Other Countries	8	8	8	8	8	8	8	8	9	10
Total East Asia	**2,007**	**2,166**	**2,228**	**2,373**	**2,482**	**2,441**	**2,498**	**2,788**	**2,927**	**2,907**
Africa										
Morocco	8	8	8	8	9	8	7	8	8	8
Tunisia	7	7	7	6	7	7	7	7	7	7
Algeria	3	4	4	3	3	3	3	3	3	3
Other Countries	10	10	10	10	10	11	11	10	10	11
Total Africa	**28**	**29**	**29**	**28**	**30**	**30**	**28**	**28**	**28**	**28**
Oceania										
Australia	21	21	21	20	20	19	20	21	22	23
New Zealand	1	1	1	1	1	1	1	1	1	1
Total Oceania	**22**	**22**	**22**	**21**	**21**	**20**	**21**	**22**	**24**	**25**
CIS										
Russia	28	38	48	51	70	79	92	104	84	80
Other Countries	16	16	17	17	18	18	16	15	13	13
Total CIS	**43**	**55**	**64**	**68**	**89**	**97**	**108**	**119**	**97**	**92**
World Total	**5,809**	**5,834**	**5,858**	**5,489**	**5,718**	**5,570**	**5,559**	**5,997**	**5,800**	**5,771**

World Jewelry Fabrication



Source: Thomson Reuters GFMS

World Jewelry Fabrication, 2012

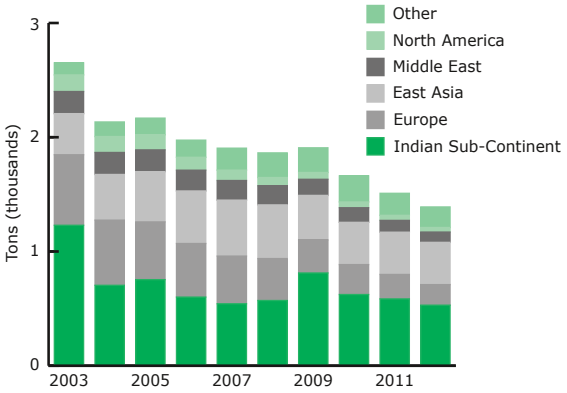


Source: Thomson Reuters GFMS

Table 9 - Silver Fabrication: Silverware Including the Use of Scrap (tons) Thomson Reuters GFMS / The Silver Institute

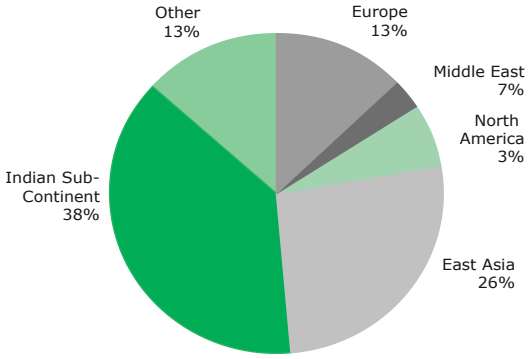
	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Europe										
Italy	298	283	250	225	204	172	143	123	87	71
Germany	128	110	95	91	83	71	51	51	44	34
Greece	60	54	48	44	38	32	24	18	15	14
Norway	35	31	27	29	20	21	14	15	14	14
Sweden	14	15	15	14	12	12	10	10	9	9
Denmark	11	10	10	10	10	10	9	9	9	8
Other Countries	72	67	61	56	50	49	37	36	34	31
Total Europe	**617**	**570**	**505**	**469**	**417**	**367**	**289**	**262**	**212**	**182**
North America										
United States	55	51	47	45	42	32	28	26	24	21
Mexico	83	81	77	62	43	36	28	21	17	16
Canada	8	8	8	6	6	4	4	3	3	3
Total North America	**146**	**140**	**132**	**113**	**91**	**72**	**60**	**51**	**45**	**40**
Latin America										
Colombia	10	10	10	10	10	8	7	7	6	6
Peru	10	9	8	8	8	7	6	6	5	4
Other Countries	17	19	21	22	23	22	17	15	13	13
Total Latin America	**37**	**38**	**39**	**40**	**41**	**36**	**30**	**27**	**24**	**23**
Middle East										
Turkey	91	87	82	74	67	68	55	48	39	34
Israel	43	44	46	48	45	42	34	30	22	19
Egypt	10	10	9	8	7	6	6	5	2	3
Saudi Arabia	3	4	4	3	4	4	3	3	3	3
Other Countries	46	48	50	49	49	48	43	42	37	33
Total Middle East	**193**	**193**	**191**	**182**	**172**	**168**	**141**	**128**	**103**	**92**
Indian Sub-Continent										
India	1,118	590	660	505	462	482	537	526	515	472
Bangladesh & Nepal	82	72	60	59	58	57	52	49	44	40
Other Countries	30	32	33	33	33	32	28	25	22	19
Total Indian Sub-Cont.	**1,229**	**694**	**753**	**597**	**552**	**571**	**617**	**600**	**580**	**531**
East Asia										
China	159	195	225	262	283	271	215	237	259	267
Thailand	129	136	140	134	141	133	115	77	60	55
Indonesia	21	23	23	21	20	20	21	22	18	15
South Korea	23	22	25	23	23	22	20	19	17	15
Other Countries	24	23	24	22	22	21	19	18	16	15
Total East Asia	**355**	**400**	**437**	**462**	**489**	**467**	**388**	**373**	**370**	**367**
Africa										
Africa	9	9	9	9	10	9	9	8	7	7
Total Africa	**9**	**9**	**9**	**9**	**10**	**9**	**9**	**8**	**7**	**7**
Oceania										
Oceania	1	1	1	1	1	1	1	1	1	1
Total Oceania	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**
CIS										
Russia	53	73	91	93	134	162	171	187	156	148
Other Countries	5	6	6	6	6	6	5	5	5	5
Total CIS	**58**	**79**	**96**	**99**	**141**	**169**	**176**	**192**	**160**	**153**
World Total	**2,646**	**2,123**	**2,164**	**1,973**	**1,913**	**1,860**	**1,711**	**1,642**	**1,502**	**1,396**

World Silverware Fabrication



Source: Thomson Reuters GFMS

World Silverware Fabrication, 2012



Source: Thomson Reuters GFMS

Table 1a - Supply & Demand with Bar Investment

(tons)	2010	2011	2012
Supply			
Mine Production	23,413	23,546	24,478
Net Government Sales	1,375	374	229
Old Silver Scrap	7,118	8,028	7,897
Producer Hedging	1,569	381	-
Physical Bar Disinvestment	-	-	-
Implied Net Disinvestment	-	-	-
Total Supply	**33,474**	**32,330**	**32,604**
Demand			
Total Fabrication	28,550	28,213	26,339
Producer De-Hedging	-	-	1,289
Physical Bar Investment	1,467	3,128	1,649
Implied Net Investment	3,457	988	3,328
Total Demand	**33,474**	**32,330**	**32,604**

Thomson Reuters GFMS / The Silver Institute

Appendix 2

Nominal Silver Prices in Various Currencies

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 Mumbai market.

	London US$/oz	India Rupee/kg	Thai Baht/oz	Japan Yen/10g	Korea Won/10g	China Yuan/kg	Eurozone* Euro/kg	Mexico Peso/oz
1979	11.068	1,896	225.99	780	1,722	N/a	333	0.25
1980	20.984	2,783	429.67	1,530	4,098	1,011	628	0.48
1981	10.487	2,650	228.83	744	2,296	575	390	0.26
1982	7.922	2,675	182.21	634	1,862	482	316	0.45
1983	11.430	3,435	262.89	873	2,851	726	479	1.37
1984	8.145	3,514	192.53	622	2,111	608	382	1.37
1985	6.132	3,880	166.54	470	1,715	579	296	1.58
1986	5.465	4,105	143.71	296	1,549	607	195	3.34
1987	7.016	5,124	180.46	326	1,855	840	208	9.67
1988	6.532	6,231	165.23	269	1,536	782	189	14.85
1989	5.500	6,803	141.36	244	1,187	666	170	13.54
1990	4.832	6,779	123.62	225	1,099	743	129	13.59
1991	4.057	6,993	103.51	176	956	694	111	12.24
1992	3.946	7,580	100.24	161	991	700	101	12.21
1993	4.313	6,163	109.20	154	1,113	799	117	13.44
1994	5.285	6,846	132.92	174	1,365	1,465	141	17.84
1995	5.197	6,864	129.49	157	1,289	1,395	122	33.36
1996	5.199	7,291	131.77	182	1,345	1,390	128	39.51
1997	4.897	7,009	153.60	191	1,498	1,305	139	38.78
1998	5.544	8,016	229.30	233	2,498	1,476	160	50.65
1999	5.218	8,022	197.38	191	1,994	1,389	158	49.90
2000	4.951	8,002	198.61	172	1,800	1,318	172	46.82
2001	4.370	7,420	194.15	171	1,814	1,163	157	40.82
2002	4.599	7,934	197.57	185	1,850	1,224	156	44.41
2003	4.879	8,138	202.39	182	1,869	1,298	139	52.64
2004	6.658	10,606	267.79	232	2,452	1,772	172	75.14
2005	7.312	11,083	294.07	259	2,407	1,926	189	79.68
2006	11.549	17,843	437.51	432	3,545	2,958	296	125.88
2007	13.384	18,794	461.98	507	3,999	3,273	314	146.26
2008	14.989	21,620	499.34	498	5,311	3,349	328	166.82
2009	14.674	23,815	503.12	441	6,024	3,223	339	198.30
2010	20.193	32,007	640.59	570	7,507	4,393	489	255.16
2011	35.119	55,638	1069.25	900	12,508	7,296	811	436.30
2012	31.150	57,086	967.03	799	11,187	6,309	777	405.47

* From 1977-1998, the DM/kg price is expressed in Euro/kg at the official conversion rate of 1.95583

Appendix 3

Real Silver Prices in Various Currencies (CPI deflated - constant 2012 money terms)

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 Mumbai market.

	London US$/oz	India* Rupee/kg	Thai Baht/oz	Japan Yen/10g	Korea Won/10g	China Yuan/kg	Eurozone** Euro/kg	Mexico Peso/oz
1979	35.016	25,537	896.43	1,086	9,835	N/a	637	414.90
1980	58.485	33,654	1,423.77	1,976	18,184	5,465	1,139	633.30
1981	26.496	28,341	673.03	916	8,397	3,029	665	281.72
1982	18.854	26,510	509.13	760	6,353	2,490	513	293.78
1983	26.356	30,424	708.19	1,027	9,405	3,677	752	451.27
1984	18.003	28,736	514.21	715	6,806	2,994	585	272.34
1985	13.088	30,052	434.22	530	5,398	2,551	444	199.16
1986	11.451	29,249	367.93	332	4,743	2,498	293	227.78
1987	14.171	33,561	450.75	365	5,515	3,224	311	283.17
1988	12.686	37,129	397.58	299	4,262	2,528	280	203.19
1989	10.189	38,185	322.84	265	3,116	1,820	245	154.40
1990	8.493	34,919	266.69	237	2,658	1,971	180	122.40
1991	6.841	31,634	211.25	179	2,115	1,778	165	89.90
1992	6.459	30,676	196.44	161	2,061	1,685	143	77.63
1993	6.857	23,447	207.14	153	2,211	1,680	159	77.81
1994	8.189	23,634	240.02	171	2,552	2,478	186	96.57
1995	7.833	21,499	220.96	155	2,306	2,020	158	133.79
1996	7.613	20,955	212.52	179	2,293	1,857	164	117.93
1997	7.007	18,798	234.53	184	2,445	1,696	175	95.94
1998	7.811	18,985	324.21	224	3,793	1,934	199	108.11
1999	7.194	18,153	278.28	184	3,004	1,847	195	91.36
2000	6.604	17,408	275.62	167	2,652	1,748	210	78.28
2001	5.668	15,570	265.13	167	2,567	1,531	187	64.17
2002	5.872	15,948	267.93	183	2,548	1,624	184	66.47
2003	6.091	15,759	269.60	180	2,487	1,703	162	75.35
2004	8.095	19,790	347.14	229	3,149	2,237	197	102.74
2005	8.598	19,839	364.65	257	3,009	2,389	213	104.78
2006	13.161	30,103	518.47	428	4,336	3,615	329	159.73
2007	14.820	29,797	535.28	501	4,769	3,819	341	178.51
2008	15.996	31,643	548.92	486	6,050	3,690	347	193.69
2009	15.702	31,438	557.85	437	6,676	3,577	358	218.65
2010	21.259	37,717	687.51	568	8,083	4,720	510	270.11
2011	35.851	60,213	1,105.46	900	12,946	7,435	827	446.66
2012	31.150	57,086	967.03	799	11,187	6,309	777	405.47

* From 1977-1998, the DM/kg price is expressed in Euro/kg at the official conversion rate of 1.95583

Appendix 4

Silver Prices in US$ per ounce

	London Silver Market - Spot			Comex Spot Settlement		
	High	Low	Average	High	Low	Average
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	3.9348
1993	5.4200	3.5600	4.3130	5.4430	3.5230	4.3082
1994	5.7475	4.6400	5.2851	5.7810	4.5730	5.2803
1995	6.0375	4.4160	5.1971	6.1020	4.3750	5.1871
1996	5.8275	4.7100	5.1995	5.8190	4.6760	5.1777
1997	6.2675	4.2235	4.8972	6.3070	4.1550	4.8773
1998	7.8100	4.6900	5.5398	7.2600	4.6180	5.4914
1999	5.7900	4.8800	5.2188	5.7600	4.8720	5.2149
2000	5.4475	4.5700	4.9526	5.5470	4.5630	4.9662
2001	4.8200	4.0500	4.3702	4.8570	4.0280	4.3603
2002	5.0975	4.2350	4.5990	5.1250	4.2230	4.5967
2003	5.9650	4.3700	4.8787	5.9930	4.3460	4.8806
2004	8.2900	5.4950	6.6578	8.2110	5.5140	6.6927
2005	9.2250	6.3900	7.3115	9.0000	6.4270	7.3220
2006	14.9400	8.8300	11.5492	14.8460	8.8090	11.5473
2007	15.8200	11.6700	13.3835	15.4990	11.4650	13.3762
2008	20.9200	8.8800	14.9891	20.6850	8.7900	14.9471
2009	19.1800	10.5100	14.6743	19.2950	10.4200	14.6961
2010	30.7000	15.1400	20.1929	30.9100	14.8230	20.3127
2011	48.7000	26.1600	35.1192	48.5840	26.8110	35.1961
2012	37.2300	26.6700	31.1496	37.1400	26.2470	31.0907

US Prices in 2012

Comex Settlement

US$ per ounce	High	Low	Average
January	33.778	28.653	31.069
February	37.140	33.200	34.243
March	35.611	31.319	32.928
April	33.250	30.351	31.529
May	30.877	27.170	28.758
June	29.476	26.247	28.056
July	28.243	26.790	27.342
August	31.370	26.981	28.914
September	34.716	32.272	33.763
October	35.041	31.595	33.117
November	34.348	30.835	32.784
December	33.707	29.612	31.727

Source: Comex

Leasing Rates in 2012

Monthly Averages

Average	3-month	6-month	12-month
January	0.36%	0.57%	0.86%
February	-0.04%	0.24%	0.62%
March	-0.05%	0.22%	0.55%
April	-0.03%	0.24%	0.59%
May	-0.01%	0.26%	0.62%
June	0.00%	0.28%	0.68%
July	-0.01%	0.30%	0.68%
August	-0.07%	0.25%	0.63%
September	-0.24%	0.08%	0.47%
October	-0.33%	-0.06%	0.34%
November	-0.31%	-0.08%	0.30%
December	-0.45%	-0.23%	0.16%

Source: Thomson Reuters GFMS, LBMA

Appendix 5

Leading Primary Silver Mines

Thomson Reuters GFMS / The Silver Institute

Rank	Mine Name	Country	Company	2011 Moz	2012 Moz
1	Cannington [1]	Australia	BHP Billiton plc.	32.17	32.23
2	Fresnillo	Mexico	Fresnillo plc.	30.30	26.38
3	Dukat [2]	Russia	Polymetal International plc.	13.60	15.50
4	Uchucchacua	Peru	Compañia de Minas Buenaventura S.A.A.	10.09	11.26
5	Pirquitas	Argentina	Silver Standard Resources Inc.	7.06	8.62
6	Palmarejo	Mexico	Coeur d'Alene Mines Corp.	9.04	8.24
7	Pallancata	Peru	Hochschild Mining / International Minerals	8.77	7.44
8	Saucito	Mexico	Fresnillo Plc.	5.90	7.05
9	Gümüsköy [3]	Turkey	Eti Gümüş A.Ş.	8.37	6.43
10	Greens Creek	United States	Hecla Mining Co.	6.50	6.39
11	San José	Argentina	Hochschild Mining plc./ McEwen Mining Inc.	5.87	5.95
12	San Bartolomé	Bolivia	Coeur d'Alene Mines Corp.	7.50	5.93
13	Arcata	Peru	Hochschild Mining plc.	6.08	5.53
14	Imiter [3]	Morocco	Société Métallurgique d'Imiter	5.98	5.48
15	Alamo Dorado	Mexico	Pan American Silver Corp.	5.30	5.40

1 reported payable metal in concentrate; 2 including Goltsovoye; 3 estimate

Silver Mine Production by Source Metal

(million ounces)

	2009	2010	2011	2012
Primary				
Mexico	59.8	68.7	72.7	72.4
Australia	33.8	38.6	32.5	33.5
Peru	41.6	36.4	32.4	33.0
Other	78.0	81.8	82.2	82.8
Total	**213.1**	**225.5**	**219.8**	**221.6**
Gold				
Mexico	18.6	20.5	24.5	26.9
Russia	11.4	11.5	11.8	15.9
Chile	15.8	14.3	13.9	12.1
Other	40.2	45.4	47.9	46.9
Total	**86.0**	**91.8**	**98.2**	**101.8**
Copper				
Poland	38.7	37.3	40.5	41.0
Chile	25.8	26.6	25.7	21.9
China	16.2	17.3	18.5	21.7
Other	86.2	80.1	72.8	71.6
Total	**166.9**	**161.4**	**157.5**	**156.2**
Lead/Zinc				
China	61.5	69.0	75.6	83.9
Mexico	32.0	49.0	50.7	56.9
Peru	47.3	48.4	51.8	52.5
Other	104.2	104.9	100.0	110.4
Total	**245.0**	**271.2**	**278.2**	**303.7**
Other	**2.5**	**2.9**	**3.5**	**3.8**
World Total	**713.6**	**752.7**	**757.0**	**787.0**

Source: Thomson Reuters GFMS

Silver Mine Production by Main Region and Source Metal

(million ounces)

	2009	2010	2011	2012
North America				
primary	75.3	83.6	87.9	86.0
lead/zinc	48.5	65.1	65.3	72.3
copper	19.2	19.0	18.9	18.7
gold	30.1	32.1	34.4	37.0
other	0.9	1.3	1.9	2.1
Total	**174.0**	**201.1**	**208.3**	**216.1**
Central & South America				
primary	65.3	63.4	61.6	64.1
lead/zinc	81.0	81.0	81.8	83.7
copper	51.7	51.2	44.8	42.5
gold	36.0	37.1	37.1	32.7
other	0.0	0.0	0.0	0.0
Total	**233.9**	**232.7**	**225.3**	**223.1**
Asia & CIS				
primary	32.1	32.0	31.8	32.6
lead/zinc	86.6	92.7	99.1	113.6
copper	51.0	47.2	44.8	45.3
gold	17.8	19.9	23.2	28.6
other	1.6	1.6	1.6	1.6
Total	**189.1**	**193.5**	**200.5**	**221.6**
Rest of the World				
primary	40.5	46.4	38.5	38.9
lead/zinc	29.0	32.4	32.0	34.1
copper	45.1	44.0	48.9	49.7
gold	2.0	2.6	3.5	3.5
other	0.0	0.0	0.0	0.0
Total	**116.6**	**125.4**	**122.9**	**126.2**
World Total	**713.6**	**752.7**	**757.0**	**787.0**

Appendix 6

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-11	1,429,772	123,380	152,350	117,577	119.7	3.4	597
Feb	1,674,711	136,214	147,299	126,487	141.2	4.3	591
Mar	1,685,667	140,109	122,882	134,586	145.7	5.2	685
Apr	3,014,624	132,200	197,267	162,738	179.2	7.5	799
May	2,461,117	120,853	256,786	226,336	259.3	9.5	1,227
Jun	1,768,866	110,978	176,767	181,409	172.9	6.2	708
Jul	1,325,030	119,517	127,518	197,458	160.0	6.1	756
Aug	1,982,811	112,243	162,750	180,510	171.7	6.9	884
Sep	1,220,315	101,170	187,548	211,588	175.6	6.7	919
Oct	952,614	109,017	129,547	218,551	197.4	6.3	879
Nov	1,327,376	98,068	117,659	132,389	164.8	5.5	718
Dec	765,580	105,669	90,800	156,259	197.1	6.0	811
Jan-12	826,872	101,747	100,656	184,130	149.2	4.6	795
Feb	1,478,663	114,827	153,188	184,115	160	5.5	841
Mar	1,120,138	109,693	174,431	205,377	157.2	5.2	927
Apr	1,224,119	111,953	113,020	174,363	141.1	4.5	715
May	1,028,181	118,102	162,613	207,186	135.3	3.9	796
Jun	1,416,761	123,965	143,547	172,119	149.4	4.2	912
Jul	804,457	121,809	111,687	183,181	141.5	3.9	755
Aug	1,231,893	117,546	123,441	171,517	119.5	3.4	732
Sep	1,068,783	137,402	177,719	214,081	124.3	4.2	967
Oct	874,240	139,243	116,906	233,672	98.1	3.3	757
Nov	1,437,347	145,560	147,958	175,695	104.4	3.4	721
Dec	804,195	141,489	160,363	200,482	134.1	4.3	815

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

Silver ETF Holdings

(Moz, end-period)	iShares Silver Trust	ETF Securities*	ZKB	Sprott Silver Trust	Other**	Total	Value US$ Bn***
2011 Q1	366.8	53.2	76.1	22.3	99.8	618.2	23.41
Q2	306.6	49.6	68.4	22.3	106.2	553.1	19.37
Q3	321.4	52.1	72.7	22.3	109.4	578.0	17.60
Q4	308.8	53.3	81.0	22.3	110.7	576.2	16.24
2012 Q1	313.0	52.9	81.0	32.9	110.2	589.9	19.13
Q2	315.8	50.7	82.7	32.9	113.4	595.4	16.12
Q3	319.1	52.1	87.9	40.5	116.0	615.6	21.33
Q4	324.2	52.5	89.8	49.3	115.5	631.4	18.91

*Includes ETF Securities LSE, Australia, NYSE, GLTR and WITE **Other: includes Julius Bär, DB Physical Silver, BlackRock Silver Bullion Trust, Silver Bullion Trust, Mitsubishi UFJ Tokyo, iShares Physical Silver ETC, Central Fund of Canada, Source Physical Silver, Royal Canadian Mint

***Using the quarter-end London price

Source: Respective issuers, Thomson Reuters GFMS

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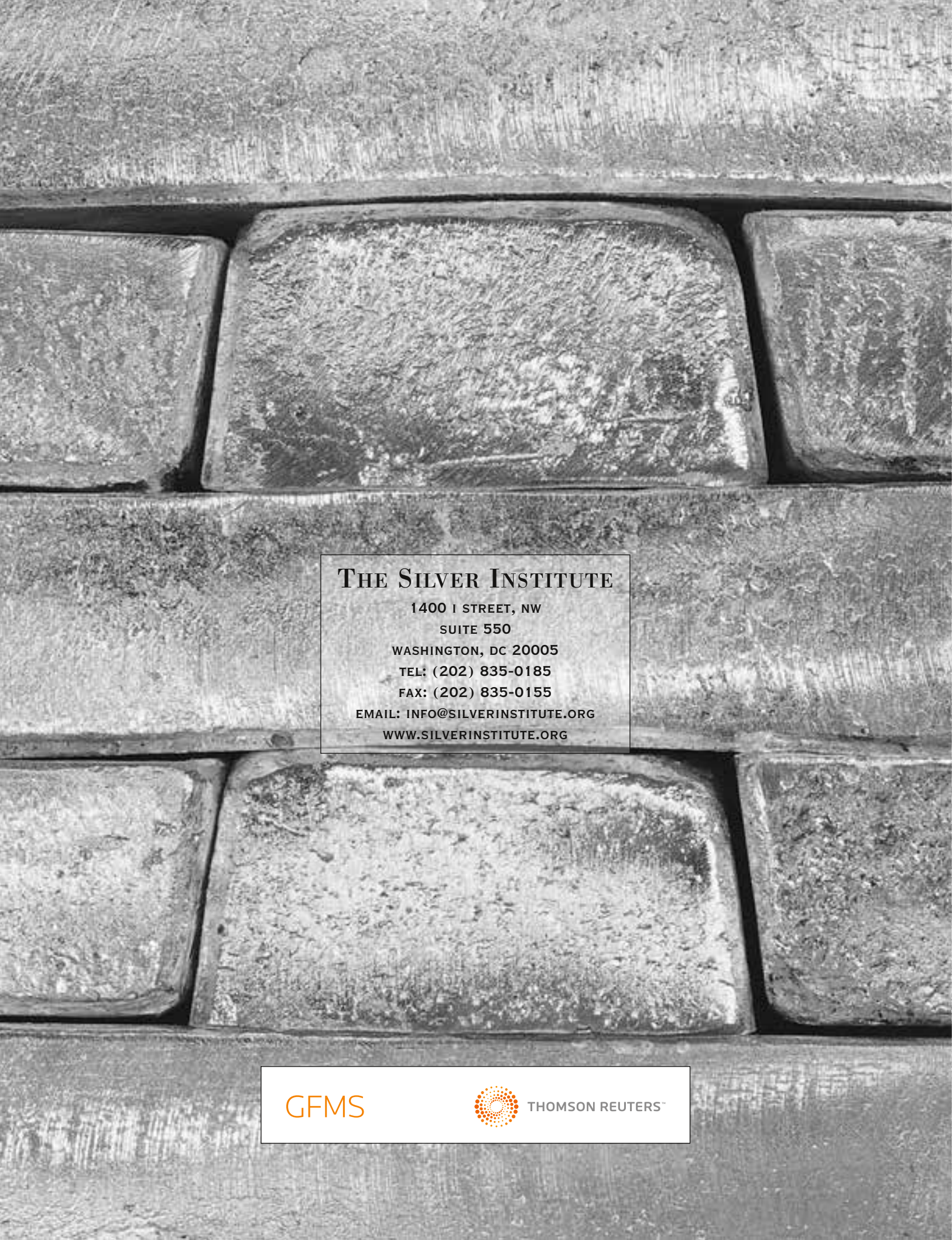

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