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The Yellow Book October 2006

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Virtual Metals Research
and Consulting

Tom Butler
Jessica Cross
Travis Hough
Gary Mead
Matthew Turner

Tel: +44 20 7487 3600
Email: info@virtualmetals.co.uk

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Introduction

Jessica Cross, CEO
Virtual Metals Research & Consulting Ltd
London, October 2006

There are no prizes for guessing what the South African gold industry will be reading over their Christmas break. As we finalised this third edition of The Yellow Book, the South African mining industry was getting a glimpse of the long awaited amendments to the country's redrafted proposed Royalty Bill. By the end of this year the full details of the re-drafted Bill are likely to be pored over by all South Africa's gold mining bosses – and probably many outside the country, too.

The latest draft appears to reduce by 0.5% the proposed royalties payable by the gold mining companies. The reality, however, is that the new proposals call for mining companies to pay 1.5% of revenues to the National Treasury, with these payments being tax deductible. Furthermore, the new proposals make allowances for marginal mines (those producers whose operating costs exceed income) to receive up to a 75% reduction in royalty levies.

This is a significant change from the first draft, released in March 2003, which called for a royalty of 3% to be charged on gross gold revenues (sales and not profitability). The response to that original draft from the gold mining industry, spearheaded by the Chamber of Mines, was one of alarm and dismay. The opposition's argument was based on international norms, that a net-based royalty system was more appropriate to investment than a gross-based system. The Chamber also argued that gold miners in South Africa were already meeting heavy tax burdens and levies compared to other gold producing countries. Yet while the South African government now appears to be giving the gold mining industry some relief on the levels of royalty taxes, it appears to be standing firm on its intention to levy on gross revenues and not profits, something the industry will continue to find hard to swallow.

While the full document has yet to be released, Trevor Manuel, South Africa's Finance Minister, has said the document had undergone "substantial refinements" because of the comments South Africa's National Treasury had received and the results of fresh comparisons with royalty rates in other countries. It had accounted for the financial analysis received by the mining industry. Once released, the bill will be open for comment until January 31st 2007, before being presented to parliament; the current timetable suggests it will be implemented by 2009.

Over the past five years the management of South African mining companies have certainly spent more than their fair share of time on the political and social dimensions of mining gold in South Africa, what with the conversion of mineral rights, the Mining Charter, Black Economic Empowerment and now the revamped Royalty Bill. From where we sit all this makes selling 500 tonnes of European central bank gold annually look like shooting fish in a barrel.

South African gold mining has been steadily shrinking for a number of years and is now down to levels unseen since the early 20th century. Partly this reflects the sheer commercial and technical difficulties of mining at very deep levels. But the danger is that this decline may be accelerated if South African gold mining executives decide that, rather than do business in an increasingly onerous legislative environment, they will seek options elsewhere. The country's leading gold mining companies have already flown the nest in many respects, by sourcing an increasing portion of their production overseas. This trend is likely to increase – to the benefit of other gold producing nations, but to the detriment of South Africa in the long term.

In this issue of The Yellow Book, as well as presenting our updated supply-demand data, we also examine in detail the situation for above-ground stocks, a

key factor that plays a role in possible scrap recycling and hence potential responses by the market to future price movements.

That the Yellow Book is made available to the market on a complimentary basis is due to Fortis Bank SA/NV, and Virtual Metals would like to thank our colleagues at Fortis for their continued support and recognition of the value of this research to the industry.

We remind readers that our data is available electronically in Microsoft Excel format – drop us an 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.

This time 5 years ago

October 15th 2001

Morning fix: \$283.75/oz

Afternoon fix: \$281.85/oz

Dollar to Sterling: 1.45

Yen to Dollar: 121

Rand to Dollar: 9.0

1 month lease rate: 0.24%

Reuters, September 13th 2001: The gold vault buried beneath the wreckage of the World Trade Centre in New York belongs to ScotiaMocatta, the metals trading division of the Bank of Nova Scotia, and is one of two official depositories that hold gold for delivery against futures contracts traded on Comex. According to the latest Comex data, 379,036 ounces (11.8 tonnes) of gold were stored there in the form of 100 oz bars.

Platts, September 18th 2001: Later this week the Russian government is due to debate the possible lifting of export duties on precious metals. The duty, first introduced in May 1999, is 5% for gold and platinum exports and 6.5% for silver. The ministry of economic development and trade supports the abolition of the duty as it would bring Russia in line with World Trade Organization practice, but the finance ministry wishes to retain it. In practice, however, as no duty is paid if shipments are bound for states within the Russian customs union, most metal is channelled through Belarus, which the central bank says received 100% of Russian silver exports and 98.5% of gold and platinum exports in May.

Reuters, September 24th 2001: Gold market analysts see no evidence of dubious dealings in bullion linked to the September 11th attacks on the USA, but some refused to rule out the possibility of such activity. Although authorities across world financial markets are probing reports that people linked to the attacks took market positions in order to benefit from the subsequent effects on markets, gold analysts largely played down the idea that gold was a vehicle for profiteering given the apparent normality of trading activity in the days before the attack.

Business Wire, October 3rd 2001: Following an independent review by management consultants McKinsey and Co, AngloGold, Barrick Gold and other mining companies have proposed spending as much as \$200 million a year on the gold industry's biggest marketing campaign ever, aimed at increasing gold prices and demand for jewellery. The plan calls for leveraging the current marketing efforts of the World Gold Council by merging the new effort with the existing advertising resources of the WGC into one coherent marketing campaign. The new initiative will be monitored for success against measurable performance benchmarks including retail jewellery sales, consumer and retail behaviour.

Dow Jones Newswires, October 3rd 2001: Uzbekistan's State geology committee will soon sign a new agreement with Newmont Mining, giving Newmont a larger 60% stake in a joint venture developing the Kyzylalmasai and Kochbulak gold deposits. The venture, Angren Gold Co, was set up in 1996 to develop the two deposits whose proven reserves are 270 tonnes of gold.

Economic Times, October 19th 2001: In order to encourage the bullion trade to return to Mumbai the Maharashtra government is considering reducing its sales tax on gold. In Maharashtra this tax is currently 1.55%, whereas in neighbouring states Gujerat and Rajasthan it is 0.55% and 0.26% respectively. As a result the bulk of Mumbai's traditional bullion business has moved to Ahmedabad and Jaipur.

Above ground stocks

Analyst**Jessica Cross & Travis Hough**

Tel: +44 20 7487 3600

Email: jessica@virtualmetals.co.uk

Gold is unlike most commodities in that after being extracted from the ground the gold remains available for ‘use’ forever, except in rare circumstances. Thus each year the amount of gold newly mined is potentially added to that which has been mined before, what we term the “above ground stock of the metal”.

While a vague total of around 150,000 tonnes produced in history is bandied about in the literature available, scant attention is ever paid to where these stocks sit geographically and which sector holds the metal. One implication of this vagueness is that at any moment the market could conceivably be caught by surprise as to what could feasibly come to market at short notice.

This edition of The Yellow Book tries to diminish that potential surprise by analysing these stocks, and the results are presented graphically on the two pages that follow. The first diagram lists above ground stock as of the end of 2005. The second table attempts to show current liquidity and flows of gold during 2006 – that which is mine production will be added to stocks by the end of the year.

Methodology

All of the data is taken from the models developed by Virtual Metals and before that by Jessica Cross during her years as gold analyst at RTZ. The exceptions are for mine production, historical losses and gold bars.

Mined gold for 2006 and previous years was obtained from data supplied by Raw Materials Group, the Swedish resource company that specialises in supplying data covering various types of commodities throughout the world. In addition, historical data was derived from various sources including the Chamber of Mines of South Africa, the USGS and ABARE.

Historic losses comprise gold lost over time and encompass such things as sunken treasure, gold in teeth, gold in electronic equipment dumped into landfills and gold lost due to general wear and tear. This number is an estimate and for this and other information we are grateful to Tim Green, the doyen of the gold market and expert on the history of gold since the beginning of time.

Gold bar figures are inferred amounts since we maintain this sector is impossible to measure with any degree of certainty and, in any case, the majority of kilobars (and historically ten tolas) are destined for the jewellery industry. When the life expectancy of gold in these bar forms is only about three weeks, it is impossible to trace its destiny over time. For this reason we cannot break down where these bars are held geographically – hence this tonnage is accepted as a residual.

The official sector holdings include lending, since the individual central banks remain the titleholders of by far the majority of this gold. The only exception is a swap executed by a central bank. A swap comprises two distinct transactions – a spot sale and a forward purchase, the latter often being unwound at a later date which then implies a net sale of gold. While swaps were a major feature of the bullion industry throughout the 1980s and 1990s, they are less prominent in today’s market and as a consequence we have excluded them from our analysis.

The official coin figure reflects fabrication rather than consumption of coins. This is because while we can list where the coins were struck, it cannot be said for sure who bought them. This fabrication figure reveals the historical importance of the South African-minted Krugerrand, although we suspect that many of these coins were returned for re-melt, especially throughout the USA and Europe in the 1980s and 1990s.

The results

The easiest part of this exercise is estimating the total amount of gold ever mined – it involves summing-up the amount of gold ever mined and subtracting that which is considered ‘lost’ (see Methodology). Mine production data for gold is reasonably accurate and covers a long time span. Furthermore, estimates of gold produced before 1800, whilst not necessarily highly accurate, cannot be a major source of error because the amounts are relatively small. For instance we estimate that 154,000 tonnes of gold has been mined, of which half has been mined since 1962, and probably $\frac{3}{4}$ since 1925. Of that it is estimated that just under 10,000 tonnes has been ‘lost’.

The destination of the gold is somewhat harder to estimate given the multitude of sources, the ease with which gold is transferred from one use to another, and the limited historical knowledge.

Nevertheless our analysis suggests that, unsurprisingly, jewellery dominates as the sector of final end use, accounting for just under 72,500 tonnes or 47% of all the gold ever mined. Of this sector, adornment jewellery accounts for 42,000 tonnes (58% of total jewellery) and this represents 27% of total above ground stocks. In terms of volume, official sector holdings follow, at just under 30,500 tonnes or just under 20% of total stocks.

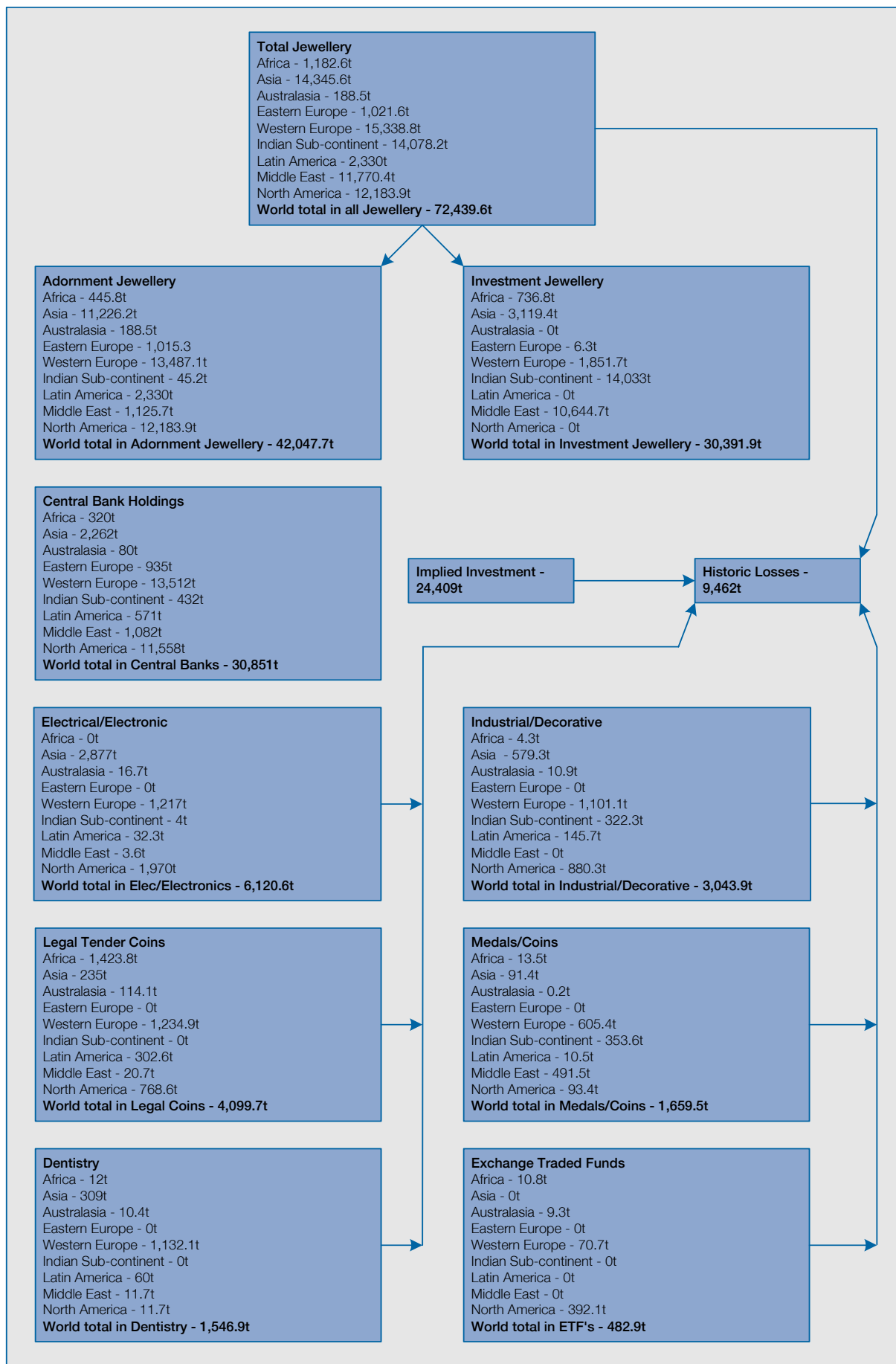
It is interesting to compare this percentage with that in 1962, when the total mined stock was around 67,000 tonnes, or half what it is today. Jewellery was probably only around 15% of the total, whereas IMF data suggests that official gold holdings were then around 37,000 tonnes (allowing for some that was unreported), or 55% of the total stock.

Thus, in 2005, between the wearers of jewellery and the central banks, over two-thirds of gold stocks are accounted for. Furthermore, we deduce (because it cannot be measured with final certainty), that investment bars represent another 24,400 tonnes, just less than 16% of total stocks. This leaves a mere 17% in coinage, electronics, dentistry and other industrial and decorative applications.

The 2006 flows of gold imply that 2,361 tonnes of newly mined gold will be added to the existing stocks by the end of the year, bringing the total to nearly 157,000 tonnes. The remainder of the gold shown in the second table represents gold circulating within the industry. Of the 3,276 tonnes of central bank lending, 1,700 tonnes or nearly half is still tied up in the global producer hedge book. The remainder we assume to be largely associated with financing the jewellery manufacturing pipeline.

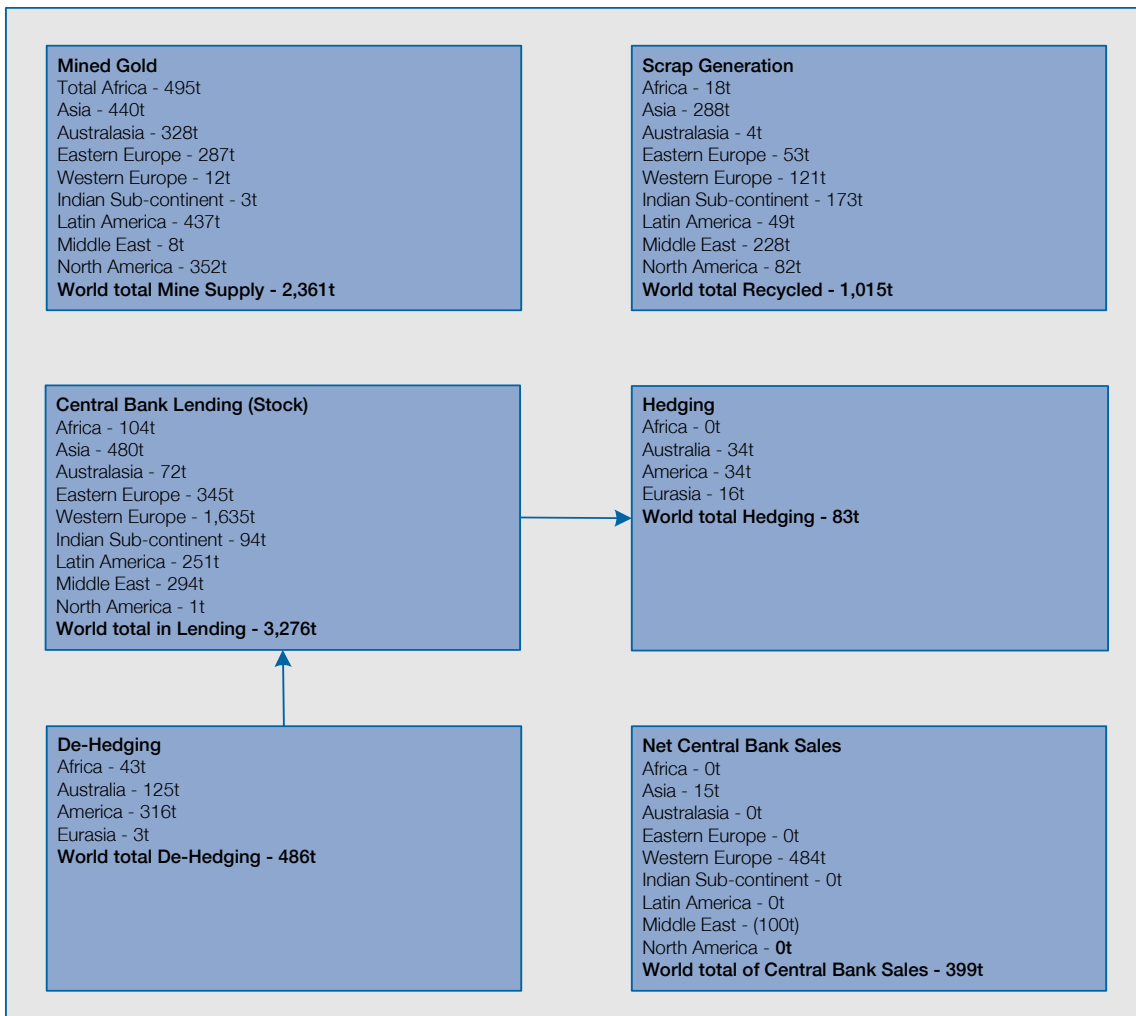
Looking at the location of all this gold, distinct regional variations quickly become apparent. The chart on page 7 shows the different emphasis regions place on different types of gold as a percentage of the total for each region. For the Indian Sub-continent, it is all about investment jewellery; a similar but slightly less pronounced bias is seen in the Middle East. In North America, the holdings of the Federal Reserve Bank dominate, along with adornment jewellery. In Eastern Europe, central bank holdings and adornment jewellery share equal weightings, but less so in Western Europe where despite six years of the European Gold Agreement sales, official holdings still predominate, although adornment jewellery comes a close second. The African data is skewed by the historical fabrication of the Krugerrand and we acknowledge that the majority of these coins were purchased by European and American investors in the two decades after the debut of the Krugerrand in 1967.

Gold total above ground stocks as of end 2005 – 154,000 tonnes



Source: Virtual Metals

Gold supply and flows in 2006 (Est)



Source: Virtual Metals

How the market changed

Commodity analyst

Matthew Turner

Virtual Metals Research & Consulting Ltd

Email: matthew@virtualmetals.co.uk

Forecasting anything is playing hostage to fortune, not least when it comes to such an emotionally-charged commodity as gold. But it has to be done and one must bow to the intellectual discipline of revisiting our forecast with the knowledge of hindsight.

In March this year, when we released the second edition of The Yellow Book, we made a forecast for gold supply and demand for all of 2006. Our estimate was that the market would face a surplus of 422 tonnes on the back of a price related collapse in jewellery demand. This implied three possibilities for the remainder of the year:

One, if this forecast was correct, then prices would have to fall to regenerate demand and curb supply (largely scrap recycling) in order to bring the market back into balance.

Two, the surplus might have, in fact, been a source of demand, which is not measured directly in our supply/demand balance, namely investment not included in bars/coins and the ETFs.

Or three, our forecast may have overestimated an element of supply and/or underestimated demand at current prices.

The accompanying table compares the forecasts we made in March to our revised estimates as of October 2006.

World total - 2006 (tonnes)			
	March F'cast	Oct F'cast	Change
Supply			
Mine supply	2,364	2,361	(3)
Scrap recycling	998	1,015	17
Hedging	64	83	19
Central Bank sales	547	499	(48)
Total Supply	3,973	3,958	(15)
Demand			
Jewellery fabrication	2,341	2,310	(31)
Jewellery consumption	2,341	2,310	(31)
Legal tender coins	104	103	(1)
Electronics	372	372	0
Other end uses	281	315	34
ETFs	173	209	36
Central Bank purchases	0	100	100
Dehedging	280	486	206
Total demand	3,551	3,894	343
Residual (supply less demand)	422	64	(358)

Source: Virtual Metals

Notes: Global totals do not include jewellery fabrication

In the event, prices clearly did not collapse. In fact the gold price rose to a 25 year high of \$725/oz in May, and although it has fallen back subsequently, it remains slightly higher than it was in March 2006.

Furthermore, we now do not believe that 'implied investment' was enormous after all. Instead our new estimate for 2006, which is obviously based on far more data to hand, suggests that even at the sustained high prices of Q2 and Q3, the market was only in surplus by 64 tonnes, a difference from our March forecast of 358 tonnes.

So what changed?

First, looking at supply, total mine production has been little changed from our earlier estimate, whilst scrap and hedging are 17 and 19 tonnes higher, respectively. Central bank sales we estimate to be 48 tonnes lower, this reflects both the timing of EGA signatories' sales (the EGA 'year' runs from October 2005 to end-September 2006) and lower sales from non-signatory central banks. Overall though, supply was only 15 tonnes lower than we forecast back in March this year.

Then on the demand side, jewellery fabrication was even lower than we first thought, losing an additional 31 tonnes as the high price took its toll in most markets but especially those in the Indian Sub-continent and the Middle East. In other sectors, we believe our initial estimates are broadly unchanged, although other-end uses were up and ETFs took 36 tonnes more than we expected. The two big exceptions, however, were central bank purchases, where we note that 100 tonnes went into the Middle East, and the level of dehedging, where a large Barrick-led decline meant offtake was 206 tonnes higher than we had expected. This made all the difference in our estimates.

Thus the far smaller market surplus now forecast than in March is essentially down to just two factors – greatly reduced net central bank sales and greatly increased dehedging.

Looking ahead to 2007 can these trends continue?

We think not, and in fact we are predicting the market surplus (at current prices) to rise significantly in 2007 to 219 tonnes, despite our forecast that supply will fall by 159 tonnes, as we think demand will fall by a huge 313 tonnes.

Looking at supply first, we think higher mine supply (up 21 tonnes), will be offset by lower central bank sales (down 51 tonnes), much lower scrap recycling (down 117 tonnes), and slightly lower hedging (down 12 tonnes).

We expect three categories of demand to rise: jewellery fabrication (up 47 tonnes), electronics (up 31 tonnes) and other end uses. However, these will be easily offset by weaker ETF demand (down 108 tonnes) as the investment fever for gold cools – although this could be affected by new launches that tend to attract heavy initial investment, no central bank purchases (thus 100 tonnes lower) and a sharp decline in dehedging of 186 tonnes. This is partly because Barrick have finished the bulk of their planned reduction and have given a good indication of their future intentions, but also because the level of outstanding hedging has declined so much there is just less latitude for further buy backs or deliveries.

On the basis of all this, we present our latest estimates for 2006 and our initial forecasts for 2007, although, of course, the market supply and demand in 2007 will be largely predicated by the gold price performance throughout the remaining months of this year. And as we have seen throughout 2006 so far, a lot can happen in three months.

World total (tonnes)

	Estimate 2006	Forecast 2007	Change
Supply			
Mine supply	2,361	2,382	21
Scrap recycling	1,015	897	(117)
Hedging	83	72	(12)
Central Bank sales	499	448	(51)
Total supply	3,958	3,799	(159)
Demand			
Jewellery fabrication	2,310	2,357	47
Jewellery consumption	2,310	2,357	47
Legal tender coins	103	97	(6)
Electronics	372	403	31
Other end uses	315	323	8
ETFs	209	101	(108)
Central Bank purchases	100	0	(100)
Dehedging	486	300	(186)
Total demand	3,894	3,580	(313)
Residual (supply less demand)	64	219	154

Source: Virtual Metals

Notes: Global totals do not include jewellery fabrication

The data

The methodology

General comments: In an industry characterised by large and permanent above-ground stocks, a gold 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 through recycling and official sector sales and lending. Furthermore, it has to be recognised that there are large swathes of the gold market which are clandestine and unofficial, and therefore movements of metal within these sectors are largely unmeasurable and unverifiable. Virtual Metals attempts to avoid spurious accuracy – measuring something visible to the last two decimal places is a waste of resources considering the global picture for this commodity. In the context of large tonnages of gold being smuggled across borders, the claim that it is possible to measure to fine accuracy the relatively small end-uses such as dental alloys and medallions, adds little to the understanding of the big picture.

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

The derivation of the data series

- Mine supply – data collated from Raw Materials Group, company reports, the Chamber of Mines of South Africa, ABARE, USBM, China Gold Association and newswires.
- Scrap recycling – data from refineries and industry participants. Virtual Metals estimates based on gold price movements, political developments.
- Producer hedging – data from the Mitsui Hedge Report produced by Virtual Metals and Haliburton Mineral Services.
- Central Bank transactions – data from IFS statistics, ECB statistics and newswires. Interpretation from discussions with Central Banking sector.
- Jewellery fabrication – data derived from data series published by Consolidated Gold Fields, London until 1988. Individual country data series estimated by Virtual Metals 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.
- Jewellery consumption – data series generated by Virtual Metals based on our analysis of exports and imports of gold jewellery to and from countries and gross retail sales as reported by a number of countries. The fabrication data was re-allocated on a country-by-country and percentage basis to derive consumption. The calculation of gold jewellery as a percentage of total jewellery retail sales is formula-based and has been verified in the countries concerned. All jewellery figures include old jewellery scrap but exclude process scrap generated during jewellery manufacturing. The generation of process scrap has been assessed depending on the manufacturing process, e.g. machine-made, stamping, casting or hand made. In mature markets, close scrutiny of jewellery fabrication and consumption is not necessary. We know that these have not been growth industries and that jewellery's share of disposable income expenditure has been falling. Thus, in these markets, demographic trends and rising disposable incomes have been offset by life-style preferences which favour other goods over jewellery.

The countries of most interest are those consuming large tonnages of gold jewellery, specifically the USA, India, Turkey, China and countries in the

Middle East. For these countries, trade data, retail sales, commodity exchange-related figures or data contributed by industry is sufficient to generate the needed data series.

- Legal tender coins – data made available by the Mints and refineries concerned, for example, the US Mint, the SA Mint and Rand Refinery. There are some smaller mintings for which Virtual Metals does not have data, and therefore this data series probably understates the sector. Virtual Metals makes allowance for this in the “other industrial” data series.
- Electronics – data series derived by Virtual Metals 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.
- The “other category” of gold end-uses is an estimate of all other applications of gold including medallions (not legal tender coinage), industrial and decorative uses (excluding electronics), as well as medical and dental demand. With the exception of dental alloys, this combined sector is believed to have shown robust growth over the years and for the purposes of this supply/demand balance, an average growth rate of around 10% between 2000 and 2005 has been applied, but seeing a decline in 2006.

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 gold flows of considerable magnitude associated with the unofficial market, such as smuggled or stolen gold which cannot be verified and c) there are sectors which cannot be measured and therefore we do not pretend otherwise; these include “bar hoarding”, which is the purchase of gold in bar form, the vast majority of which is in any case rapidly turned into jewellery.

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.

World total and regional supply/demand imbalances (tonnes)

	Latin America						Africa					
	2002	2003	2004	2005	2006e	2007f	2002	2003	2004	2005	2006e	2007f
Supply												
Mine supply	376	391	374	430	437	452	614	598	551	517	495	491
Scrap recycling	61	61	69	40	49	44	20	20	22	15	18	15
Hedging	0	0	0	0	0	0	0	0	16	6	0	0
Central Bank sales	23	0	0	0	0	0	0	58	0	0	0	0
Total supply	460	452	443	470	486	496	635	676	589	537	513	506
Demand												
Jewellery fabrication	77	77	78	80	68	69	28	29	31	31	21	21
Jewellery consumption	65	65	65	66	56	57	28	28	28	29	19	19
Legal tender coins	0	0	0	0	0	0	1	2	3	3	3	3
Electronics	1	1	2	2	2	2	0	0	0	0	0	0
Other end uses	8	9	10	11	10	11	0	0	0	0	0	0
ETFs	0	0	0	0	0	0	0	0	3	4	2	2
Central Bank purchases	0	28	55	0	0	0	0	0	0	0	0	0
Dehedging	0	0	0	0	0	0	163	99	170	0	43	95
Total Demand	74	104	131	79	68	69	192	129	204	36	66	119
Residual (supply less demand)	385	348	312	392	418	427	442	547	384	501	447	387
	Australasia						Eastern Europe					
	2002	2003	2004	2005	2006e	2007f	2002	2003	2004	2005	2006e	2007f
Supply												
Mine supply	340	364	339	343	328	328	307	296	302	285	287	283
Scrap recycling	3	3	4	3	4	3	35	40	45	40	53	48
Hedging	0	97	33	33	34	31	0	0	0	0	0	0
Central Bank sales	0	0	0	0	0	0	0	5	0	0	0	0
Total supply	343	463	376	378	365	362	342	342	347	325	339	331
Demand												
Jewellery fabrication	5	5	5	6	5	5	34	34	34	39	33	30
Jewellery consumption	5	5	5	6	5	5	34	34	34	39	33	30
Legal tender coins	3	3	5	6	6	5	0	0	0	0	0	0
Electronics	1	1	1	1	1	1	15	16	16	17	17	19
Other end uses	0	0	0	0	0	0	0	0	0	0	0	0
ETFs	0	8	(1)	1	2	2	0	0	0	0	0	0
Central Bank purchases	0	0	0	0	0	0	6	4	3	5	0	0
Dehedging	458	144	131	70	125	87	0	0	0	0	0	0
Total Demand	467	162	141	83	139	100	55	53	54	61	51	49
Residual (supply less demand)	(124)	302	235	295	226	262	287	288	293	264	289	282

Source: Virtual Metals

Note: Regional totals include jewellery consumption but not jewellery fabrication. Totals might not add due to rounding.

Primary mine supply, 2002-2007f (tonnes)

	2002	2003	2004	2005	2006e	2007f
South Africa	395.2	375.8	343.0	296.0	275.0	270.0
Ghana	69.0	70.0	60.0	65.3	68.5	71.0
Tanzania	40.0	45.0	48.0	49.0	49.0	49.0
Mali	56.0	48.0	40.0	46.0	46.0	46.0
Guinea	17.0	16.5	13.0	13.0	13.0	13.0
Zimbabwe	18.0	12.6	20.0	14.0	12.4	10.0
Ethiopia	5.0	6.0	6.0	6.0	6.0	6.0
Sudan	5.5	5.1	5.0	5.0	5.0	5.0
Congo (Dem Rep)	5.0	5.0	5.0	5.0	5.0	5.0
Cote D'Ivoire	3.5	2.0	0.0	2.0	2.0	2.0
Other Africa	0.0	11.9	10.9	15.7	13.0	14.0
Africa Total	614.2	597.9	550.9	517.0	494.9	491.0
China	190.0	213.0	220.0	224.0	246.4	250.0
Indonesia	145.0	147.0	100.0	142.0	137.1	142.0
Mongolia	9.0	12.0	16.0	18.0	18.0	18.0
Japan	8.0	8.2	8.0	7.5	7.5	7.3
Philippines	7.9	5.8	5.0	6.2	6.2	6.5
North Korea	5.0	5.0	5.0	5.0	5.0	5.0
Other Asia	5.6	16.7	15.6	16.9	19.4	22.0
Total Asia	370.5	407.7	369.6	419.6	439.7	450.8
Australia	263.0	284.0	253.0	260.0	250.0	250.0
Papua New Guinea	63.2	66.0	71.0	68.7	65.0	65.0
New Zealand	10.0	10.0	11.0	11.0	10.0	10.0
Fiji	3.8	3.6	4.0	2.8	2.8	2.8
Total Australasia	340.0	363.6	339.0	342.5	327.8	327.8
Russia	170.0	158.0	159.0	152.0	151.9	155.0
Uzbekistan	88.0	86.0	90.0	86.0	88.1	80.0
Kazakhstan	20.0	20.0	22.0	22.0	22.0	21.0
Kyrgyzstan	18.0	22.5	22.0	17.0	17.0	19.0
Other Eastern Europe	11.3	10.0	9.0	7.7	7.7	8.0
Total Eastern Europe	307.3	296.5	302.0	284.7	286.7	283.0
Sweden	5.8	5.7	6.0	5.2	5.2	5.0
Other Western Europe	18.2	18.2	16.2	14.2	14.2	13.7
Total Western Europe	24.0	21.6	17.5	11.5	11.5	10.8
India	1.4	3.3	5.0	3.4	3.4	3.5
Total Indian sub-continent	1.4	3.3	5.0	3.4	3.4	3.5
Peru	157.3	172.6	173.0	207.8	200.0	200.0
Chile	36.5	38.9	39.0	39.6	46.2	50.0
Colombia	35.0	46.5	30.0	37.0	37.0	37.0
Brazil	37.0	34.0	34.0	35.0	35.0	35.0
Mexico	23.3	22.2	24.0	31.6	31.8	32.0
Argentina	32.5	28.6	27.0	25.0	26.8	27.0
Venezuela	16.0	15.0	15.0	14.0	14.0	14.0
Bolivia	10.0	7.0	0.0	8.9	7.4	8.0
Guyana	13.0	12.0	12.0	8.2	6.0	6.0
Other Latin America	15.1	14.1	20.0	23.1	33.0	43.1
Latin America Total	375.7	390.9	374.0	430.1	437.2	452.1
Saudi Arabia	4.0	8.8	8.0	8.0	8.0	8.0
Other Middle East	1.4	0.8	1.0	0.0	0.0	0.0
Total Middle East	5.4	9.6	9.0	8.0	8.0	8.0
USA	300.0	280.0	260.0	261.0	250.0	250.0
Canada	152.2	140.6	129.0	118.5	102.0	105.0
Total North America	452.2	420.6	389.0	379.5	352.0	355.0
World Total	2,490.6	2,511.6	2,356.0	2,396.5	2,361.2	2,382.0

Source: Raw Materials Group, Chamber of Mines, South Africa, News Wires

Scrap recycling (excluding process scrap), 2002-2007f (tonnes)

	2002	2003	2004	2005	2006e	2007f
Algeria	5.2	5.2	5.4	4.0	4.9	4.1
Morocco	5.1	5.1	5.5	4.0	4.9	3.9
Tunisia	5.1	5.1	5.2	3.5	4.3	3.6
Other Africa	10.1	10.1	10.2	8.5	9.3	8.6
Total Africa	20.4	20.4	21.6	14.5	17.7	14.6
Thailand	35.0	35.0	45.0	45.0	54.9	49.9
Indonesia	30.0	30.0	33.0	40.0	48.8	44.4
Malaysia	18.0	18.0	18.0	30.0	36.6	33.3
Japan	35.0	35.0	42.0	30.0	35.1	31.9
China	35.0	35.0	37.0	25.0	30.5	27.7
Philippines	12.0	12.0	15.0	18.0	22.0	20.0
South Korea	18.0	18.0	20.0	15.0	18.3	16.6
Taiwan	12.0	12.0	16.0	12.0	14.6	13.3
Hong Kong	12.0	12.0	17.0	10.0	12.2	11.1
Singapore	12.0	12.0	15.0	10.0	12.2	11.1
Myanmar	3.0	3.0	3.0	2.0	2.4	2.2
Total Asia	222.0	222.0	261.0	237.0	287.6	261.5
Australia	3.0	3.0	4.0	3.0	3.5	3.2
Total Australasia	3.0	3.0	4.0	3.0	3.5	3.2
Russia	35.0	40.0	45.0	40.0	52.8	48.0
Total Eastern Europe	35.0	40.0	45.0	40.0	52.8	48.0
Turkey	60.0	65.0	80.0	40.0	48.8	40.7
Italy	30.0	30.0	34.0	26.0	30.4	27.7
France	5.2	5.2	7.0	6.0	7.0	6.4
UK & Ireland	6.0	6.0	7.0	5.0	5.9	5.3
Switzerland	6.0	6.0	6.8	5.0	5.9	5.3
Germany	6.0	6.0	7.0	5.0	5.9	5.3
Other Western Europe	16.4	16.4	20.7	14.6	17.0	15.5
Total Western Europe	129.6	134.6	162.9	101.5	120.8	106.1
India	110.0	120.0	145.0	115.0	140.3	127.5
Pakistan	22.0	22.0	30.0	20.0	24.4	20.3
Bangladesh	4.0	4.0	7.0	4.0	4.9	4.1
Sri Lanka	3.0	3.0	4.0	3.0	3.7	3.1
Total Indian sub-continent	139.0	149.0	186.0	142.0	173.2	155.0
Brazil	7.0	7.0	10.0	6.0	7.3	6.7
Argentina	7.0	7.0	8.0	6.0	7.3	6.7
Chile	7.0	7.0	8.0	5.0	6.1	5.5
Colombia	8.0	8.0	8.0	5.0	6.1	5.5
Mexico	8.0	8.0	8.0	5.0	6.1	5.5
Venezuela	8.0	8.0	9.0	4.0	4.9	4.4
Peru	8.0	8.0	8.0	4.0	4.9	4.4
Other Latin America	8.0	8.0	10.0	5.0	6.1	5.5
Total Latin America	61.0	61.0	69.0	40.0	48.8	44.4
Saudi Arabia	70.0	70.0	90.0	70.0	85.4	71.2
Iraq	20.0	40.0	65.0	40.0	48.8	40.7
Kuwait	20.0	20.0	25.0	20.0	24.4	20.3
Egypt	30.0	30.0	33.0	20.0	24.4	20.3
Iran	15.0	15.0	28.0	20.0	23.4	19.5
Arab Emirates	10.0	10.0	15.0	10.0	12.2	10.2
Lebanon	6.0	6.0	9.0	5.0	6.1	5.1
Israel	4.0	4.0	4.5	3.0	3.7	3.1
Total Middle East	175.0	195.0	269.5	188.0	228.4	190.3
USA	70.0	70.0	75.0	65.0	76.1	69.1
Canada	5.0	5.0	6.0	5.0	5.9	5.3
Total North America	75.0	75.0	81.0	70.0	81.9	74.5
World Total	860.0	900.0	1100.0	836.0	1014.7	897.5

Source: Virtual Metals

Jewellery fabrication, 2002-2007f (tonnes)

	2002	2003	2004	2005	2006e	2007f
South Africa	7.0	8.0	9.6	9.6	8.2	8.2
Morocco	10.0	10.0	10.0	10.0	6.0	6.1
Algeria	5.0	5.0	5.0	5.0	3.0	3.0
Libya	5.0	5.0	5.0	5.0	3.0	3.0
Tunisia	1.0	1.0	1.0	1.0	0.6	0.6
Total Africa	28.0	29.0	30.6	30.6	20.8	21.0
China	220.0	230.0	240.0	250.0	260.0	267.8
Indonesia	100.0	100.0	100.0	100.0	60.0	60.6
Thailand	75.0	75.0	75.0	70.0	57.4	59.1
Taiwan	80.0	75.0	70.0	70.0	57.4	57.4
Malaysia	75.0	50.0	50.0	55.0	33.0	33.0
South Korea	50.0	50.0	50.0	52.0	31.2	31.5
Vietnam	25.0	25.0	30.0	34.5	20.7	25.0
Japan	25.0	25.0	25.0	25.0	22.5	22.6
Hong Kong	10.0	15.0	17.3	20.0	17.0	17.2
Singapore	15.0	10.0	10.0	10.0	8.2	8.3
Afghanistan	10.0	10.0	10.0	10.0	8.0	8.1
Cambodia	10.0	10.0	10.0	10.0	6.0	6.1
Other Asia	7.5	8.0	9.0	9.0	5.4	5.5
Total Asia	702.5	683.0	696.3	715.5	586.8	602.1
Australia	5.0	5.0	5.0	5.5	4.7	4.7
Total Australasia	5.0	5.0	5.0	5.5	4.7	4.7
Russia	30.0	30.0	30.0	35.0	29.8	30.0
Bulgaria	0.3	0.3	0.3	0.3	0.3	0.3
Uzbekistan	3.0	3.0	3.0	3.0	2.6	0.0
Estonia	0.1	0.1	0.2	0.2	0.2	0.0
Croatia	0.6	0.6	0.7	0.7	0.6	0.0
Total Eastern Europe	34.0	34.0	34.2	39.2	33.4	30.3
Italy	400.0	350.0	330.0	320.0	304.0	301.0
Turkey	136.5	225.7	263.6	283.5	170.1	178.6
Switzerland	27.5	30.0	30.0	30.0	28.5	28.6
Spain	30.0	30.0	30.0	30.0	28.5	28.4
UK & Ireland	26.0	25.0	25.0	26.0	26.1	26.3
Germany	30.0	25.0	22.5	22.5	21.4	20.9
France	23.0	22.0	20.0	22.0	20.9	20.6
Portugal	10.0	10.0	10.0	10.0	9.5	9.5
Greece	8.0	9.0	10.0	10.0	9.5	9.5
Poland	4.5	5.2	5.5	5.5	5.2	5.4
Other Europe	20.4	19.9	19.1	19.6	18.6	18.7
Total Western Europe	715.9	751.8	765.7	779.1	642.4	647.4
India	525.0	500.0	532.0	592.5	414.7	427.2
Pakistan	50.0	50.0	50.0	50.0	30.0	30.9
Bangladesh	25.0	20.0	20.0	14.0	8.4	8.5
Sri Lanka	10.0	5.0	5.0	5.0	3.0	3.0
Total Indian sub-continent	610.0	575.0	607.0	661.5	456.1	469.6
Mexico	30.0	30.0	30.0	30.0	25.5	26.1
Brazil	20.0	20.0	20.0	22.0	18.7	19.3
Dominican Republic	6.0	6.0	6.0	6.0	5.1	5.1
Other Latin America	21.3	21.4	21.5	21.5	18.3	18.5
Total Latin America	77.3	77.4	77.5	79.5	67.6	69.0

Continued overleaf

Jewellery fabrication, 2002-2007f (tonnes)

	2002	2003	2004	2005	2006e	2007f
Saudi Arabia	160.0	170.0	180.0	190.0	133.0	139.7
Egypt	100.0	75.0	75.0	85.0	55.3	58.0
Arab Emirates	45.0	47.5	50.0	55.0	38.5	39.3
Iran	35.0	35.0	35.0	40.0	34.0	34.7
Iraq	30.0	35.0	30.0	35.0	21.0	21.4
Israel	15.0	14.0	15.0	15.0	12.3	12.5
Kuwait	15.0	15.0	15.0	17.5	10.9	11.1
Lebanon	8.0	9.0	10.0	12.0	6.6	6.7
Yemen	7.6	7.8	8.0	8.3	5.5	5.8
Other Middle East	8.3	8.3	8.5	8.5	5.5	5.5
Total Middle East	423.9	416.1	426.0	465.8	320.8	333.1
USA	175.0	200.0	200.0	195.0	165.8	168.2
Canada	12.0	12.0	12.0	12.0	11.4	11.5
Total North America	187.0	212.0	212.0	207.0	177.2	179.8
World Total	2,783.6	2,783.3	2,854.2	2,983.6	2,309.6	2,356.8

Source: Virtual Metals

Jewellery consumption, 2002-2007f (tonnes)

	2002	2003	2004	2005	2006e	2007f
Morocco	7.0	8.0	9.6	9.6	8.2	8.2
South Africa	5.0	5.2	5.9	5.9	5.1	5.2
Other Africa	14.2	13.9	13.7	14.1	8.5	8.7
Total Africa	28.2	27.9	28.4	28.9	19.0	19.3
China	257.3	258.2	265.0	274.2	253.4	259.5
Indonesia	81.8	81.3	82.0	82.8	57.7	58.7
Vietnam	25.0	25.0	30.0	34.5	20.7	25.0
Japan	30.0	29.4	28.8	28.8	24.3	24.4
South Korea	37.5	37.5	37.5	39.0	23.4	23.6
Thailand	30.0	29.9	29.9	28.3	22.0	22.6
Taiwan	31.1	29.3	27.5	27.3	22.4	22.4
Afghanistan	25.8	26.1	27.0	28.5	20.5	21.2
Malaysia	36.8	27.7	27.6	29.1	18.5	18.6
Singapore	24.0	18.9	18.9	19.4	13.0	13.1
Myanmar	12.5	11.7	12.7	12.6	8.0	8.2
Philippines	12.9	11.7	11.7	11.8	7.5	7.6
Cambodia	10.0	10.0	10.0	10.0	6.0	6.1
Other Asia	5.0	5.8	6.1	6.5	4.7	4.7
Total Asia	619.6	602.2	614.4	632.9	502.2	515.6
Australia	5.0	5.0	5.0	5.5	4.7	4.7
Total Australasia	5.0	5.0	5.0	5.5	4.7	4.7
Russia	30.0	30.0	30.0	35.0	29.8	30.0
Other Eastern Europe	4.0	4.0	4.1	4.1	3.6	0.9
Total Eastern Europe	34.0	34.0	34.2	39.2	33.4	30.3
Turkey	73.9	112.1	128.5	137.6	89.1	93.1
Italy	105.2	92.5	87.4	85.1	81.1	80.4
Switzerland	65.9	72.9	72.7	71.7	63.7	64.4
Germany	54.2	59.0	58.5	57.4	50.1	50.7
UK & Ireland	52.1	49.0	48.0	47.9	45.5	45.6
Spain	38.0	37.7	37.7	37.7	36.0	35.9
France	23.0	22.0	20.5	21.8	20.8	20.7
Portugal	14.7	14.7	14.8	14.9	14.3	14.4
Greece	9.9	10.3	10.8	10.8	10.3	10.4
Austria	10.3	9.7	9.1	9.3	9.0	9.0
Belgium	8.9	8.5	8.5	8.7	8.5	8.6
Netherlands	8.7	8.1	7.8	7.8	7.4	7.4
Poland	6.2	6.7	6.9	7.0	6.7	6.8
Yugoslavia	3.4	3.2	3.0	3.0	2.9	2.9
Other Europe	23.3	22.1	21.3	21.6	20.7	20.8
Total Western Europe	494.1	525.2	532.4	539.3	463.2	468.0
India	508.0	487.4	516.4	571.5	401.8	413.4
Pakistan	89.2	89.2	93.2	100.2	66.7	68.7
Bangladesh	40.8	35.5	36.5	32.9	21.5	22.0
Sri Lanka	10.0	5.0	5.0	5.0	3.0	3.0
Total Indian sub-continent	648.0	617.1	651.1	709.7	493.1	507.1
Mexico	27.4	27.4	27.4	27.4	23.3	23.8
Brazil	11.0	11.0	11.0	12.0	10.2	10.5
Chile	4.7	5.1	5.2	5.2	4.4	4.5
Other Latin America	26.3	26.3	26.5	26.6	22.6	22.9
Total Latin America	64.6	64.7	64.8	66.0	56.1	57.2

Continued overleaf

Jewellery consumption, 2002-2007f (tonnes)

	2002	2003	2004	2005	2006e	2007f
Saudi Arabia	133.2	143.9	152.3	160.0	114.4	118.7
Egypt	86.4	74.0	76.7	85.8	54.8	57.5
Iraq	48.9	49.1	49.7	55.6	44.0	45.2
Iran	47.0	55.5	54.1	60.3	37.9	39.2
Arab Emirates	28.5	36.2	40.4	43.1	29.1	30.2
Lebanon	28.6	31.9	34.3	38.1	24.0	24.9
Syria	25.5	29.6	32.2	34.4	22.3	23.3
Yemen	26.9	29.4	31.3	33.3	22.2	23.2
Kuwait	22.6	25.8	27.7	30.8	19.2	19.9
Jordan	23.8	25.6	27.3	29.0	18.2	19.0
Israel	1.7	1.7	1.8	1.8	1.5	1.6
Total Middle East	473.0	502.6	527.7	572.3	387.5	402.7
USA	398.6	386.7	378.5	372.2	333.7	334.8
Canada	18.4	17.9	17.7	17.7	16.8	17.0
Total North America	417.1	404.6	396.2	390.0	350.5	351.8
World Total	2783.6	2783.3	2854.2	2983.6	2309.6	2356.8

Source: Virtual Metals

Gold usage in electronics, 2002-2007f (tonnes)

	2002	2003	2004	2005	2006e	2007f
Japan	112.1	118.5	125.0	131.6	135.5	146.3
South Korea	38.5	46.2	55.5	66.6	69.2	74.8
Singapore	10.4	11.9	13.5	15.4	15.6	16.9
China	1.1	1.7	2.5	3.8	5.7	7.4
Taiwan	3.0	3.1	3.3	3.4	3.6	3.9
Total Asia	165.1	181.4	199.8	220.8	229.6	249.2
Australia	0.5	0.5	0.5	0.5	0.6	0.6
Total Australasia	0.5	0.5	0.5	0.5	0.6	0.6
Russia	15.1	15.6	16.0	16.5	17.2	18.6
Total Eastern Europe	15.1	15.6	16.0	16.5	17.2	18.6
Germany	10.7	10.8	10.8	10.9	11.3	12.2
France	7.7	8.3	8.9	9.5	9.9	10.6
Switzerland	7.9	8.4	8.9	9.4	9.8	10.6
UK & Ireland	5.9	5.7	5.5	5.4	5.6	6.0
Other Western Europe	7.2	7.3	7.4	7.5	7.7	8.3
Total Western Europe	39.4	40.4	41.5	42.6	44.3	47.9
India	0.1	0.1	0.1	0.1	0.1	0.1
Total Indian sub-continent	0.1	0.1	0.1	0.1	0.1	0.1
Brazil	1.3	1.3	1.4	1.4	1.5	1.6
Mexico	0.1	0.1	0.1	0.1	0.1	0.2
Total Latin America	1.5	1.5	1.5	1.5	1.6	1.7
Israel	0.1	0.1	0.1	0.1	0.1	0.2
Total Middle East	0.1	0.1	0.1	0.1	0.1	0.2
USA	68.1	70.1	72.2	74.4	77.4	83.5
Canada	0.7	0.7	0.7	0.7	0.7	0.8
Total North America	68.7	70.8	72.9	75.1	78.1	84.3
World Total	290.6	310.4	332.5	357.3	371.6	402.6

Source: Virtual Metals

Other end uses, 2002-2007f (tonnes)

	2002	2003	2004	2005	2006e	2007f
Japan	48.4	50.9	53.4	56.2	47.8	47.0
South Korea	11.6	12.5	13.6	14.7	13.5	13.9
Other Asia	2.7	2.8	2.9	3.1	2.9	3.0
Total Asia	62.7	66.2	69.9	74.0	64.1	63.9
Australia	0.5	0.5	0.5	0.5	0.4	0.5
Total Australasia	0.5	0.5	0.5	0.5	0.4	0.5
Turkey	42.1	50.6	60.7	72.8	48.9	53.0
Germany	22.8	23.2	23.7	24.1	22.6	22.1
Switzerland	14.6	15.5	16.6	17.7	16.2	16.5
Italy	8.0	7.9	7.9	7.8	7.2	7.3
France	6.2	6.4	6.5	6.7	6.0	6.3
Netherlands	4.6	5.2	5.9	6.7	6.4	6.1
Spain	2.1	2.3	2.5	2.7	2.5	2.6
Other Europe	6.7	6.9	7.2	7.4	6.8	6.9
Total Western Europe	105.1	115.8	128.4	143.2	114.1	118.2
India	55.9	68.4	83.7	102.5	76.9	80.1
Pakistan	2.0	2.1	2.2	2.3	2.2	2.2
Total Indian sub-continent	57.9	70.5	85.9	104.8	79.0	82.3
Brazil	7.3	8.2	9.1	10.1	9.2	9.6
Other Latin America	1.0	1.0	1.0	1.0	0.9	0.9
Total Latin America	8.3	9.1	10.1	11.1	10.1	10.6
United Arab Emirates	12.8	15.4	18.5	22.2	13.3	13.3
Other Middle East	5.6	5.8	6.0	6.2	6.0	6.0
Total Middle East	18.4	21.2	24.4	28.3	19.1	19.1
USA	31.4	31.1	30.8	30.6	28.3	28.6
Canada	0.3	0.3	0.3	0.3	0.3	0.3
Total North America	31.7	31.4	31.1	30.9	28.5	28.9
World Total	284.6	314.6	350.3	392.8	315.4	323.3

Source: Virtual Metals Note: Includes Dental Alloys, Non-Legal Tender Coins and Other Industrial Uses.

Financials: prices, volatilities and lease rates

Gold prices in various currencies, average, 1994-2006

	\$/oz	Euro/oz	Rand/kg	Yen/gr	A\$/oz
1994	384.02	324.26	42,409	1,261	527.24
1995	384.18	296.91	43,343	1,162	517.53
1996	387.71	309.91	52,205	1,356	493.66
1997	331.37	293.10	47,377	1,287	444.82
1998	294.17	262.39	50,729	1,238	469.37
1999	278.73	261.45	53,006	1,018	432.90
2000	279.14	302.78	60,106	967	480.54
2001	271.10	302.82	74,496	1,056	524.66
2002	307.20	328.03	101,011	1,243	569.83
2003	363.32	321.06	85,026	1,346	558.89
2004	409.17	329.10	84,361	1,422	556.18
2005	444.45	358.38	90,829	1,577	583.52
Jan-05	423.72	323.19	79,037	1,408	554.77
Feb-05	423.35	325.21	79,211	1,427	541.88
Mar-05	434.32	328.80	84,001	1,468	554.93
Apr-05	429.00	331.66	84,866	1,480	555.00
May-05	423.05	332.20	85,296	1,447	551.58
Jun-05	428.60	352.51	93,076	1,498	561.30
Jul-05	424.33	352.09	91,235	1,526	563.53
Aug-05	437.93	356.48	91,108	1,558	575.20
Sep-05	456.52	373.33	93,375	1,631	596.15
Oct-05	469.90	391.00	99,157	1,735	623.38
Nov-05	476.67	404.63	101,787	1,815	648.47
Dec-05	510.10	430.22	104,138	1,948	685.41
Jan-06	549.86	453.61	107,284	2,040	733.13
Feb-06	555.00	464.86	108,872	2,103	748.58
Mar-06	557.09	463.39	111,832	2,101	767.33
Apr-06	610.65	497.46	119,188	2,295	829.18
May-06	675.39	528.47	136,993	2,424	883.34
Jun-06	596.15	470.94	133,408	2,197	805.83
Jul-05	633.71	499.61	144,107	2,357	842.61
Aug-06	632.59	493.38	140,804	2,354	828.21
Sep-06	598.19	470.15	142,911	2,252	792.09

Source: Virtual Metals

Inflation-adjusted gold price (in 2005 dollars)

	Nominal gold price (\$/oz)	US CPI (2005=100)	Real gold price (2005 dollars)
1980	612.6	42.4	1,440.08
1981	459.9	46.8	982.04
1982	375.8	49.6	753.20
1983	424.1	51.2	825.02
1984	360.3	53.4	671.84
1985	317.2	55.3	570.71
1986	367.7	56.4	649.10
1987	446.5	58.4	760.14
1988	437.0	60.8	715.70
1989	381.4	63.8	595.67
1990	383.5	67.2	568.45
1991	362.2	70.0	514.80
1992	343.7	72.2	474.18
1993	359.8	74.3	481.91
1994	384.1	76.2	501.58
1995	384.2	78.4	490.18
1996	387.7	80.7	480.59
1997	331.2	82.6	401.21
1998	294.2	83.8	350.87
1999	278.6	85.7	325.24
2000	279.1	88.6	315.18
2001	271.1	91.1	297.68
2002	307.2	92.5	332.07
2003	363.3	94.6	384.01
2004	409.2	97.1	421.19
2005	444.4	100.0	444.45
2006*	600.0	102.1	587.66

Source: Virtual Metals

*average year to date, CPI estimated

Price volatility, 1994-2006 (%)

	Daily	1M	3M	6M	12M
1994	6.47	8.12	8.35	9.19	9.89
1995	4.22	5.70	5.74	5.91	6.05
1996	4.44	5.45	5.52	5.66	5.80
1997	7.52	9.80	9.78	9.23	8.81
1998	9.29	12.32	12.80	12.95	12.86
1999	9.44	13.41	13.87	13.10	12.64
2000	8.57	12.37	13.40	15.94	17.13
2001	8.17	11.41	11.83	11.89	11.75
2002	10.42	12.72	12.78	13.00	13.04
2003	11.53	15.69	16.13	15.79	15.31
2004	11.32	14.05	14.03	14.37	14.77
2005	9.31	11.60	11.39	11.27	12.29
Jul-05	7.14	10.33	10.24	10.05	11.31
Aug-05	6.81	9.66	9.94	9.91	11.00
Sep-05	9.42	11.58	10.65	10.29	11.03
Oct-05	12.07	14.36	11.98	11.17	11.16
Nov-05	10.87	15.06	13.71	11.93	11.46
Dec-05	18.82	17.33	15.88	13.45	12.15
Jan-06	19.03	27.56	20.71	16.71	13.93
Feb-06	13.08	20.20	22.01	18.11	14.72
Mar-06	19.87	19.43	22.54	19.23	15.49
Apr-06	13.52	19.85	19.90	20.12	16.30
May-06	29.17	26.75	22.80	22.21	17.91
Jun-06	20.07	34.84	29.39	26.08	20.64
Jul-06	24.06	26.07	30.81	25.96	21.76
Aug-06	18.45	27.21	29.92	26.81	22.99
Sep-06	16.64	20.99	25.09	27.16	23.61

Source: Virtual Metals

Lease Rates, 1993-2006 (% p.a.)

	1-month	3-month	6-month	12-month
1993	0.74	0.86	0.94	1.15
1994	0.54	0.66	0.75	0.91
1995	1.74	1.69	1.59	1.59
1996	1.52	1.71	1.90	2.17
1997	1.84	1.90	1.97	2.12
1998	2.60	2.69	2.94	3.27
1999	1.71	1.90	2.05	2.27
2000	0.60	0.82	1.04	1.50
2001	1.29	1.33	1.42	1.68
2002	0.26	0.40	0.58	0.94
2003	0.09	0.14	0.23	0.41
2004	0.08	0.11	0.15	0.25
2005	0.11	0.11	0.13	0.18
Aug-05	0.10	0.09	0.12	0.18
Sep-05	0.12	0.11	0.14	0.19
Oct-05	0.11	0.12	0.14	0.18
Nov-05	0.10	0.10	0.11	0.12
Dec-05	0.11	0.11	0.12	0.13
Jan-06	0.11	0.11	0.12	0.15
Feb-06	0.09	0.12	0.15	0.18
Mar-06	0.13	0.11	0.13	0.15
Apr-06	0.12	0.11	0.13	0.15
May-06	0.09	0.10	0.10	0.11
Jun-06	0.11	0.12	0.13	0.15
Jul-06	0.09	0.08	0.09	0.11
Aug-06	0.05	0.06	0.08	0.08
Sep-06	0.06	0.09	0.09	0.08

Source: Virtual Metals

Official sector by region, 2002-2007f

Official sector holdings, 2002-2007f (tonnes)

	2002	2003	2004	2005	2006e	2007f
Africa	477	420	420	420	420	420
Asia	2,373	2,356	2,326	2,262	2,247	2,247
Australasia	80	80	80	80	80	80
Eastern Europe	928	926	930	935	935	935
Western Europe	14,915	14,461	14,051	13,512	13,047	12,609
Indian sub-continent	432	432	432	432	432	432
Latin America	487	516	571	571	571	571
Middle East	1,112	1,092	1,072	1,082	1,182	1,182
North America	8,155	8,140	8,140	8,140	8,140	8,140
Institutions	3,413	3,411	3,425	3,418	3,399	3,389
Total	32,371	31,833	31,444	30,851	30,452	30,004

Source: IMF, national central banks websites, Virtual Metals

Official sector purchases, 2002-2007f (tonnes)

	2002	2003	2004	2005	2006e	2007f
Africa	0	58	0	0	0	0
Asia	23	7	3	4	-	-
Australasia	-	-	-	-	-	-
Eastern Europe	6	4	3	5	-	-
Western Europe	-	-	-	-	-	-
Indian sub-continent	-	-	-	-	-	-
Latin America	0	28	55	0	-	-
Middle East	-	-	-	30	100	-
North America	-	-	-	-	-	-
IMF/BIS	-	-	-	-	-	-
Total	29	39	61	39	100	

Source: IMF, national central banks websites, Virtual Metals

Official sector sales, 2002-2007f (tonnes)

	2002	2003	2004	2005	2006e	2007f
Africa	-	57.5	-	-	-	-
Asia	-	19.8	34.0	66.9	15.0	-
Australasia	-	-	-	-	-	-
Eastern Europe	-	5.1	-	-	-	-
Western Europe	411.1	453.7	410.0	539.0	465.0	438.0
Indian sub-continent	-	-	-	-	-	-
Latin America	-	-	-	-	-	-
Middle East	30.0	20.0	20.0	20.0	-	-
North America	14.0	15.2	-	-	-	-
IMF/BIS	-	2.0	-	7.0	19.0	10.0
Total	455.1	573.3	464.0	632.9	499.0	448.0

Source: IMF, national central banks websites, Virtual Metals

Gold lending, 2002-2007f (tonnes) (*)

	2002	2003	2004	2005	2006e	2007f
Africa	97	123	123	107	104	76
Asia	664	648	648	536	520	440
Australasia	76	76	76	76	72	60
Eastern Europe	439	375	405	382	345	321
Western Europe	2,862	2,580	2,139	1,980	1,785	1,613
Indian sub-continent	100	100	100	95	94	94
Latin America	299	299	299	277	251	231
Middle East	466	476	444	356	294	274
North America	8	2	2	2	1	1
Total	5,010	4,678	4,236	3,810	3,466	3,110

Source: IMF, national central banks websites, Virtual Metals.

(*) Includes estimates of private lending.

Other**Hedging, hedge impact, end-period, 2002-2006 (tonnes)**

	2002	2003	2004	2005	1H06
Global					
Net Forwards	2,050	1,717	1,477	1,298.3	1,023.3
Net Calls	270	290	252	289.7	267.5
Other Products	145	123	44	51.8	38.0
Net Puts	137	120	22	12.6	10.0
Total Hedge Impact	2,602	2,251	1,795	1,652	1,339
Change	(418)	(351)	(456)	(142)	(314)
Americas					
Net Forwards	1,245	976	849	764.1	563.6
Net Calls	56	90	62	48.1	21.2
Other Products	41	33	29	24.5	11.6
Net Puts	55	41	22	4.9	4.6
Total Hedge Impact	1,397	1,140	963	842	601
Change	186	(257)	(176)	(122)	(241)
Africa					
Net Forwards	455	381	235	183.8	159.0
Net Calls	171	159	162	214.1	215.6
Other Products	0	0	0	-	-
Net Puts	19	5	-6	0.2	(2.5)
Total Hedge Impact	644	546	392	398	372
Change	(163)	(99)	(154)	7	(26)
Australasia					
Net Forwards	335	309	357	316.6	267.2
Net Calls	43	40	27	21.4	17.5
Other Products	104	87	15	27.3	26.4
Net Puts	62	73	6	4.4	3.5
Total Hedge Impact	543	508	404	370	315
Change	(438)	(35)	(104)	(35)	(55)
Europe					
Net Forwards	15	51	35	33.8	33.5
Net Calls	1	1	0	6.0	13.2
Other Products	0	3	0	-	-
Net Puts	2	2	0	3.1	4.4
Total Hedge Impact	17	57	35	43	51
Change	(4)	40	(22)	7	8

Source: "The Hedge Book", by Mitsui Global Precious Metals, Haliburton Mineral Services, Virtual Metals

Hedging, committed, end-period, 2002-2006 (tonnes)

	2002	2003	2004	2005	1H06
Global					
Net Forwards	2,167	1,781	1,501	1,317.0	1,042.6
Calls sold	503	456	391	401.1	365.3
Calls bought	112	71	64	56.5	50.3
Other Products	212	149	49	53.3	38.3
Total Committed	2,795	2,315	1,877	1,715	1,396
<i>Change</i>	(528)	(480)	(438)	(162)	(319)
Puts bought	557	525	646	235.7	179.6
Puts sold	60	65	40	23.5	31.1
Americas					
Net Forwards	1,309	1,011	866	776.5	571.5
Calls sold	94	109	76	59.1	32.6
Calls bought	12	0	3	1.0	-
Other Products	81	40	35	25.5	11.7
Total Committed	1,497	1,160	973	860	616
<i>Change</i>	69	(337)	(187)	(113)	(244)
Puts bought	212	237	151	88.2	33.0
Puts sold	40	17	5	2.5	-
Africa					
Net Forwards	474	394	239	187.0	161.1
Calls sold	345	280	271	301.1	291.3
Calls bought	94	71	61	55.5	49.8
Other Products	0	0	0	-	-
Total Committed	725	603	448	433	403
<i>Change</i>	(195)	(122)	(154)	(16)	(30)
Puts bought	117	91	75	83.9	64.8
Puts sold	20	49	35	21.0	31.1
Australasia					
Net Forwards	369	324	361	319.2	270.7
Calls sold	61	64	44	27.6	20.2
Calls bought	6	0	0	-	0.5
Other Products	131	106	15	27.7	26.7
Total Committed	554	494	420	375	317
<i>Change</i>	(395)	(60)	(74)	(45)	(57)
Puts bought	217	187	420	47.2	48.8
Puts sold	0	0	0	-	-
Europe					
Net Forwards	15	52	36	34.3	39.4
Calls sold	4	4	0	13.3	21.3
Calls bought	0	0	0	-	-
Other Products	0	3	0	-	-
Total Committed	19	58	36	48	61
<i>Change</i>	(7)	39	(23)	12	13
Puts bought	11	9	0	16.3	33.0
Puts sold	0	0	0	-	-

Source: "The Hedge Book", by Mitsui Global Precious Metals, Haliburton Mineral Services, Virtual Metals

Exchange traded funds, annual offtake, 2002-2007f (tonnes)

	2002	2003	2004	2005	2006e	2007f
Africa	0.0	0.0	3.0	4.3	1.5	2.0
Australasia	0.0	8.4	(1.0)	0.9	2.0	2.0
Europe	0.0	24.5	27.6	8.5	35.0	12.0
North America	0.0	0.0	94.9	178.2	170.0	85.0
Total	0.0	32.9	124.5	191.9	208.5	101.0

Source: Virtual Metals calculations from company websites

COMEX speculation, end-period, 1994-2006 (tonnes)

	Open interest	Large speculators net long	Small speculators net long	Total net long
1994	559	(125)	5	(120)
1995	439	7	45	52
1996	590	(130)	(5)	(135)
1997	553	(159)	21	(138)
1998	506	(108)	(8)	(116)
1999	487	(90)	34	(56)
2000	357	(44)	25	(20)
2001	345	(9)	46	37
2002	644	185	140	325
2003	867	350	147	497
2004	1,029	307	121	428
2005	996	481	108	589
Jan-05	850	88	97	185
Feb-05	833	121	108	229
Mar-05	876	316	101	416
Apr-05	940	429	98	527
May-05	796	103	62	165
Jun-05	944	404	111	515
Jul-05	799	152	105	258
Aug-05	908	342	93	434
Sep-05	1,141	517	87	604
Oct-05	1,056	477	85	562
Nov-05	1,089	494	67	561
Dec-05	996	481	108	589
Jan-06	1,056	433	87	520
Feb-06	1,057	396	92	488
Mar-06	1,039	375	90	465
Apr-06	1,101	402	117	519
May-06	978	316	118	434
Jun-06	911	266	95	361
Jul-06	982	316	118	434
Aug-06	957	273	92	365
Sep-06	1,004	222	75	292

Source: Commodity Futures Trading Commission

Weights and measures

Chemical properties

Atomic weight	196.967
Atomic number	79
Chemical symbol	Au
Melting point deg C	1,063
Hardness (mohs)	2.5-3.0
Boiling point deg C	2,966
Specific gravity gr/cubic cm	19.32
Hardness	25
Tensile strength km/Sq mm	11.9

Source: *Virtual Metals*

Purity (caratage) – In parts per 1,000

24 carat	1,000	
	999.9	Termed four nines
	995	London good delivery
22 carat	916	Common caratage for jewellery in Middle East & Asia
18 carat	750	Common caratage for jewellery throughout Europe
14 carat	583	Common caratage for jewellery in the USA
10 carat	417	Lowest acceptable for jewellery in USA
9 carat	375	Common caratage for jewellery in the UK
8 carat	333	Lowest acceptable caratage in parts of Europe
1 carat	41.7	

Source: *Virtual Metals*

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: *Virtual Metals*

Glossary

A

- **Accelerated supply:** Gold reaching the market through lending and leasing before it is physically produced.
- **American style:** (option) that can be exercised at any stage during its life, in other words at or before expiration date. Contrast **European style**.
- **Asian options:** A **history-dependent** option where the outcome is reliant not only on whether or not the option is **in-the-money** at expiry but also depends on the average price of the underlying throughout the option life. These options are used mostly (in the base metal markets) to reduce exposure or incentives to manipulate the underlying price at expiry. Asian options are also used by market participants who are obliged to have frequent exposure to the underlying asset over time. The options are then useful in capping the overall cost of the physical exposure and are ideal for producers.
- **At-the-money option:** An option with a strike price equal to that of the current price.

B

- **Backwardation:** A market situation where the spot price trades at a premium to the forward price. Opposite of **contango**.
- **Barrier options:** Unlike standard **European options** where the income depends only on the price of the underlying at expiration, barrier options are **history-dependent**. In other words, their outcome depends on the performance of the price of the underlying during the life of the option and whether that price breaches some predetermined barrier or level. See ‘in’ barrier and ‘out’ barrier options.
- **Binary options:** Unlike standard options which have a constant income, binary options have variable (usually all or nothing) pay backs depending on whether or not the price of the underlying meets some pre-agreed condition. Binary options can be either **history-dependent** or **history-independent**.
- **BIS:** Bank for International Settlements.
- **Bonds:** Means of raising debt through the capital markets. See also Gold-backed bonds.

C

- **Call option:** Option giving the purchaser the right but not the obligation to buy gold at a predetermined (strike) price.
- **CBOT:** The Chicago Board of Trade.
- **CCA:** Comex Clearing Association.
- **CFTC:** Commodity Futures Trading Commission (the futures and options watch-dog).
- **CIS:** Commonwealth of Independent States (former Soviet Union).
- **Collars:** Options which have the same pay-out as the standard call except that the upside is not unlimited. It is subject to a maximum. The option buyer forgoes any further income above this maximum.
- **COMEX:** The Commodity Exchange in New York.
- **Compound options:** These are options on options. The underlying asset is an option rather than a tangible commodity or security. Valuation of the option is complicated by the fact that two expiry dates must be accounted for: the time to expiration of the compound and the time to expiration of the underlying option.
- **Contango:** A market situation where the spot price is lower than the forward quotation; the differential representing the carrying (financing) costs and prevailing interest rates. Opposite of backwardation.
- **Cost curve:** Graphical representation of the costs of producing a metal for an entire primary industry. Usually cumulative output expressed in percent plotted against unit operating costs.
- **Coupon:** Annual interest rate associated with capital market bond issues.

E

- **EGA:** European Gold Agreement.
- **EMCF:** European Monetary Co-operation Fund.
- **ETF:** Exchange Traded Fund.
- **European style:** An option that can only be exercised on the date of expiry.
- **Exercising: (An Option)** Whereby the option purchaser holds the writer (seller) of an option to the agreed contract.
- **Exotic options:** Generic term for the more sophisticated option strategy which has features over and above the basic contracts.

G

- **GOFO:** Reuters screen code for the daily gold lease rates.
- **Gold backed bonds:** Debt raised through the capital markets issued with a gold options alternative to enhance the value/attraction of the investment.
- **Gold loan:** A means of raising capital for project financing which involves monetising gold.

I

- **IFS:** International Financial Statistics.
- **IMF:** International Monetary Fund.
- **IMM:** International Monetary Market.
- **'In' barrier options:** Options which are paid for at the time of the initial transaction but are not received until a specified price level (the barrier or the knock-in boundary) is broken. If the barrier is broken at some stage during the option's life, then the buyer receives a standard **European** option with a **strike** price and time to expiration. If the barrier is not broken, then at expiry, the holder receives a cash rebate.
- **In-the-money option:** An option which has a positive **intrinsic value** is said to be in the money. In the case of a **call**, it is in the money when the **strike** price is lower than the current price. A **put** option is in the money when the **strike** price is higher than the current price.
- **Intrinsic value** (of an option): The difference between the strike price and current price of the underlying commodity.

K

- **Knock-out options: Exotic option** whereby the contract is cancelled if the spot price breaks through an agreed price. See up-and-out puts and down-and-out calls. The knock-out option is priced differently since it can explode or be cancelled while theoretically it still has **time value**.

L

- **Limit down:** Arbitrary price level below which trading on a Futures and Options Exchange ceases during that trading day. Imposed to prevent very sharp price declines in futures prices and are adjusted from time to time at the discretion of the Exchange. See Limits.
- **Limits:** Arbitrary price barriers imposed by Futures and Options Exchanges to limit severe price movements during a trading day. There are no limits in the spot market. See Limit Up and Limit Down.
- **Limit up:** Arbitrary price level above which trading on a Futures and Options Exchange ceases during that trading day. Imposed to prevent very sharp price increases in futures prices and are adjusted from time-to-time at the discretion of the Exchange.
- **Liquidity:** The volume of business or turnover on an exchange or any market forum; can be applied to either the paper market or the physical.
- **Loco:** Physical location of metal. Unless otherwise stated, price quotations imply delivery loco London.
- **Long:** To be long of a commodity or associated futures or options contract is to have been a buyer. Contrast **short**.

M

- **Maturity date:** Date on which option matures; when it is either exercised or it expires worthless. Also known as expiration date.
- **Margin:** The cash deposit against a paper contract payable as a guarantee. An initial payment is usually made and thereafter further margin requirements may have to be met depending on the performance of the contract throughout its life.

N

- **Naked options:** Option granted and left unhedged or exposed to potential exercising.

O

- **Open outcry:** Method of trading any commodity where dealers face each other in a dealing ring or pit and there is direct communication. Contrast: **Screen Trading**.
- **Out-of-the-money (option):** An option that has no **intrinsic value** is said to be out-of-the-money. A **call** is out-of-the-money when the **strike** price is higher than the current price. A **put** is when the **strike** price is lower than the current price.
- **OTC:** Over-the-counter; term used to describe an option that is written and traded through principals rather than an exchange.
- **'Out' Barrier:** Options which are paid for immediately and exist until, during the option life, a predetermined barrier is broken after which the options are rendered null and void – they cease to exist. If the barrier is not breached, the holder receives standard **European** options. If the barrier is broken and the options are extinguished, the holder is then paid a rebate.

P

- **Principal-to-principal:** Bullion transactions executed directly between the client and the market makers without being channelled through an exchange. Used primarily by market participants who have actual physical transactions to complete rather than the speculators. Speculative business tends to be channelled via the exchanges.
- **Premium:** The cost which the buyer of an option pays to the writer or seller of the option; normally only a very small fraction of the value of the underlying commodity.
- **Put option:** Option giving the purchaser the right but not the obligation to sell gold at a particular **strike** price.

R

- **Reuters:** International screen-based news agency widely used by all metal and foreign exchange market participants.

S

- **Screen trading:** Method of trading via computer screens and telephones in which there is no direct contact between dealers. Contrast: **open outcry**.
- **SDR:** Special Drawing Right.
- **Short:** To be short of a commodity or associated futures or options contract is to have been a seller. Contrast **long**.
- **Spot deferred:** Hybrid forward contract offering floating interest rates and no fixed delivery. More flexible than a conventional forward but without the cost of an option.
- **Spot market:** The immediate market where delivery obligations usually occur no more than 2 days after the transaction.
- **Strike price:** The agreed price at which the option can be exercised which will be equal to, higher or lower than the current price of the underlying.
- **Swap:** A spot sale with a simultaneous equal forward purchase of equal tonnage. This is the definition of a gold or bullion swap which may differ from the term used by the foreign exchange markets.

- **Synthetic gold loan:** A means of raising finance using the gold forward market but which does not result in the monetising of physical metal.

T

- **Time value:** Option value associated with the time left to maturity since during its life an option can move in- and out-of-the-money.

U

- **Underlying:** Shortened term for the underlying commodity upon which futures and options are traded.

V

- **Volatility:** The rate of change in the price of the underlying commodity.

W

- **Writing options:** Selling someone else the right to buy or sell gold at a particular price.
- **10K report:** Set of audited annual accounts published and issued to shareholders. Differs from an annual report only in detail.

Notes

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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

Piet-Hein Ingen Housz (Global Head of Metals)		+31 10 401 67 93
Rotterdam	Silvan Doorenspleet	+31 10 401 97 83
London	Michael Rolfe	+44 20 7444 8450
New York	Edward Aldrich	+1 203 705 57 25

Structured Commodity Finance

Carl Shipman		+44 20 7444 8785
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	Alain Adam	+32 2 565 76 50
France	Philippe Barroso	+33 1 55 67 90 82
Luxembourg	André Wagner	+352 42 10 49 07
The Netherlands	Eddy de Bruin	+31 20 535 70 52
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	Marc Denatris	+1 212 418 87 14

Fixed Income/New Issues

Katherine Dior (Head)		+32 2 565 63 08
Syndication	Tom Thyssens (Head)	+32 2 565 86 15
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

Kris De Zeure (European Head Sales Treasury Products) +32 2 565 60 81
Eddy Naets (Assistant) +32 2 565 60 25

Corporate

Ivo Mertens (Head)		+32 2 565 72 05
Belgium	Ivo Mertens	+32 2 565 72 05
The Netherlands	Onno Priester	+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	Ruth Bellinger	+44 20 7247 80 00
Norway	Bjorn Kaaber	+47 23 11 49 60

Financial Institutions

Belgium	Alex Devroye	+32 2 565 61 03
Fiduciaries		+32 2 565 72 60
Institutionals & Banks		+32 2 565 72 70
The Netherlands	Onno Priester	+31 20 535 71 66
Luxembourg	Marc Calmes	+352 42 10 47 00
Italy	Francesco Scotto	+39 02 57 53 24 64

Mid-Caps

Hans van Buijten (Head) +31 20 535 71 65
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
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	Marc Calmes	+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	Mieczyslaw Krzymkowski	+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 Warhøi-Rasmussen	+45 32 71 19 09
Sweden	Mats Cardemo	+46 732 02 08 59
Turkey	Özlem Surek	+90 212 274 42 80
United Kingdom	Simon Law	+44 20 7444 8458

Energy & Environmental Markets

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

Global Markets Research Contacts

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

Economic Research

The Netherlands

Guy Verberne (Head) +31 20 535 73 25
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
Carine Brasseur, Ph.D. (Fixed Income) +32 2 565 86 49
Didier Engels (Financial Products) +32 2 565 86 13
Philippe Gijssels (Equities) +32 2 565 16 37
Michel Karakatsanis (Forex & Money Markets) +32 2 565 63 02
Nancy Verret (Forex & Money Markets) +32 2 565 55 63
Filiep Wyseur (Fixed Income) +32 2 565 82 31

Technical Analysis

Françoise Bernard (Head) +32 2 565 83 02
Karel De Bie (Fixed Income/Forex/Commodities) +32 2 565 85 46
Geert-Jan Nikken (Equities/Commodities) +31 20 535 70 79

Modelling

Dirk-Emma Baestaens, Ph.D. (Head) +32 2 565 85 54
Philippe Brimmel +32 2 565 40 29
Alain Cram +32 2 565 60 52
Arjen Prinsen +31 20 535 72 97
Dries Stragier +32 2 565 60 86
Herman van der Sluis +31 20 535 72 98
Jean-François Williams +32 2 565 12 47
Amjed Younis +32 2 565 31 00

Rating Advisory Services

Dirk-Emma Baestaens, Ph.D. (Head) +32 2 565 85 54
Gerda Cabus +32 2 565 85 91
Yves Clarenne +32 2 565 35 60

Credit Research

Credit Bonds

Hélène Séré (Head/Utilities) +33 1 55 67 72 83/+32 2 565 75 87
Luciana Amram (Building & Basics/Energy/Industrials) +33 1 55 67 72 82
Benoit Feliho (Banks) +33 1 55 67 72 95
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
Benjamin Sabahi (Chemicals/Telecoms) +33 1 55 67 72 86

ABS/CDO

Helmut Van Ginderen (Head) +32 2 565 60 10
Sabrina Marchal +32 2 565 86 82

Equity Research

Marc Pauwels (Head) +31 20 527 13 55

Benelux

Michel Aupers (Head) +31 20 527 28 62
Wim Lewi, CFA (Co-ordinator Belgium) +32 2 565 62 61
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
Mariska Douwens (Media) +31 20 527 23 23
Mark Gevens (Industrials) +32 2 565 60 71
Frank Jansen (Real Estate) +31 20 527 14 79
Bart Jooris (Telecom/Mid & Small Caps) +32 2 565 60 99
Geraldine O'Keeffe (Biotech) +31 20 527 91 50
Sebastiaan Schreijen (IT Software & Services) +31 20 527 22 30
Matthijs Storm (Real Estate) +31 20 527 91 44
Teun Teeuwisse (Temporary Employment) +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

France

Philippe Ezeghian (Head) +33 1 55 67 72 29
Séverine Blé (Food) +33 1 55 67 72 41
François Deloit (IT Services) +33 1 55 67 72 46
Claire Deray (Transport/Consumer Goods/Retail) +33 1 55 67 72 43
Marc Huberty (Industrials) +33 1 55 67 72 30
Bertrand Laport (IT Hardware) +33 1 55 67 72 31
Jean-Christophe Lefèvre-Moulenq (Construction) +33 1 55 67 72 34
Olivier Macquet (Industrials & Services) +33 1 55 67 72 42
Olivier Moral (Media) +33 1 55 67 72 32
Gilles Raffort (Leisure & Services) +33 1 55 67 72 45

Spain

Antonio López (Head/Utilities/Oil/Steel) +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
Francisco Ruiz (Mid & Small Caps/Retail) +34 91 436 56 76
Manuel Zayas (Mid & Small Caps) +34 91 436 55 41

US

Dan Barrett (Oil Services & Shipping) +1 212 340 54 91
David Garrett (Biotech) +1 212 340 54 94
Gregory Lewis, CFA (Oil Services & Shipping) +1 212 340 54 95
Patrick Moriarty, Ph.D. (Biotech) +1 212 340 54 97
Biju Perincheril (Energy) +1 212 340 54 76

Retail Banking and Private Banking Research

Koen Van de Steene (Head/Healthcare) +32 2 565 86 14
Christel Bosch (Energy/Industrials/Utilities) +32 2 565 82 34
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
Tom Vermeiren (Technology/Consumer Cyclicals) +32 2 565 44 05
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	Beta Capital S.V., S.A. Serrano 73 28006 Madrid Spain Tel: +34 91 436 56 00
Fortis Bank Turkey Yildiz Posta Caddesi No: 54 Gayrettepe 34353 Istanbul Turkey Tel: +90 212 274 42 80	Fortis Bank UK Camomile Court 23 Camomile Street London EC3A 7PP United Kingdom Tel: +44 207 247 80 00	Fortis Bank USA 520 Madison Avenue, 3 rd Floor New York, NY 10022 United States Tel: +1 212 418 87 00	Fortis Securities LLC 520 Madison Avenue, 3 rd Floor New York, NY 10022 United States Tel: +1 212 418 87 14

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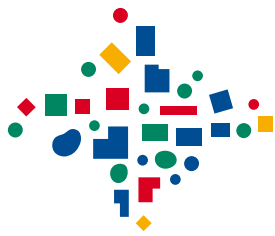
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Fortis Bank

Merchant Banking

Montagne du Parc
Warandeberg 3
B-1000 Brussels
Belgium

www.merchantbanking.fortis.com