

Merchant Banking

The silver book

January 2008



VM Group

Sponsored by Fortis

Tel. +44 20 7487 3600
info@vmgroup.co.uk

Contents

Introduction	3
This time 5 years ago	4
Feature: Playing tag	5
The data	9
Weights and measures	23
Disclaimer and copyright	24
About the VM Group	28
Fortis commodities contact list	29

Jessica Cross, CEO
The VM Group/MineLife
London, January 2008

Introduction

This is the second issue of The Silver Book – a record of past activities and a discussion of possible future developments in the international silver market, and sister report to The Yellow and White Books, which cover gold and platinum group metals respectively.

With the compliments of Fortis Bank, The Silver Book will be made available twice a year. The VM Group thanks Fortis Bank for recognising the rationale behind this publication.

We remind readers that our data is available electronically in Microsoft Excel format – contact us by email with specific data requests at: info@virtualmetals.co.uk.

Housekeeping

- All volumes are in metric tonnes or troy ounces unless stated.
- All references to dollars are US dollars unless stated.
- For space saving in the data tables (production, scrap, and jewellery), countries registering small amounts of gold are grouped into “other”. Contact us if you need a detailed breakdown.
- Numbers in the tables have been independently rounded and, accordingly, may not add exactly to indicated totals and subtotals.

Jessica Cross
CEO
The VM Group
London, January 2008

This time 5 years ago

December 31st 2002

Daily fix: \$4.67/oz

Dollar to Sterling: 1.61

Yen to Dollar: 118.7

Euro to Dollar: 1.04

1 month lease rate: 0.62%

Times of India, 1st November 2002: The majority of silver items sold in Delhi are mixed with cheaper metals and neither the police nor the government are doing anything to clamp down on the trade. “Fake silver items have captured 70% of the market in Delhi”, Nandikshore Zaveri, director of the Janpath-based Tribhovandase Bhimji Zaveri jewellers said.

Silver Research Consortium, Q4 2002: The International Lead Zinc Research Organization founded the SRC, sponsored by the silver producers and Silver Institute. The SRC’s mission is to “assist in the defense and enhancement of environmentally appropriate markets with clear promise for the future, and to find new markets through scientific research and technical innovation”.

The People’s Daily, Oct 30th 2002: The Shanghai Gold Exchange, on which silver and platinum can be traded, opened today. It marks the establishment of all major financial products in China, following the opening of forex, insurance and equity markets.

Jessica Cross and Travis Hough

The VM Group

London, January 2008

Feature: Playing tag

Radio frequency identification is technology that in its simplest form has been around since the Second World War, when it was used in aircraft transponders. However, since 2003 the world has started to take greater notice of the technology, as RFID (Radio Frequency Identification Devices) began to change the world of logistics and inventory management. At that stage RFID was portrayed as having the potential to vastly improve efficiency in commercial and military supply-chains, with the possibility of becoming adapted for other areas such as foiling counterfeiters, mailbag tracking, highway tolling and production line management, to name but a few. On the supply chain side, the RFID industry received a shot in the arm when retail giants Wal-Mart, Target, Best Buy, Tesco as well as the US Defence Department all applied mandates requiring their largest suppliers to incorporate RFID tags onto goods they delivered. As is the trend in the world today, China also came to the party, with a planned \$6bn RFID programme incorporating a range of applications. With these developments the industry looked set to take off, although, as with any new technology, there has been considerable hype in some of the demand projections.

Estimated usage of RFIDs for 2016 has been as high as 10 times the figure of 1.3 billion used in 2006, according to an independent research firm IDTechEx. Other projections have been even more optimistic, positing the RFID industry to grow by 25 times the 2005 level by 2010. Only time will tell if these growth levels will be achieved; but even if growth is tempered, the sector is of particular importance to the silver industry.

The technology of RFID has come a long way in a short time, with the recent emergence of passive as opposed to active RFID tags. The original active RFID technology includes a battery-powered, high data capacity tag that transmits radio frequency energy across a radius of up to 300ft. This is now being replaced by passive RFID technology, which has no battery but relies on a radio frequency signal from a transmitter to activate the tag. The tag then sends out information to a receiver, which reads the information and processes it. The price of active and passive tags differs significantly, with the former costing \$65-\$90 a tag whilst the latter costs roughly \$0.10-\$0.15 per tag. The drawback of passive tags is that they have far less performance and data capacity compared to active tags, and are best used where the ability to read hundreds of tags simultaneously from a short distance is a basic requirement. As with any new technology, the cost has been gradually reduced and the price of tags should continue to decline as RFID firms merge and economies of scale come into play. Of importance to the silver industry is the fact that passive RFID tags each contain an estimated 10.9 milligrams of silver. Potentially this is a large, relatively new, and – crucially – hard to recycle demand source for silver.

RFIDs' main competition comes from barcodes and, as the production cost of RFIDs is reduced progressively, they could ultimately supersede barcodes. Other more high tech data storage/tracking devices are optical memory cards (costing \$7-\$12 each), contact memory buttons (\$2-\$95 each depending on the number ordered and memory capacity) and satellite tracking systems. But their current comparatively higher cost is an inhibiting factor against their mass market use. Interestingly though, there appears to be room for co-existence of the two technologies, RFID and barcodes. Research by EPCglobal (the leader in the development of industry driven standards for the electronic product code (EPC) to support the use of RFIDs) does not see RFIDs replacing the barcodes but instead envisages the two cohabiting for many years. There are therefore strong factors underlying the belief that RFIDs will ultimately become the dominant player, including the following:

- they require no physical contact or line of sight;
- RFID tags can withstand harsh conditions;
- RFID allows the scanning of multiple products;
- RFID tags can be re-used.

We expect the relationship between RFID and bar coding will evolve gradually, with RFIDs making greater inroads over time. One of the problems facing RFIDs is that suppliers to large corporations are not as enthusiastic about the RFID technology as their customers, since it will be the suppliers who will be footing the bill for upgrading to an RFID system. In an industry where margins are already thin, adopting a new and rapidly changing technology is not a route suppliers favour. Using RFIDs would mean, for example, that the cost to consumer product suppliers shipping over 50 million cases per year would currently be in the region of \$13m-\$23m, with \$5m-\$10m of that coming from the purchasing of RFID tags alone. Understandably, while suppliers are currently piloting and implementing RFID technology, many have voiced concern over costs, the current lack of standardisation, market acceptance and integration.

To make passive RFID tags truly competitive and their usage ubiquitous the price will probably still have to be reduced from the current level of \$0.10-\$0.15 per tag to around \$0.01. But this leaves the RFID industry in a Catch-22 position. In order for manufacturing costs to decline to the level whereby RFIDs are competitive with barcodes demand needs to increase, but the price needs to go down substantially before the kind of high volumes are bought that will make such lowered costs feasible.

In that sense RFID technology is facing a similar situation to that of the electric car. The technology and idea may be very sound and provide vast improvements to the industry it operates in, but the task of changing systems and processes to make them effective is currently a big obstacle to creating sufficient momentum for a genuine breakthrough. Switching to RFID involves companies retooling, training staff, updating software and processes whilst continually running a barcode system in parallel in the event that the RFID system breaks down. With such inbuilt extra capital costs, and with most of the benefits being passed on to the retailers, it is no surprise that suppliers to large retail companies have been unenthusiastic about RFID. A report published in August 2005 by the US Defence Department indicates that if it were to enforce the immediate implementation of passive RFID on its suppliers, there would not be enough RFID equipment (tags, readers, printers) available in the market place to support all 60,000-plus suppliers it uses. The RFID market is not ready to support such a volume in such a short time span, which leaves some of the estimated growth figures open to doubt. For comparison, the US retail giant Wal-Mart has a similar number of external suppliers; what the likes of Wal-Mart does regarding RFID could set a pattern that other, smaller companies are likely to find themselves forced to follow.

There are other hurdles facing greater uptake of RFIDs. The RFID industry in general suffers from a lack of standardisation with regard to tags and readers. Compounding this, there has also been a battle between various high frequency (HF) and ultra-high frequency (UHF) products, implying potential incompatibility. This creates uncertainty as to whether the data on the tag could be read all along the entire supply chain. In 2004 a standard for UHF RFID tags was established, but this in fact set the industry back, as users had to ensure that all readers, tags and software were compatible with the new standard. However, even this so-called standard has variations, with the UHF RFID standard in Europe being different to that in America, which in turn is different to that in Japan. Developing globally homogenous equipment is proving difficult, yet without standardisation, the concept of RFID in global stock control is undermined.

There are nevertheless some positives for future growing uptake of RFID. A major driving force behind RFID market growth is China. Its \$6bn programme has seen a nationwide rollout of RFID cards for various applications, with the most extensive being the use in railway tickets; about 3bn railway tickets will be issued every year once the program is fully operational. China also plans to use the tags in anti-counterfeiting in industries such as food, pharmaceuticals, and tobacco, which combined would have tag volumes estimated at 37.5bn units annually. With half of consumer goods sold by large US retailers coming from China and various recent high-profile public scares about Chinese products, it is not surprising to see that many Chinese manufacturers are adopting RFID technologies that meet the mandates of large US retailers. A bigger driver of RFID implementation in China is the fact that logistics in China have been unable to keep pace with the growth in manufacturing, which is damaging the efficiencies of the supply chains in the country. China is collaborating with logistics experts from around the world to improve their infrastructures, remove supply-chain bottlenecks, and improve security. Other applications that are being looked at by China include the tagging of cattle and the use of RFID in the health care sector, where it will be used to track donated blood, to combat HIV and hepatitis.

Other worldwide applications for RFID technology include: in the pharmaceutical industry where it is used to prevent counterfeiting; tags are being fitted to library books to allow for automated check out; and in the US RFID tags are being used on cattle, to help track the source of diseases when they break out. Newly issued passports in the UK are now fitted with RFID tags, designed to reduce immigration queues. However, the fact that data off these passports can be read without scanning the document and indeed from some distance away, has raised concerns about identification theft and has resulted in the more cautious traveller wrapping their passports in aluminium kitchen foil. Unpopular as the programme may be, the UK government has secured a budget of \$15bn for the planned UK national ID card, fitted with RFID technology.

But what does this all mean for silver?

The potential off take of physical silver from the widespread use of RFID technology is obviously highly dependent on the performance of the market and the adoption of the technology. Our current projections are summarised below.

Estimated RFID sales

	Tags billion/year	mg Ag/tag	kg Ag/year	Moz Ag/year
2007	1.91	10.9	20,819	0.67
2008	4.31	10.9	46,979	1.51
2009	6.71	10.9	73,139	2.35
2010	9.11	10.9	99,299	3.19
2011	11.51	10.9	125,459	4.03
2012	13.91	10.9	151,619	4.87
2013	16.31	10.9	177,779	5.72
2014	18.71	10.9	203,939	6.56
2015	21.11	10.9	230,099	7.4
2016	23.51	10.9	256,259	8.24
2017	25.79	10.9	281,057	9.04

Source: IdTechex.com

These volumes are by no means going to replace the decline in silver off take from the photographic industry, but, unlike the photographic industry, RFID technology does not lend itself to silver recycling. As most of these tags will form part of packing and collection will prove difficult, it is unlikely that RFID tags will be collectable on a scale large enough for commercially viable recycling. Moreover, research suggests that RFID tags do not affect the paper recycling process, which means there will be no need to strip off the tags prior to recycling. Rather surprisingly though, some businesses are planning to buy used RFID tags to re-programme and resell, potentially at a discounted rate. The

danger is that silver's current high price could also result in thrifting and substitution in this end use of the metal. The development of conductive polymers could replace silver but at the moment the cost of the polymers is far greater than silver, at \$200/gram, and commercial production is still a long way off.

On balance it is likely that the costs of passive RFID tags will tumble over the next five years as their use becomes more widespread and the manufacturers of RFIDs compete for greater market share. RFIDs will become a prominent player in the world of inventory and logistic control. The extent to which they grow will depend on the benefits the technology brings to those who use it. Silver will without doubt benefit and we have included this source of demand in our projected supply/demand balance.

The data

Supply & demand

The silver market was in surplus in 2007 by 6,141 tonnes, up from our estimate in the Silver Book first edition by 505 tonnes. We estimate that both supply and demand of silver were lower than we predicted in June, but demand has been revised down further. Photographic demand in particular has fallen faster than we expected. The introduction of wood preservatives, which are likely to be a major consumer of silver in the next decade, were delayed. This application remains at the licensing stage and therefore it is not surprising that product developers are remaining tight-lipped about the developments and progress of this licensing. Our figures therefore reflect this delay.

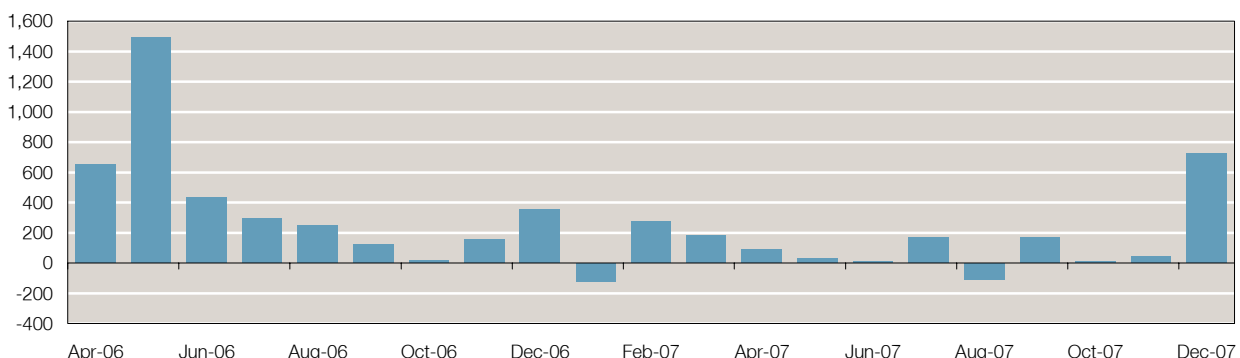
For 2008 we envisage the market remaining in substantial surplus, with supply exceeding demand by 7,315 tonnes; metal available to the investor which in a strong market as we have recently experienced, appears to be relatively easy to absorb. We expect jewellery demand to make a modest recovery as consumers adapt to higher prices, whilst photographic demand will continue to fall. Some good news will come from newer applications, in particularly wood preservatives should make a meaningful contribution to demand for the first time. ETF demand is likely to continue, but at a lower level of 800 tonnes.

The ETFs

The Barclay's Global Investors' exchange-traded fund in silver had a remarkable launch. Its first day's trading was on the 28th April 2006, and by the end its declared holdings were 653 tonnes. Less than two weeks later that total had already passed the 2,000 tonnes mark, and by the end of 2006 it had reached 3,768 tonnes. The rate of accumulation had clearly slowed, however, after Q2 06's 2,580 tonnes, with Q3 06 seeing offtake of 665 tonnes and Q4 06 523 tonnes.

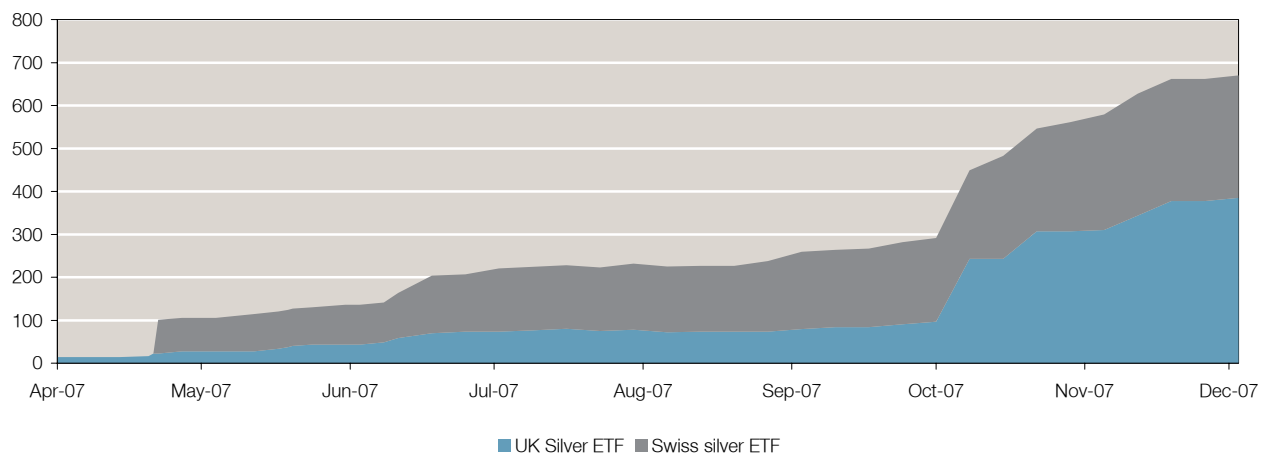
This rate slowed further in 2007, with 336 tonnes in Q1 07, 134 tonnes in Q2 07, 226 tonnes in Q3 07 and (up to the 30th December 2007) 164 tonnes in Q4 07. But the 31st December saw a huge inflow of 616.9 tonnes. The reasons for this have not been explained, but we are assured it is not an error (despite all but 71 tonnes of it being reversed the following trading day). In total then offtake in 2007 of the BGI ETF was 1477.7 tonnes.

BGI silver ETF monthly offtake (tonnes)



Source: Company website

There have also been two new silver ETFs launched in 2007, one in the UK and one in Switzerland. These have steadily seen their holdings rise to stand at 669.6 tonnes by the end of 2007.

Offtake in 2007 of 'new' silver ETFs (tonnes)

Source: Company websites

Collectively then the offtake of the three silver ETFs was 2147.3 tonnes in 2007, slightly higher than our earlier forecast of 2,000 tonnes.

The methodology

General comments: In an industry characterised by large and permanent above-ground stocks, a silver supply/demand balance only attempts to record the additions made to those stocks in a calendar year, the destination of that new supply, the mobilisation of the existing stocks largely through recycling.

Furthermore, it has to be recognised that there are large swathes of the silver market which are largely unmeasurable and unverifiable.

These supply/demand balances are designed therefore to give overall general flows of metal between regions and sectors.

The data sources

- Our historical data sources include:
 - Simba and Krishnan: *The Saga of Silver*, The Institute of Financial Management and Research, Madras, 1980.
 - Tim Green, *The Silver Millennium*, electronic copyright, Virtual Metals Research & Consulting.
 - The Samuel Montagu & Co Annual Bullion Reviews, 1968-1989 on which Tom Butler, a member of the VM team, worked for many years.
 - Bullion imports into India compiled by Janet Long, covering 1925 to 1949.
 - Raw Materials Group, Stockholm.
 - The MMRS Silver Market Fundamentals Report compiled in August 1994.
 - Stephen Fry, *The Great Silver Bubble*, Hodder and Stoughton, London, 1982.
 - Eduard Kann, *The Currencies of China*, Kelly & Walsh, Shanghai, 1926.
 - Benjamin White, *Silver Its History and Romance*, Waterlow & Sons, London, 1920.
 - Roy Jastram, *Silver the Restless Metal*, John Wiley and Sons, 1981.
 - US Geological Annual Surveys, various years, archived.
 - Silver Trade Data back to the early 1990s.
- Mine supply – data collated from Raw Materials Group, company reports, ABARE, USBM, China Gold Association and newswires.
- Scrap recycling – Data from refineries and industry participants. VM Group has modelled the recycling of photographic and electronic waste and has made estimates of jewellery recycling based on silver price movements and market information.
- Photographic: Base data from the MMRS Silver Report 1994, with permission and extrapolated using market information and the analysis of annual reports of major manufacturers of film and photographic products.
- Jewellery consumption: Base data from the MMRS Silver Report 1994, with permission. Individual country data series further estimated by the VM Group from our understanding of the individual markets, discussions with the bullion banks active in various physical markets, jewellery wholesalers, hallmarking figures where available, and trade data, which is subject to interpretation but gives direction of physical flows.
Data further derived from the comparison gold and silver jewellery data and an analysis of country-by-country and regional gold/silver volumes in this sector.
- Electrical/Electronics – Data series derived by the VM Group, based on work relating to the electronics industry when studying the pgm industry and the recycling of electronic scrap.
- Exchange traded funds – Data series from published data.

- Brazing Alloys and Bearings – Base data from the MMRS Silver Report 1994, with permission and modelled by the VM Group
- Batteries: VM Group primary research commissioned by The Silver Institute.
- New Industrial End Uses: VM Group primary research commissioned by The Silver Institute.

The residual

The overall supply/demand balance does not balance. The difference between supply and demand (negative is demand exceeding supply), we term the residual. The residual is an acknowledgement that a) omniscience about this market is impossible, and to pretend otherwise is misleading b) there are silver flows of considerable magnitude associated with the unofficial market, such as smuggled or stolen metal which cannot be verified and c) there are sectors which cannot be measured and therefore we do not pretend otherwise; these include “investment” or “bar hoarding”, which is the purchase of silver in bar form.

The residual also does not reflect the net long or short positions held by the hedge funds or the speculators over year-end. While CFTC data gives an indication of outstanding positions on COMEX, it is not possible to put a number on the net longs or shorts in the OTC market.

Physical supply and demand, world total and by region, 2002-2008f

World total supply/demand imbalances (tonnes, 2002-2008f)

	2002	2003	2004	2005	2006	2007e	2008f
Supply							
Mine supply	18,821	19,066	20,284	20,811	20,430	20,584	21,376
Recycling - Jewellery	3,302	3,285	3,800	2,961	4,164	3,348	3,374
Recycling - Photographic	3,746	3,637	3,531	3,428	3,328	3,210	3,121
Recycling - Coin Melt	135	134	133	131	130	129	141
Recycling - Other Industrial	2,920	3,650	4,563	5,124	5,722	6,360	6,421
Government disposals	500	500	500	500	500	500	500
Total supply	29,424	30,272	32,810	32,956	34,274	34,130	34,934
Demand							
Jewellery and Silverware	10,666	10,265	10,491	11,142	8,651	8,801	9,045
Photographic	5,120	4,982	4,848	4,718	4,591	4,468	4,349
Electrical/Electronics	4,479	4,711	4,956	5,640	5,901	6,207	6,596
Brazing Alloys	1,143	1,164	1,187	1,209	1,232	1,255	1,293
Catalysts	1,428	1,442	1,457	1,471	1,486	1,501	1,516
Others:	2,218	2,465	2,757	2,884	3,050	3,328	3,724
- Solar Panels	562	661	778	840	907	980	1,058
- Water Purification	449	529	622	672	726	784	846
- Wood Preservatives	0	0	0	0	0	15	150
- Batteries	483	493	503	482	505	545	585
- Mirrors/Reflective Glass	448	457	467	476	485	495	505
- Plasma Screens	225	264	311	317	324	330	337
- Food Hygiene	10	10	16	23	35	52	79
- Medical Applications	15	20	25	31	39	49	61
- Radio Frequency Tags	0	2	5	8	11	47	73
- Bearings	16	16	16	16	16	16	16
- Detox, chemical	0	0	0	0	0	16	16
- Fibre/Textiles	0	0	0	0	0	0	0
ETF	0	0	0	0	3,768	2,147	800
Coins	326	285	299	261	310	281	295
Total demand	25,371	25,306	25,982	27,310	28,991	27,989	27,619
Residual (supply less demand)	4,053	4,966	6,828	5,645	5,283	6,141	7,315

Source: VM Group

Note: Because of rounding of individual items the total might not equal the sum of the subtotals

Mine production (tonnes, 2002 – 2008f)

	2002	2003	2004	2005	2006	2007e	2008f
Morocco	276.8	200.5	196.0	189.0	186.0	184.0	184.0
South Africa	113.1	87.0	73.0	89.0	89.0	89.0	89.0
Congo (Dem Rep)	69.7	35.7	69.7	45.6	67.6	70.0	71.8
Zambia	6.0	7.0	10.0	10.0	10.0	10.0	10.3
Ghana	1.6	1.8	3.0	3.0	3.0	3.0	3.1
Tunisia	3.0	3.0	3.0	3.0	4.0	4.0	4.1
Algeria	1.5	1.5	1.0	1.0	1.0	1.0	1.0
Zimbabwe	2.6	0.8	0.5	0.5	0.5	0.5	0.5
Total Africa	474.3	337.4	356.2	341.1	361.1	361.5	363.7
China	1,400.0	2,000.0	2,450.0	2,500.0	2,540.0	2,600.0	2,665.0
Indonesia	220.0	260.0	262.0	275.0	280.0	280.0	280.0
Japan	103.2	99.2	86.0	54.1	10.0	10.0	10.0
North Korea	40.0	40.0	40.0	40.0	40.0	40.0	41.0
Mongolia	20.0	20.0	20.0	25.0	25.0	25.0	25.6
Thailand	18.1	15.0	10.9	14.3	15.0	15.0	15.4
Philippines	8.8	9.3	10.0	23.0	28.0	30.0	30.8
Myanmar	6.0	6.0	6.0	6.0	6.0	6.0	6.2
Total Asia	1,816.1	2,449.5	2,884.9	2,937.4	2,944.0	3,006.0	3,073.9
Australia	2,120.0	1,870.0	2,083.0	2,267.0	1,730.0	1,700.0	1,700.0
Papua New Guinea	64.0	62.0	53.8	51.3	51.1	51.1	51.0
New Zealand	29.0	25.0	30.0	40.0	40.0	30.0	30.8
Fiji	2.0	2.0	2.0	2.0	2.0	2.0	2.1
Total Australasia	2,215.0	1,959.0	2,168.8	2,360.3	1,823.1	1,783.1	1,783.8
Russia	770.0	850.0	1,095.0	1,225.0	1,325.0	1,355.0	1,388.9
Kazakhstan	855.0	805.0	708.0	830.0	830.0	830.0	850.8
Bulgaria	25.0	25.0	70.0	70.0	70.0	70.0	71.8
Uzbekistan	60.0	60.0	60.0	60.0	60.0	60.0	61.5
Romania	35.0	30.0	30.0	30.0	30.0	30.0	30.8
Macedonia	10.0	10.0	10.0	10.0	10.0	10.0	10.3
Serbia	5.0	2.0	2.0	2.0	2.0	2.0	2.0
Total Eastern Europe	1,760.0	1,782.0	1,975.0	2,227.0	2,327.0	2,357.0	2,415.9
Poland	1,343.0	1,332.0	1,373.0	1,262.0	1,300.0	1,300.0	1,332.5
Sweden	320.8	340.7	319.6	310.0	290.0	290.0	297.3
Turkey	124.0	149.0	150.0	219.0	223.0	223.0	228.6
Yugoslavia	60.0	60.0	60.0	60.0	60.0	60.0	61.5
Portugal	24.0	24.0	24.0	23.7	20.0	20.0	20.5
Finland	29.0	31.0	37.0	49.0	52.0	54.0	55.4
Greece	74.8	70.0	50.0	40.0	20.0	20.0	20.5
Ireland	8.5	20.0	20.0	20.0	20.0	20.0	20.5
Spain	10.0	5.0	3.6	3.5	3.5	3.5	3.6
France	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Total Western Europe	1,994.8	2,032.4	2,037.8	1,987.9	1,989.2	1,991.2	2,041.0
India	59.5	60.0	60.0	60.0	60.0	60.0	61.5
Total Indian sub-continent	59.5	60.0	60.0	60.0	60.0	60.0	61.5
Mexico	3,100.0	2,900.0	3,045.0	3,205.0	2,950.0	2,952.0	2,925.0
Peru	2,686.6	2,921.0	3,060.0	3,193.0	3,471.0	3,470.0	3,556.8
Chile	1,210.0	1,313.0	1,360.0	1,380.0	1,602.0	1,625.0	1,665.6
Bolivia	461.0	466.0	413.0	420.0	472.0	550.0	1,000.0
Argentina	125.9	133.9	172.0	175.0	175.0	175.0	179.4
Honduras	52.9	51.0	48.2	53.6	55.0	56.0	57.4
Colombia	8.0	8.0	8.0	8.0	8.0	8.0	8.2
Brazil	33.0	31.0	35.0	36.0	36.0	36.0	36.9
Nicaragua	3.0	3.0	3.0	3.0	3.0	3.0	3.1
Total Latin America	7,680.4	7,826.9	8,144.2	8,473.6	8,772.0	8,875.0	9,432.3
Iran	60.0	60.0	60.0	60.0	60.0	60.0	61.5
Saudi Arabia	10.0	10.0	10.0	10.0	10.0	10.0	10.3
Total Middle East	70.0	70.0	70.0	70.0	70.0	70.0	71.8
USA	1,350.0	1,240.0	1,250.0	1,230.0	1,100.0	1,100.0	1,127.5
Canada	1,401.0	1,309.0	1,337.5	1,123.9	983.4	980.0	1,004.5
Total North America	2,751.0	2,549.0	2,587.5	2,353.9	2,083.4	2,080.0	2,132.0
World total	18,821.0	19,066.1	20,284.4	20,811.2	20,429.9	20,583.8	21,375.8

Source: VM Group

Photographic recycling (tonnes, 2002 – 2008f)

	2002	2003	2004	2005	2006	2007e	2008f
Imaging	1,665.9	1,581.4	1,501.3	1,425.4	1,353.3	1,276.0	1,211.4
Medical	924.6	927.0	929.5	932.0	934.6	932.8	922.7
Graphic	648.7	631.5	614.8	598.5	582.7	563.4	553.8
Industrial	176.1	171.5	166.9	162.5	158.2	153.2	150.3
Other	173.8	169.2	164.8	160.4	156.2	151.0	155.8
Movies	156.6	156.2	153.7	149.2	142.9	133.9	127.1
Total	3,745.8	3,636.8	3,530.9	3,428.1	3,328.0	3,210.3	3,121.0

Source: VM Group

Jewellery recycling (tonnes, 2002 – 2008f)

	2002	2003	2004	2005	2006	2007e	2008f
Algeria	13.0	13.0	13.5	10.0	20.4	11.2	12.6
Tunisia	7.3	6.9	7.1	7.6	8.2	5.0	5.9
Total Africa	20.3	19.9	20.6	17.6	28.6	16.2	18.5
Thailand	539.1	538.2	537.3	508.5	521.5	406.8	407.7
Indonesia	73.7	73.1	79.7	97.9	173.8	141.4	142.2
Japan	135.0	132.1	128.7	129.5	155.7	109.8	110.7
China	82.9	79.4	81.2	57.0	70.6	77.9	78.0
South Korea	60.0	60.0	66.7	50.0	101.7	59.0	59.7
Malaysia	45.0	45.0	45.0	54.6	54.9	34.9	35.6
Singapore	30.0	30.0	37.5	25.0	46.0	29.5	30.4
Philippines	30.0	26.3	26.3	26.5	26.8	17.1	18.0
Hong Kong	0.6	0.4	0.5	0.3	0.5	0.3	0.3
Total Asia	996.4	984.4	1,002.8	949.2	1,151.5	876.6	882.6
Australia	7.5	7.5	10.0	7.5	9.4	8.8	9.6
Total Australasia	7.5	7.5	10.0	7.5	9.4	8.8	9.6
Russia	56.3	56.3	56.3	65.6	66.3	56.3	57.0
Total Eastern Europe	56.3	56.3	56.3	65.6	66.3	56.3	57.0
Italy	299.4	299.0	328.2	244.0	296.5	276.7	277.1
Turkey	327.6	287.1	335.6	186.7	519.0	256.0	256.6
Germany	53.8	43.4	50.8	37.2	50.5	53.2	53.3
Spain	34.2	35.4	50.7	41.0	50.2	40.2	40.5
France	10.5	10.6	11.6	9.0	11.0	9.6	9.8
Sweden	4.7	4.7	9.5	6.7	8.1	7.3	7.8
Switzerland	6.0	5.0	5.7	4.3	5.7	5.3	5.4
UK & Ireland	5.1	4.7	4.8	3.7	4.4	4.2	4.3
Austria	3.9	3.9	4.2	2.9	3.5	3.6	4.0
Belgium	2.9	2.9	3.3	2.9	3.5	3.4	3.8
Greece	3.9	3.9	4.8	3.2	0.0	3.0	3.1
Denmark	4.5	4.4	4.4	2.7	3.2	2.7	3.2
Portugal	2.4	2.4	3.9	2.0	2.4	2.1	2.2
Cyprus	2.0	2.0	3.3	1.7	2.1	1.5	1.8
Norway	1.4	1.4	2.6	1.3	1.6	1.3	1.5
Yugoslavia	0.6	0.6	1.2	1.0	1.2	1.2	1.6
Netherlands	0.6	0.6	1.0	0.5	0.6	0.5	0.6
Total Western Europe	763.5	712.0	825.7	550.6	963.5	672.1	676.5
India	546.6	594.3	738.0	510.4	722.7	723.5	723.8
Pakistan	111.0	109.7	151.9	93.4	109.3	120.2	120.6
Bangladesh	20.0	20.0	35.5	18.8	35.8	20.3	20.5
Sri Lanka	7.5	7.5	10.0	7.5	7.5	4.5	5.1
Total Indian sub-continent	685.1	731.5	935.4	630.1	875.3	868.5	870.0
Brazil	46.7	46.7	66.7	40.0	52.8	49.0	49.7
Mexico	53.3	53.3	53.3	33.3	49.0	36.9	37.1
Chile	28.1	30.8	31.1	31.1	31.5	27.0	27.9
Peru	28.2	28.2	28.2	29.2	29.6	25.2	26.1
Colombia	14.9	15.4	15.9	15.9	16.1	13.5	14.3
Argentina	22.7	22.7	22.7	22.7	22.7	8.5	9.3
Venezuela	10.7	8.7	8.7	8.7	8.8	7.6	8.2
Total Latin America	204.6	205.9	226.6	180.9	210.6	167.6	172.5
Saudi Arabia	172.4	145.3	177.8	156.9	278.3	222.5	223.3
Iraq	51.2	94.0	148.3	97.6	121.8	107.4	108.3
Egypt	77.3	74.8	81.3	50.6	101.2	65.0	65.5
Iran	26.8	26.7	49.3	36.0	54.3	49.0	49.5
Kuwait	54.3	49.9	61.0	51.3	65.6	47.3	48.2
Arab Emirates	27.8	24.2	34.9	25.3	47.4	30.2	30.6
Lebanon	15.1	13.4	19.6	11.9	23.9	15.6	15.8
Israel	3.4	3.3	3.7	3.7	2.8	3.2	4.0
Total Middle East	428.1	431.7	575.9	433.2	695.4	540.1	545.2
USA	115.6	111.5	117.4	102.2	133.0	115.2	115.4
Canada	24.7	24.6	29.2	24.4	30.4	26.6	26.9
Total North America	140.3	136.0	146.5	126.6	163.4	141.8	142.3
World total	3,302.1	3,285.2	3,799.8	2,961.3	4,164.0	3,348.0	3,374.3

Source: VM Group

Jewellery consumption (tonnes, 2002 – 2008f)

	2002	2003	2004	2005	2006	2007e	2008f
Morocco	22.6	22.0	22.0	22.3	20.5	20.5	20.8
South Africa	12.4	13.1	14.7	14.5	14.5	13.0	13.2
Libya	13.1	13.3	13.0	13.3	13.4	8.0	8.1
Algeria	13.9	13.3	13.3	13.5	13.7	8.0	8.1
Tunisia	8.6	8.2	7.9	8.4	8.6	5.3	5.3
Total Africa	70.5	69.8	70.9	71.9	70.7	54.8	55.6
China	609.7	585.9	582.0	680.5	633.5	648.8	668.2
Thailand	599.0	598.0	597.0	565.0	440.0	452.0	465.6
Indonesia	204.6	203.2	205.0	207.1	144.3	146.8	151.2
Japan	150.0	146.8	143.0	143.9	121.5	122.0	125.7
South Korea	125.0	125.0	125.0	130.0	78.0	78.7	81.0
Afghanistan	75.3	68.8	70.0	77.3	79.9	63.6	65.5
Vietnam	62.5	62.5	62.5	62.5	51.8	62.5	64.4
Afghanistan	62.7	57.3	58.3	64.4	51.3	53.0	54.6
Malaysia	92.0	69.2	69.0	72.8	46.3	46.5	47.9
Singapore	60.0	47.3	47.2	48.6	32.5	32.8	33.7
Taiwan	31.1	29.3	27.5	27.3	22.4	22.4	23.1
Myanmar	31.3	29.1	31.6	31.6	20.0	20.5	21.1
Philippines	203.0	29.2	29.2	29.5	18.8	19.0	19.6
Cambodia	25.0	25.0	25.0	25.0	15.3	15.3	15.7
Hong Kong	7.5	7.5	7.5	7.5	6.5	6.5	6.7
Nepal	8.8	8.8	8.8	8.8	5.3	5.5	5.7
Total Asia	2,347.3	2,092.7	2,088.3	2,181.7	1,767.1	1,795.7	1,849.5
Australia	12.5	12.5	12.5	13.8	11.8	11.8	12.8
Total Australasia	12.5	12.5	12.5	13.8	11.8	11.8	12.8
Russia	75.0	75.0	75.0	87.5	74.5	75.0	75.8
Uzbekistan	2.8	2.5	2.3	2.4	1.5	1.3	1.3
Croatia	2.8	2.5	2.3	2.4	1.5	1.3	1.3
Bulgaria	0.8	0.8	0.8	0.8	0.8	0.8	0.8
Estonia	2.8	2.5	2.3	2.4	0.5	0.5	0.5
Total Eastern Europe	84.2	83.3	82.5	95.5	78.8	78.8	79.5
Italy	1,050.1	922.3	847.0	851.0	811.0	804.0	812.0
Germany	541.8	589.8	584.5	574.0	501.2	507.0	512.1
Turkey	403.5	560.5	642.5	688.0	445.5	465.5	470.2
Spain	151.0	149.6	148.6	136.9	130.0	130.3	131.6
France	91.2	86.7	79.8	87.2	83.2	82.8	83.6
Switzerland	65.9	72.9	72.7	71.7	63.7	64.4	65.0
Portugal	57.8	57.5	57.4	57.2	57.2	57.6	58.2
UK & Ireland	64.4	59.5	59.9	56.9	56.9	57.0	57.6
Greece	32.3	33.3	34.3	36.0	29.4	29.7	30.0
Sweden	20.0	18.1	15.7	16.7	16.7	16.0	16.2
Austria	10.1	9.4	8.5	9.3	9.0	9.0	9.1
Belgium	8.7	8.2	8.0	8.7	8.5	8.6	8.7
Finland	8.3	8.3	8.3	8.3	8.0	8.0	8.1
Netherlands	9.0	8.4	7.8	7.7	7.4	7.4	7.5
Poland	6.5	7.0	7.0	7.0	6.7	6.8	6.9
Denmark	7.7	7.0	6.4	6.3	6.0	6.0	6.1
Norway	7.7	7.0	6.4	6.7	6.7	6.0	6.1
Cyprus	6.7	6.7	6.7	6.7	5.0	5.0	5.1
Yugoslavia	3.4	3.2	3.0	2.9	2.9	2.9	2.9
Hungary	3.0	2.8	2.5	2.6	2.6	2.5	2.5
Malta	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Czechoslovakia	2.0	2.0	2.0	2.2	2.1	2.1	2.1
Romania	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Total Western Europe	2,554.7	2,623.6	2,612.4	2,647.5	2,263.2	2,282.1	2,304.9
India	2,524.5	2,413.5	2,628.5	2,857.5	2,009.0	2,067.0	2,149.7
Pakistan	450.1	444.9	471.9	501.0	333.5	343.5	357.2
Bangladesh	203.8	177.5	185.0	164.5	107.5	110.0	114.4
Others	17.5	17.5	17.5	17.5	17.9	18.0	18.7
Sri Lanka	25.0	12.5	12.5	12.5	7.5	7.5	7.8
Total Indian sub-continent	3,220.9	3,065.9	3,315.4	3,553.0	2,475.4	2,546.0	2,647.8

Continued overleaf

Jewellery consumption (tonnes, 2002 – 2008f)

	2002	2003	2004	2005	2006	2007e	2008f
Mexico	182.4	182.4	182.4	182.7	155.3	158.7	165.0
Brazil	73.1	73.1	73.3	80.0	68.0	70.0	72.8
Chile	31.2	34.3	34.5	34.7	29.3	30.0	31.2
Peru	31.3	31.3	31.3	32.7	28.0	28.0	29.1
Dominican Republic	28.4	28.4	28.4	28.4	24.0	24.0	25.0
Bolivia	21.2	21.2	21.2	21.3	18.0	18.0	18.7
Colombia	19.9	20.5	21.2	21.3	18.0	18.0	18.7
Venezuela	17.9	14.5	14.5	14.7	12.7	12.7	13.2
Ecuador	14.5	14.5	14.5	13.3	11.3	11.3	11.8
Argentina	10.7	10.7	10.7	10.7	10.7	10.7	11.1
Total Latin America	430.5	430.9	432.1	439.7	375.3	381.3	396.6
Saudi Arabia	327.9	298.6	300.7	400.0	286.0	296.8	320.5
Egypt	222.6	184.5	188.9	214.5	137.0	144.5	156.1
Iraq	120.3	130.4	123.5	139.0	110.0	113.0	122.0
Iran	117.5	138.8	128.5	150.8	94.8	98.0	105.8
Arab Emirates	79.1	87.8	94.0	107.8	72.8	75.5	81.5
Lebanon	71.8	71.4	74.8	95.3	60.0	62.3	67.2
Syria	63.8	74.0	80.5	86.0	55.8	58.3	62.9
Yemen	67.7	65.1	67.2	83.3	55.5	58.0	62.6
Kuwait	61.3	64.4	67.6	77.0	48.0	49.8	53.7
Jordan	59.3	64.0	68.3	72.5	45.5	47.5	51.3
Israel	4.2	4.2	4.6	4.5	3.8	4.0	4.3
Total Middle East	1,195.5	1,183.2	1,198.5	1,430.5	969.0	1,007.5	1,088.1
USA	658.3	615.7	592.3	620.3	556.2	558.0	530.1
Canada	91.2	88.0	86.0	88.5	84.0	85.0	80.8
Total North America	749.5	703.7	678.3	708.8	640.2	643.0	610.9
World total	10,665.5	10,265.4	10,491.0	11,142.5	8,651.4	8,800.9	9,045.7

Source: VM Group

Photographic demand (tonnes, 2002 – 2008f)

	2002	2003	2004	2005	2006	2007e	2008f
Japan	1,305.5	1,259.8	1,215.7	1,173.2	1,132.1	1,092.5	1,054.2
China	87.5	88.4	89.3	90.1	91.0	92.0	92.9
Total Asia	1,393.0	1,348.2	1,305.0	1,263.3	1,223.2	1,184.4	1,147.1
Belgium	532.7	519.4	506.4	493.7	481.4	469.3	457.6
Germany	374.2	364.9	355.8	346.9	338.2	329.7	321.5
UK & Ireland	326.5	318.3	310.3	302.6	295.0	287.6	280.4
France	287.4	280.3	273.2	266.4	259.8	253.3	246.9
Italy	62.1	60.6	59.0	57.6	56.1	54.7	53.4
Spain	61.3	59.8	58.3	56.8	55.4	54.0	52.7
Total Western Europe	1,644.2	1,603.1	1,563.0	1,524.0	1,485.9	1,448.7	1,412.5
Total Latin America	252.4	246.1	239.9	233.9	228.1	222.4	216.8
USA	1,594.1	1,554.2	1,515.4	1,477.5	1,440.5	1,404.5	1,369.4
Canada	236.5	230.6	224.8	219.2	213.7	208.4	203.2
Total North America	1,830.5	1,784.8	1,740.2	1,696.7	1,654.2	1,612.9	1,572.6
World total	5,120.2	4,982.2	4,848.1	4,717.9	4,591.4	4,468.4	4,349.0

Source: VM Group

Electrical/Electronic demand (tonnes, 2002 – 2008f)

	2002	2003	2004	2005	2006	2007e	2008f
Japan	1,069.5	1,123.0	1,179.2	1,341.9	1,409.0	1,479.4	1,597.8
Taiwan	310.5	326.0	342.3	389.5	409.0	429.5	463.8
China	255.9	276.4	298.5	339.7	366.9	396.3	428.0
South Korea	155.2	163.0	171.1	194.8	204.5	214.7	231.9
Others	77.6	81.5	85.6	97.4	102.3	107.4	116.0
Total Asia	1,868.8	1,969.9	2,076.7	2,363.3	2,491.6	2,627.2	2,837.4
Germany	494.1	518.8	544.7	619.9	650.9	683.4	717.6
France	262.5	275.6	289.4	329.3	345.8	363.1	381.2
Others	175.4	184.2	193.4	220.1	231.1	242.7	254.8
Italy	174.0	182.7	191.9	218.4	229.3	240.7	252.8
UK & Ireland	174.0	182.7	191.9	218.4	229.3	240.7	252.8
Total Western Europe	1,280.1	1,344.1	1,411.3	1,606.0	1,686.3	1,770.6	1,859.2
India	323.7	340.8	358.7	408.2	397.5	417.4	438.2
Total Indian sub-continent	323.7	340.8	358.7	408.2	397.5	417.4	438.2
USA	965.7	1,013.9	1,064.6	1,211.6	1,272.1	1,335.8	1,402.5
Canada	40.7	42.7	44.9	51.1	53.6	56.3	59.1
Total North America	1,006.4	1,056.7	1,109.5	1,262.6	1,325.8	1,392.1	1,461.7
World total	4,479.0	4,711.4	4,956.2	5,640.2	5,901.2	6,207.3	6,596.5

Source: VM Group

Brazing Alloys demand (tonnes, 2002 – 2008f)

	2002	2003	2004	2005	2006	2007e	2008f
China	176.5	180.9	185.4	190.0	194.8	199.6	205.6
Japan	142.2	145.1	148.0	150.9	153.9	157.0	161.7
South Korea	47.8	48.8	49.7	50.7	51.7	52.8	54.4
Taiwan	30.9	31.5	32.2	32.8	33.5	34.1	35.2
Others	12.5	12.8	13.1	13.4	13.8	14.1	14.6
Total Asia	409.9	419.0	428.4	437.9	447.7	457.7	471.4
Germany	167.3	170.7	174.1	177.6	181.1	184.7	190.3
UK & Ireland	77.7	79.2	80.8	82.4	84.1	85.8	88.3
Switzerland	75.3	76.8	78.3	79.9	81.5	83.1	85.6
Italy	70.5	71.9	73.4	74.8	76.3	77.8	80.2
Total Western Europe	390.8	398.6	406.6	414.7	423.0	431.5	444.4
India	89.6	91.4	93.3	95.1	97.0	99.0	101.9
Others	37.0	37.8	38.5	39.3	40.1	40.9	42.1
Total Indian sub-continent	126.7	129.2	131.8	134.4	137.1	139.9	144.1
USA	193.6	195.5	197.5	199.4	201.4	203.5	209.6
Canada	21.9	22.1	22.3	22.5	22.8	23.0	23.7
Total North America	215.5	217.6	219.8	222.0	224.2	226.4	233.2
World total	1,142.8	1,164.5	1,186.5	1,209.1	1,232.1	1,255.5	1,293.2

Source: VM Group

Inflation-adjusted silver price (in 2007 dollars)

	Nominal silver price (\$/oz)	US CPI (2007=100)	Real silver price (2007 dollars)
1980	15.2	41.75	36.40
1981	8.125	45.48	17.87
1982	10.93	47.22	23.15
1983	8.91	49.01	18.18
1984	6.385	50.95	12.53
1985	5.8	52.88	10.97
1986	5.2815	53.46	9.88
1987	6.7015	55.83	12.00
1988	6.05	58.30	10.38
1989	5.2165	61.01	8.55
1990	4.1925	64.74	6.48
1991	3.86	66.72	5.79
1992	3.6695	68.65	5.34
1993	5.115	70.54	7.25
1994	4.85	72.43	6.70
1995	5.142	74.27	6.92
1996	4.7975	76.73	6.25
1997	5.995	78.04	7.68
1998	5.005	79.30	6.31
1999	5.33	81.43	6.55
2000	4.575	84.19	5.43
2001	4.52	85.49	5.29
2002	4.665	87.52	5.33
2003	5.965	89.17	6.69
2004	6.815	92.07	7.40
2005	8.83	95.22	9.27
2006	12.9	97.64	13.21
2007	13.38	100.00	13.38

Source: Reuters Ecowin

Silver prices in various currencies (average, 1997-2007)

	\$/oz	Euro/oz	Yen/gr
1997	4.90	4.34	19.07
1998	5.54	4.95	23.30
1999	5.22	4.90	19.08
2000	4.95	5.37	17.15
2001	4.37	4.88	17.05
2002	4.60	4.87	18.49
2003	4.88	4.31	18.14
2004	6.66	5.35	23.11
2005	7.31	5.90	25.97
2006	11.55	9.17	43.16
Jun-06	10.80	8.52	39.77
Jul-06	11.23	8.85	41.77
Aug-06	12.18	9.51	45.37
Sep-06	11.68	9.17	43.97
Oct-06	11.56	9.16	44.06
Nov-06	12.93	10.03	48.74
Dec-06	13.36	10.11	50.35
Jan-07	12.84	9.89	49.71
Feb-07	13.91	10.63	53.83
Mar-07	13.18	9.95	49.71
Apr-07	13.74	10.16	52.53
May-07	13.15	9.73	51.05
Jun-07	13.14	9.79	51.81
Jul-07	12.91	9.41	50.37
Aug-07	12.36	9.08	46.46
Sep-07	12.83	9.22	47.47
Oct-07	13.67	9.60	50.92
Nov-07	14.70	10.02	52.42
Dec-07	14.30	9.82	51.60

Source: Reuters Ecowin

Lease Rates, 1999 to 2007 (%)

	1-month	3-month	6-month	12-months
1999	3.1	4.0	4.9	5.7
2000	1.0	1.6	2.4	3.6
2001	0.6	1.2	1.3	1.5
2002	(0.2)	0.9	1.3	1.6
2003	0.3	0.4	0.6	0.9
2004	0.2	0.4	0.6	1.1
2005	0.5	0.7	1.2	2.1
2006	1.1	1.8	2.5	3.4
Jun-06	2.4	3.4	4.0	5.0
Jul-06	0.4	0.9	1.6	2.7
Aug-06	0.3	0.6	1.2	2.4
Sep-06	0.3	0.5	1.2	2.2
Oct-06	0.3	0.5	1.0	1.8
Nov-06	0.3	0.5	0.9	1.7
Dec-06	0.1	0.5	0.7	1.4
Jan-07	0.1	0.4	0.7	1.5
Feb-07	0.0	0.2	0.7	1.3
Mar-07	0.0	0.1	0.5	1.1
Apr-07	0.0	0.1	0.6	1.0
May-07	0.0	0.1	0.5	0.9
Jun-07	0.0	0.1	0.3	0.5
Jul-07	0.0	0.1	0.3	0.6
Aug-07	0.2	0.3	0.5	0.6
Sep-07	0.0	0.1	0.2	0.3
Oct-07	0.0	0.0	0.2	0.2
Nov-07	0.0	0.1	0.2	0.1
Dec-07	0.0	0.1	0.1	0.1

Source: Reuters Ecowin

Silver ETFs offtake, tonnes

	US ETF		UK & Swiss ETFs	
	ETF offtake	Change	ETF offtake	Change
2006	3,768	n/a		
Apr-06	653	653		
May-06	2,146	1,493		
Jun-06	2,580	434		
Jul-06	2,874	294		
Aug-06	3,122	247		
Sep-06	3,245	123		
Oct-06	3,259	14		
Nov-06	3,413	154		
Dec-06	3,768	355		
Jan-07	3,642	(126)		
Feb-07	3,920	277		
Mar-07	4,104	184		
Apr-07	4,195	91	14.0	
May-07	4,225	29	105.6	92
Jun-07	4,238	14	140.9	35
Jul-07	4,406	168	221.1	80
Aug-07	4,296	(110)	225.5	4
Sep-07	4,464	168	259.2	34
Oct-07	4,478	14	291.2	32
Nov-07	4,523	44	579.0	288
Dec-07	5,246	723	669.6	90.6

Source: Company websites and data requests

COMEX silver (tonnes)

	Open interest	Futures net long		Options net long		Total	Change
		Large speculators	Small speculators	Large speculators	Small speculators		
2001	9,929	2,794	1,507	(68)	377	4,611	
2002	11,964	4,499	3,289	3	512	8,303	3,693
2003	15,954	7,616	3,794	629	304	12,342	4,038
2004	15,438	5,864	3,661	231	325	10,081	(2,261)
2005	25,911	9,517	3,482	(580)	202	12,620	2,539
2006	19,834	5,366	2,601	(607)	326	7,686	(4,934)
Jan-06	26,629	9,305	3,310	(539)	106	12,182	(1,133)
Feb-06	27,769	8,063	3,433	(619)	172	11,049	234
Mar-06	27,359	8,143	3,389	(274)	25	11,282	(1,792)
Apr-06	26,848	5,607	3,739	(125)	269	9,490	(2,138)
May-06	26,069	4,081	3,365	(412)	318	7,352	(1,770)
Jun-06	22,049	3,085	2,820	(581)	258	5,582	469
Jul-06	20,675	3,705	2,773	(716)	290	6,051	1,307
Aug-06	24,381	4,596	3,064	(532)	231	7,359	(1,967)
Sep-06	20,845	2,872	2,704	(478)	294	5,392	1,004
Oct-06	22,609	4,099	2,605	(598)	290	6,396	2,234
Nov-06	24,346	5,827	3,063	(468)	208	8,630	(943)
Dec-06	19,834	5,366	2,601	(607)	326	7,686	512
Jan-07	21,553	5,545	2,892	(552)	314	8,198	1,478
Feb-07	24,968	7,220	2,793	(567)	230	9,677	(1,731)
Mar-07	21,214	4,989	3,091	(494)	359	7,946	1,276
Apr-07	23,950	5,974	3,148	(237)	337	9,222	(2,079)
May-07	20,746	3,939	2,977	(145)	372	7,143	61
Jun-07	22,340	4,331	3,121	(454)	206	7,204	1,126
Jul-07	22,911	5,030	3,102	(30)	229	8,331	(3,740)
Aug-07	21,004	1,503	2,694	208	186	4,590	2,150
Sep-07	23,307	3,851	2,706	33	152	6,741	919
Oct-07	19,104	4,435	2,898	95	232	7,660	763
Nov-07	27,877	4,801	3,239	128	255	8,423	(1,133)
Dec-07	29,708	5,463	3,323	(72)	286	8,786	(363)

Source: CFTC

Weights and measures

Chemical properties

Atomic weight	107.87
Atomic number	47
Chemical symbol	Ag
Melting point deg C	961.78
Hardness (mohs)	2.5
Boiling point deg C	2,162
Specific gravity gr/cubic cm	10.49
Hardness	24.5
Tensile strength psi	21,000

Source: VM Group

Measures

1 troy ounce	= 31.103 grammes = 408.6 grains = 1.097 oz avoirdupois = 20 pennyweights
1 metric tonne	= 32.151 troy ounces = 1.102 short tons
1 short ton	= 0.893 long tonnes = 2,000 Pounds
1 pound	= 14.58 troy ounces
1 grain	= 0.0648 grammes = 0.002083 troy ounces
1 gramme	= 14.43 grains
1 pennyweight	= 24 grains
1 kilogramme	= 32.1507 troy ounces
1 oz avoirdupois	= 0.9115 troy ounces

Source: VM Group

Notes

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The VM Group comprises a team of dynamic, highly experienced analysts dedicated to understanding and explaining the current and future state of commodity markets – focusing on the precious and base metals markets but also covering energy, plastics and agribusiness. The VM Group team combines a range of skills with a collective 60 years' experience in the precious metals markets and all that this implies – a plethora of market contacts and personal networks of long-standing trust and wisdom.

Our clients include world-class mining companies for whom the VM Group specialises in proprietary research for example corporates, national governments and other research bodies.

The VM Group team excels in macro-economic analysis, the generation of supply and demand scenarios, costs analysis, derivative research and price forecasting. Confidentiality, experience and independence are key elements of such advisory roles. Our aim is to assist those in need of external expertise, as well as those who wish to supplement their own in-house resources. With our extensive international contacts, we are able to broaden our services through links with experienced associates in related fields. For example, the VM Group maintains close working relationships with other highly regarded consultants such as Ted Reeve of Haliburton Mineral Services and Magnus Ericsson of the Raw Materials Group. The VM Group also produces for Fortis a range of monthly reports, the first covering all metals (base and precious) as well as plastics and more recently products covering energy, metals from an Asian perspective and agricommodities. All are available on a complimentary basis.

In July 2005, the VM Group launched MineLife a non-profit alliance of mining members committed to heightened social responsibility among host communities throughout Africa.

For further details, please email info@virtualmetals.co.uk or call us on +44 (0) 20 7487 3600. Visit our websites: www.virtualmetals.co.uk and www.minelife.org.

Fortis commodities contact list

Commodities

Ian Downes (Head)		+44 20 7444 8741
John King (Head of Base & Precious Metals)		+44 20 7444 8330
Gerry Schubert (Director, Precious Metals)		+44 20 7444 8600
Jonathan Parkman (Director, Agricommodities)		+44 20 7444 8407

Global Commodities Group

Cristina Roberts (Global Head Energy)		+1 212 340 53 41
Rotterdam	Bram de Veer	+31 10 401 97 83
London	Michael Rolfe	+44 20 7444 8450
New York	Antonio Nanez	+1 212 418 87 00
	Kimberly Oates	+1 212 418 87 00
Dubai	Silvan Doorenspleet	+97 14 363 57 40

Structured Commodity Finance

Piet-Hein Ingen Housz (Head)		+31 10 401 67 93
London	Carl Shipman	+44 20 7444 8785
New York	Juan Mejia	+1 212 340 53 56
Singapore	Ng Chuey Peng	+65 65 394 923
Hong Kong	Lee Mei	+852 28 47 94 20
Shanghai	Steven Jin	+862 15 049 88 33

Global Markets Sales Contacts

Johan Beckers +32 2 565 98 93
(Global Head Sales & Marketing Group)

Investment Products Sales

Paul Wagner (Head Investment Products Sales) +352 42 10 44 50

Institutionals

Belgium	Marc Sollie	+32 2 565 74 70
The Netherlands	Bert Veenstra	+31 20 535 74 54
Luxembourg	Paul Wagner	+352 42 10 44 50
France	François Girod	+33 1 55 67 90 56
UK-Ireland	Steven Harnie	+32 2 565 86 35
Italy	Franco Mora	+39 02 57 53 24 61
Spain	Jean-Louis Degand	+34 91 436 56 27

Retail and Private Banking

Belgium	Alain Cadron	+32 2 565 75 50
The Netherlands	Bert Veenstra	+31 20 535 74 54
Luxembourg	André Wagner	+352 42 10 49 07

Equities Sales

Institutionals

Johan van Megesen (Head)		+32 2 565 96 22
Belgium	Koen Devos	+32 2 565 76 50
France	Philippe Barroso	+33 1 55 67 90 82
Luxembourg	André Wagner	+352 42 10 49 07
The Netherlands	Nils Ten Berg	+31 20 535 73 32
Spain (Domestic Sales)	Manuel Torres	+34 91 436 56 51
Spain (International Sales)	Luis Broto	+34 91 436 56 52
United Kingdom	Nils Ten Berg	+31 20 535 73 32
United States	Francis Grevers	+1 212 418 87 14

Fixed Income/New Issues

Katherine Dior (Head)		+32 2 565 63 08
Syndication	Martine Klutz (Head)	+32 2 565 62 47
Origination Corporate	Olivier Tasnier (Head)	+32 2 565 16 38
Origination Financials	Jacques Massin (Head)	+32 2 565 62 37
MTN Desk	Jacques Massin (Head)	+32 2 565 62 37
Commercial Paper	Marie-Jose Rodriguez (Head)	+32 2 565 60 98

Structured Products

Ludovic Plas (Head) +33 1 55 67 90 56

Interest Rate Derivatives +32 2 565 74 70
Bernard Van Gils (Head) +32 2 565 87 61

Forex Derivatives +32 2 565 76 30
Johann Barchéchath (Head) +32 2 565 12 27

Equity Derivatives +32 2 565 78 82
Fabian de Prey (Head) +32 2 565 91 05

Credit Derivatives Structuring +32 2 565 77 20
Frédéric Monneret (Head) +33 1 55 67 90 58

Structured Product Services +352 42 42 49 65
Emmanuel Grimée (Head) +352 42 42 49 25

Sales Treasury Products

Serge van Loenhout (European Head Sales Treasury) +32 2 565 60 81

Corporate

Matthias Locker (Head)		+32 2 565 85 64
Belgium		+32 2 565 72 05
The Netherlands	Alfonso Vera Evertman	+31 20 535 71 66
Luxembourg	Manfred Hawelka	+352 42 10 49 42
France	David Alfandari	+33 1 55 67 90 05
Italy	Francesco Scotto	+39 02 57 53 24 64
Spain	Louis Veldman	+34 91 43 26 726
United Kingdom	Tim Kirkham	+44 20 73 98 93 53
Norway	Bjorn Kaaber	+47 23 11 49 60

Financial Institutions

Laurent Leveque (Head)		+33 1 55 67 90 67
Belgium	Alex Devroye	+32 2 565 61 03
	Fiduciaries	+32 2 565 72 60
	Institutionals & Banks	+32 2 565 72 70
The Netherlands	Ronald Riko	+31 20 535 70 93
Luxembourg	Dominique Chaumaz	+352 42 10 47 00
Italy	Francesco Scotto	+39 02 57 53 24 64

Mid-Caps

Belgium	Conrad Fieremans	+32 2 565 19 77
O/W Vlaanderen	Gerrit Bauwens	+32 2 565 78 57
Sud	Stéphane Christiaens	+32 2 565 78 56
Brussels/Public	Filip Moens	+32 2 565 70 40
VL Brabant/Limburg	Herwig Jaspers	+32 2 565 73 10
Antwerpen/Kempen	Jef Van Camp	+32 2 565 78 48
The Netherlands	Bart Solleveld	+31 20 535 71 84
Luxembourg	Thomas Kraemer	+352 42 10 46 00
Germany	Reinhold Beisler	+49 22 11 61 12 25
Austria	Alfred Buder	+43 181 10 43 81 58
Rest of Europe	Geert Blancke	+32 2 565 16 05
France	Muriel Flasse	+33 1 55 67 80 84
Spain	Jose Bravo Galisteo	+34 91 43 26 767
Portugal	Rui Lopes	+35 12 13 13 93 03
Italy	Marco Toja	+39 02 57 53 23 72
Poland		+48 225 66 99 04
Hungary	Attila Toth	+36 14 83 81 09
Czech Republic	Tomas Blazejovsky	+42 02 25 43 60 10
Denmark	Flemming Warhol-Rasmussen	+45 32 71 19 09
		+46 732 02 08 59
Sweden	Mats Cardemo	+30 210 9544 370
Greece	Marinos Danalatos	+41 58 322 09 70
Switzerland	Patrick Schaerer	+90 212 274 42 80
Turkey	Bahar Bezmez	+44 20 73 98 93 53
United Kingdom	Tim Kirkham	

Sales Treasury Products - United States

Foreign Exchange	Richard Vullo	+1 212 838 14 87
Money Markets	Maurice Fiol	+1 212 644 15 75
Interest Rate Derivatives	Emanuel Sanz	+1 212 838 37 05

Automated Trade and Service Desk

Marc Vidts		+32 2 565 71 10
ATS Desk		+32 2 565 73 00
Service Desk		+32 2 565 74 90
Netherlands	Wim Verwaal	+31 20 535 72 39

Energy & Environmental Markets

Philippe Arickx (Head)		+32 2 565 75 60
Energy Europe, Brussels		+31 20 535 73 67
Energy Europe, Amsterdam		+31 20 535 72 02
Carbon Banking		

Global Markets Research Contacts

Paul Gennart +32 2 565 60 45
(Global Head Research & Strategy)

Economic Research

Guy Verberne (Head) +31 20 535 73 25

The Netherlands

Joost Beaumont +31 20 535 74 31
Peter de Bruin +31 20 535 70 38
Nick Kounis +31 20 535 71 06
Aline Schuiling +31 20 535 71 31

Spain

Estefanía Ponte (Head) +34 91 436 55 37
Diego Fernández +34 91 436 55 00

Strategy

Françoise Bernard (Head) +32 2 565 83 02
Frédéric Atlan (Fixed Income) +33 1 55 67 72 81/+32 2 565 86 06
Arnaud Bornet (Forex & Money Markets Quant) +32 2 565 63 27
Lucian Briciu (Forex & Money Markets) +32 2 565 68 99
Frank Claus (Fixed Income) +32 2 312 16 81
Alexandre Dieudonné (Forex & Money Markets) +32 2 565 69 67
Sébastien Gillis (Fixed Income) +32 2 228 69 47
Helios Padilla Mayer, Ph.D. (Commodities) +32 2 312 13 85
Bart Robenek (Forex & Money Markets) +32 2 312 08 31
Joseph Tan, CFA (Asian Markets) +65 62 16 38 84

Technical Analysis

Françoise Bernard (Head) +32 2 565 83 02
Karel De Bie (Fixed Income/Forex/Commodities) +32 2 565 85 46
Stephan Debruyne (Equities) +32 2 312 13 02

Modelling

Peter Cauwels, Ph.D. (Head) +32 2 565 47 90
Philippe Brimmel +32 2 565 40 29
Stéphane Couteaux +32 2 312 10 30
Alain Cram +32 2 565 60 52
Dries Stragier +32 2 565 60 86
Herman van der Sluis +31 20 535 72 98
Amjed Younis +32 2 565 31 00

Credit Research

Hélène Séré (Head/Utilities & Energy) +33 1 55 67 72 83/+32 2 565 75 87

Credit Bonds

Benoit Feliho (Banks/Insurance) +44 20 32 96 68 42
Cyril Loiry (Telecom/Chemicals) +33 1 55 67 72 86
Christine Passieux (Banks) +33 1 55 67 72 87
Karine Petitjean (Consumer Non-Cyclical) +33 1 55 67 72 88
Bertrand Rocher (Automotive) +33 1 55 67 72 84
Olga Zubkova (Building & Basics/Utilities & Energy) +33 1 55 67 72 80

Structured Finance

Sabrina Marchal (Head/ABS, RMBS & CDO) +32 2 565 86 82
Jim Cheng (ABS & RMBS) +32 2 565 16 41
Santosh K.C. (ABS & RMBS) +32 2 312 01 09

Equity Research

Marc Pauwels (Head) +31 20 527 13 55

Benelux

Michel Aupers (Head) +31 20 527 28 62
Bart Jooris, CFA (Co-ordinator Belgium) +32 2 565 60 99
Felix Oberdorfer (Co-ordinator The Netherlands) +31 20 527 23 28
Paul Andriessen (Mid & Small Caps) +31 20 527 21 82
Maarten Bakker (Mid & Small Caps) +31 20 527 23 32
Kenn Curt Daniël, Ph.D. (Biotech) +31 20 527 34 17
Kurt De Baenst (Banks/Retail) +32 2 565 60 42
Justin De Meersman (Shipping) +32 2 565 12 45
Niels de Zwart (Semiconductors/Mid & Small Caps) +31 20 527 22 30
Mark Gevens (Industrials) +32 2 565 60 71
Tim Heirwegh (Mid & Small Caps) +32 2 565 87 60
Klaas Kruijer (Banks) +31 20 527 91 44
Geraldine O'Keeffe (Biotech) +31 20 527 91 50
Robert Stassen (Real Estate) +31 20 527 12 55
Teun Teeuwisse (Temporary Employment/Media) +31 20 527 13 01
David Vagman (Holdings) +32 2 565 67 25
René Verhoef (Mid & Small Caps) +31 20 527 91 45
Robert Jan Vos (Food Producers/Food Retail) +31 20 527 91 47
Miriam Wijnands (Real Estate) +31 20 527 23 23

France

Philippe Ezechian (Head) +33 1 55 67 72 29
Thomas Alzuyeta (Leisure & Services) +33 1 55 67 72 48
Séverine Blé (Food) +33 1 55 67 72 41
Claire Deray (Transport/Consumer Goods/Retail) +33 1 55 67 72 43
Lazare Hounhouayenou (Media) +33 1 55 67 72 45
Marc Huberty (Industrials) +33 1 55 67 72 30
Bertrand Laport (IT Hardware) +33 1 55 67 72 31
Olivier Macquet (Industrials & Services) +33 1 55 67 72 42

Spain

Antonio López (Head/Utilities) +34 91 436 56 50
Diego Barrón (Banks/Insurance) +34 91 436 56 29
Fernando Cordero (Mid & Small Caps/Technology/Media) +34 91 436 56 16
Luis Padrón (Telecom/Media) +34 91 436 56 07
Rafael Rico, CFA (Oil/Basic Materials/Mid & Small Caps) +34 91 436 56 84
Emilio Rotondo (Construction/Real Estate) +34 91 436 56 12
Francisco Ruiz (Mid & Small Caps/Retail) +34 91 436 56 76
Manuel Zayas (Mid & Small Caps) +34 91 436 55 41

US

David Garrett (Biotech) +1 212 340 54 94
Patrick Moriarty, Ph.D. (Biotech) +1 212 340 54 97

Retail Banking and Private Banking Research

Koen Van de Steene (Head/Healthcare) +32 2 565 86 14
Laurent Bailly (Technology/Consumer Cyclical) +32 2 565 44 05
Christel Bosch (Energy/Industrials/Utilities) +32 2 565 82 34
Rudy De Groot (Financials) +32 2 312 03 43
Bart Ingels (Basic Materials/Consumer Non-Cyclicals) +32 2 565 44 07
Geert Ruysschaert (Co-ordinator Top-Down/Telecom/Media) +32 2 565 19 58
Alain Servais (Editor) +32 2 228 92 30
Kristof Wauters (Fixed Income/Forex) +32 2 565 51 35

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Fortis Bank S.A./N.V.

Montagne du Parc 3
B-1000 Brussels
Belgium
Tel: +32 2 565 11 11

Fortis Bank Nederland N.V.

Rokin 55 (visiting address)
P.O. Box 243
1000 AE Amsterdam
The Netherlands
Tel: +31 20 527 91 11

Fortis Banque Luxembourg

50, avenue J.F. Kennedy
L-2951 Luxembourg
Luxembourg
Tel: +352 42 421

Fortis Bank, Succursale en France

30, quai de Dion Bouton
F-92824 Puteaux Cedex
France
Tel: +33 1 55 67 72 00

Fortis Bank Germany

Christophstrasse 33-37
50670 Cologne
Germany
Tel: +49 221 161 13 30

Fortis Bank Hong Kong

27/F, Fortis Bank Tower
77-79 Gloucester Road
Hong Kong
Tel: +852 28 23 04 56

Fortis Bank Italy

Via Cornaggia 10
I-20123 Milano
Italy
Tel: +39 02 57 53 24 61

Fortis Bank Norway

Haakon VII's gate 10
0161 Oslo
Norway
Tel: +47 23 11 49 50

Fortis Bank Polska S.A.

P.O. Box 15
02-676 Warszawa
Poland
Tel: +48 22 566 90 00

Fortis Bank Portugal

Rua Alexandre Herculano 50-6 Andar
1250-011 Lisboa
Portugal
Tel: +351 213 13 93 16

Fortis Bank Singapore

63 Market Street #21-01
Singapore 048942
Tel: +65 65 38 03 90

Fortis Bank S.A., Sucursal en España

Serrano 73
28006 Madrid
Spain
Tel: +34 91 436 56 00

Fortis Bank Turkey

Yıldız Posta Caddesi
No: 54 Gayrettepe
34353 Istanbul
Turkey
Tel: +90 212 274 42 80

Fortis Bank UK

5 Aldermanbury Square
EC2V 7HR London
United Kingdom
Tel: +44 20 32 96 80 00

Fortis Bank USA

520 Madison Avenue, 3rd Floor
New York, NY 10022
United States
Tel: +1 212 418 87 00

Fortis Securities LLC

520 Madison Avenue, 3rd Floor
New York, NY 10022
United States
Tel: +1 212 418 87 14

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Merchant Banking
Montagne du Parc
Warandeberg 3
B-1000 Brussels
Belgium
www.merchantbanking.fortis.com