Commodities
Global

HSBC Global Research

Precious Metals Outlook

All systems go…mostly

- **Precious metals likely to derive support from US dollar weakness, firm commodity prices, and new ETF products**
- **High prices are encouraging new supply while restraining physical demand**
- **We are raising our forecasts, including our long-term estimates, for gold, platinum, and palladium; cautious on silver**

We are raising our 2008 gold price forecast to USD660/oz, (from USD630/oz), our 2009 forecast to USD600/oz (from USD550/oz), and our long-term forecast to USD550/oz (from USD500/oz). Our 2007 forecast of USD680/oz for gold remains unchanged. Our view is predicated on expectations of ongoing US dollar weakness and expected firm commodity prices. Weak physical demand, increased scrap supply, and tame inflation levels may restrain gold's ability to rally over USD700/oz.

We are raising our 2007 silver forecasts modestly to an average USD12.55/oz (from USD12.25/oz). We are leaving our 2008, 2009, and long-term forecasts unchanged at USD10.25/oz, 9.00/oz, and USD8.50/oz, respectively. Mine expansion and weak physical demand are expected to weigh on prices. Silver is also vulnerable to a reduction in ETF investor interest, we believe.

We are raising our 2007 platinum forecast to USD1,305/oz (from USD1,225/oz), our 2008 forecast to USD1,250/oz (from USD1,150/oz), our 2009 forecast to USD1,150/oz (from USD1,050/oz), and our long-term forecast to USD1,100/oz (from USD900/oz). Increased mine output is expected to match growth in autocatalyst demand, but if the new ETFs are well received, the market may shift back into deficit.

We are raising our 2007 average palladium price to USD360/oz (from USD322/oz), our 2008 forecast to USD330/oz (from USD290/oz), our USD2009 forecast to USD320/oz (from USD295/oz), and our long-term outlook to USD300/oz (from USD275/oz). We believe palladium will remain in surplus, but the new ETFs and high platinum prices may spur speculative demand.

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Disclaimer & Disclosures.
This report must be read with the disclosures and the analyst certifications in the Disclosure appendix, and with the Disclaimer, that form part of it.

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Introduction

- We expect gold to benefit from US dollar weakness and buoyant commodity prices; sluggish physical demand and tame US inflation rates may damped any rallies
- Increased mine supply is pushing silver into surplus, and high prices are crimping physical demand; we believe the silver market may be vulnerable to a change in investor sentiment
- With growth in physical supply and demand evenly balanced, any ETF off-take could move platinum into deficit; we believe palladium demand will track platinum and ETF off-take, but will remain in surplus

Gold

US dollar weakness is central to our expectations of strong gold prices. HSBC's currency analysts forecast the USD/EUR will fall to 1.40 by Q4 2007, stabilizing thereafter at that level in H1 2008. Although subject to occasional de-coupling, the inverse long-run relationship between gold and the US dollar is among the most stable and predictable in the gold market.

The dollar is not the sole determinant of gold prices, however. Commodities, particularly oil, have developed a strong positive correlation with gold since 2001. Robust global growth in commodity-intensive emerging economies this year and next promise to keep commodity prices – including oil – at an elevated level, supporting gold prices. However, increasing supplies across the commodity spectrum may limit commodity price gains. Therefore, although we view commodities as generally supportive of gold prices, we do not necessarily view them as an agent for higher prices.

On the supply side, high prices are encouraging increased scrap recycling but mine production growth is stagnant and official sector selling is expected to be moderate. On the demand side, high prices are impacting jewelry demand, particularly in price-sensitive emerging nations. US dollar weakness is partially mitigating the impact of higher prices in non-dollar economies, however. Robust income gains are also supporting consumption. Anticipated low inflation levels will be an additional restraining influence on gold rallies, in our view.

We believe mine supply will remain relatively stagnant after declining in 2006. The possibility of industrial action in the South African mines should be taken seriously, given likely high pay demands in upcoming wage negotiations.

High prices – including high volatility levels – are curtailing physical demand in the more price-sensitive economies of the emerging world, although the impact of higher prices is partially offset by a weaker dollar. Income gains in gold-consuming nations such as India and China also partially offset the impact of high prices.

Although difficult to quantify precisely, any notable rise in geopolitical tensions could also be a source of support for gold. The ongoing nuclear stand-off between Iran and the West, escalating violence in Iraq, and stalled talks with North Korea over the elimination of its nuclear arsenal have the potential to trigger gold's traditional role as a safe haven asset for investors in periods of uncertainty and heightened political risk. Less potentially hostile disputes over trade, foreign exchange, and economic policy also hold out the possibility of raising international tensions.

The prospect of monetary easing this year, in line with a slowing economy, may also benefit gold. However, reduced inflationary pressures in the US will likely restrain gold rallies, as, traditionally, gold does not rally in an atmosphere of receding inflationary expectations.

We are leaving our 2007 forecast unchanged at USD680/oz, but we are raising our 2008 forecast to USD660/oz (from USD630/oz), our 2009 forecast to USD600/oz (from USD550/oz), and our long-term forecast to USD550/oz (from USD500/oz). Our positive outlook is predicated on anticipated US dollar weakness, firm commodity prices, and continued investor demand for the ETFs.

Silver

We are notably less enthusiastic on silver than we had been previously. While we are raising our average 2007 estimate modestly to USD12.55/oz (from USD12.25/oz), we are leaving our 2008, 2009, and long-term forecasts unchanged at USD10.25/oz, USD9.00/oz, and USD8.50/oz, respectively.

A robust increase in mine supply this year and next are likely, given producer optimism and the number of new and expanded projects, centered largely but not solely in Latin America. Increasing base metals production should also lead to high silver by-product output.

High prices are inhibiting jewelry demand in price-sensitive economies. Photographic demand is also likely to remain weak due to the growing popularity of digital photography. New ETF products outside the US may increase investor demand, however. We believe that silver is highly vulnerable to investor liquidation as the iShares ETF accounts for a very high proportion of mine output and physical demand. Even with firm investor off-take, silver is likely to run a surplus this year and next.

Platinum

We are raising our price forecasts for platinum considerably, to USD1,305/oz (from USD1,225/oz) for this year, to USD1,250/oz (from USD1,150/oz) for 2008, and to USD1,150/oz (from USD1,050/oz) for 2009; we are also raising our long-term price to USD1,100/oz (from USD900/oz). Our optimism is based on increasing physical demand, much of it from the auto sector. We expect higher mine output, principally from South Africa, to meet – but not exceed – increasing physical demand. At the same time, we expect Russian mine output to remain flat. We believe that softer jewelry demand will free up some metal for use in industrial applications.

The unveiling of two platinum-based ETFs and a precious metals basket ETF, which includes platinum, if successful, could push the market into structural deficit. Investor interest in the ETFs may be considerable, based on the track record of

the existing gold and silver ETFs, and on platinum's growing status as a "green" metal.

The possibility of labor-related disruptions this year cannot be dismissed. High prices have not gone unnoticed by union leaders in South Africa, and we anticipate the upcoming wage negotiations to be hard-driving. Based on comments made by union officials, we believe that they will demand a 15-20% pay increase, with the producers unlikely to improve on previous offers in the mid-single digits. While current prices are high, producers report escalating costs, especially those associated with new projects. The unions, meanwhile, are thought to be anxious for their membership to share in increased revenue.

Russian exports of platinum and rhodium, which have been suspended since the beginning of the year, should resume with the final delivery of licenses from the central government. Contracted deliveries by Norilsk are thought to have been met, in the meantime, by deliveries from stocks held outside of Russia.

Palladium

Despite tighter supply/demand fundamentals driven by growing demand, palladium will still run a substantial supply/demand surplus, we believe, largely due to ongoing Russian stockpile sales. Although the new palladium ETFs could draw some metal off the market, we believe a surplus will remain.

We believe palladium prices will likely track platinum, which could provide some price support for the former, despite what we view as uninspiring fundamentals. However, any significant decline in the precious metals complex could have a more pronounced impact on palladium.

We are raising our 2007 average forecast price to USD360/oz (from USD322/oz), our 2008 forecast to USD330/oz (from USD290/oz), our USD2009 forecast to USD320/oz (from USD295/oz), and our long-term outlook to USD300/oz (from USD275/oz). Although we believe that palladium will remain in surplus, the new ETFs and strong platinum prices should provide some support for palladium prices.

HSBC economic and metal price forecasts

		2000	2001	2002	2003	2004	2005	2006	2007e	2008e	2009e	Long term
G7 IP	% pa	4.4	-2.9	-0.3	0.7	3.4	1.9	3.5	1.3	1.9	-	-
Global IP	% pa	6.2	-0.4	3.0	4.2	6.3	4.9	6.6	5.0	4.9	-	-
Aluminium	USD/t	1,543	1,433	1,345	1,433	1,720	1,896	2,557	2,690	2,491	2,271	1,984
Copper	USD/t	1,808	1,587	1,565	1,786	2,866	3,682	6,702	6,305	5,247	4,409	2,866
Nickel	USD/t	8,642	5,930	6,768	9,634	13,845	14,749	24,052	35,605	26,455	19,842	11,023
Zinc	USD/t	1,124	882	772	838	1,058	1,389	3,263	3,131	2,646	2,094	1,433
Aluminium	USc/lb	70	65	61	65	78	86	116	122	113	103	90
Copper	USc/lb	82	72	71	81	130	167	304	286	238	200	130
Nickel	USc/lb	392	269	307	437	628	669	1091	1615	1200	900	500
Zinc	USc/lb	51	40	35	38	48	63	148	142	120	95	65
Gold	USD/oz	279	271	310	364	410	445	607	680	660	600	550
Silver	USD/oz	4.95	4.37	4.6	4.88	6.66	7.29	11.55	12.55	10.25	9.00	8.50
Platinum	USD/oz	545	530	539	692	846	897	1,139	1,305	1,250	1,150	1,100
Palladium	USD/oz	682	604	337	200	230	202	319	360	330	320	300

Source: HSBC

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HSBC gold outlook

- US dollar weakness, in our view, remains the key to long-term gold price appreciation
- In the short term, the gold market could be influenced by moves in other commodities, particularly oil, we believe
- High prices, which are impacting physical demand and encouraging scrap supplies, could temper any rallies

Capped by scrap

Escalating commodity prices, a weakening US dollar, rising inflation pressures outside of the US, and ongoing geopolitical tensions centered mostly – but not exclusively – in the Middle East, have been the main the drivers of the recent gold rally, in our view.

Gold still lingers below its 26-year high of USD730/oz (reached in May 2006), but seems to have fully recovered from last year's correction and looks poised to challenge the psychologically significant USD700/oz level. Gold prices have generally trended higher since the beginning of the year after holding above the technically important USD600/oz level, in early January.

Gold corrected briefly but sharply between the end of February and the beginning of March, on a general flight out of perceived "risky" instruments, brought on by the unfolding sub-prime mortgage crisis and fears of an imminent demise in the Japanese yen "carry trade." The impact on gold was relatively short-lived, however, with the market bottoming out in March at USD636/oz. Since then, gold has raced higher, breaking briefly over USD690/oz in mid-April.

Hard data for 2006 confirm contracting mine supply, while on the demand side, jewelry consumption has diminished. Scrap supplies are increasing as product is drawn into the market by high prices. Selling patterns by the European

Gold prices 1971-2007 (USD/oz)

Source: Reuters

Gold prices 2004-2007 (USD/oz)

Source: Reuters

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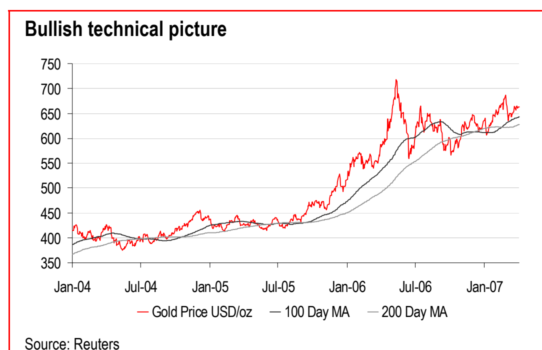
central banks, subject to the Central Bank Gold Agreement (CBGA), accelerated recently but are still consistently below quota. Modest purchases by the central bank of Qatar and others are encouraging, but the threat of IMF gold sales cannot be ignored.

While the rapid decline in the US dollar and the recent commodity rally brought gold to within striking distance of USD700/oz, the market stalled before reaching this level. As of this writing, gold is near USD700/oz but is yet to mount a serious challenge to that level.

Technical outlook remains bullish

Bullish technical picture



Source: Reuters

After correcting sharply last year, gold has resumed the uptrend, trading comfortably above its 100- and 200-day moving averages. The market, in our view, faces significant upside resistance at the psychologically important USD700/oz level. Should gold fail to drive higher, there is mild support at USD645/oz with more significant longer-term support in the vicinity of USD550/oz.

Macroeconomic influences on gold

Global economic outlook: When worlds collide

HSBC's recent review of the global economy (*Global Economics: When Worlds Collide*, HSBC Research March 2007) focused on the proposition that, while the US economy may be slowing, the global economy is still booming, driven by the rapidly expanding emerging markets. Given the influence of US monetary policy on the rest of the world, US policymakers will therefore have to juggle domestic and global imperatives. It is this potential combination of robust growth outside of the US and more lax monetary policies within the US that is likely to be supportive of gold prices, in our view. Below, we present some of the points covered in the outlook that we believe may be pertinent for the gold market.

The emerging markets now play a pivotal role in the global economy and are largely responsible for current buoyant global economic growth. These same nations, however, are still influenced by monetary conditions as set by the Federal Reserve. Given that the US economy is slowing, it is increasingly likely, in the view of our economics team, that the Fed will be forced to cut interest rates later this year. Lower US interest rates, for reasons previously discussed, are gold-bullish, in our view.

US monetary policies strongly influence monetary conditions in other countries, especially those countries whose currencies are linked to the dollar. Due to their robust growth and mounting inflationary pressures, it can be argued that lower US interest rates are highly inappropriate for most of the emerging world. Traditional economic theory tells us that under this scenario, policymakers in the emerging world will have to accept either higher inflation or greater currency appreciation. The prospect of higher global inflation, or a weaker US dollar and stronger emerging market currencies, are both bullish for gold, in our view.

HSBC's economics team highlights a host of implications stemming from this split in imperatives which, in our view, may have an important bearing on gold prices. Of these, the most important for gold are likely to be prolonged

HSBC economics forecasts

	GDP growth							Industrial production growth						
	2002	2003	2004	2005	2006	2007f	2008f	2002	2003	2004	2005	2006	2007e	2008e
US	1.6	2.7	4.2	3.2	3.3	2.0	2.4	0.1	0.6	4.1	3.2	4.1	0.6	2.0
Japan	0.1	1.8	2.3	1.9	2.2	1.8	1.8	0.0	3.2	5.5	1.1	4.1	1.7	2.0
Germany	0	-0.2	0.8	1.1	2.9	2.2	1.6	-1.3	0.1	2.5	2.8	5.6	4.1	2.9
France	1.1	1.1	2.0	1.2	2.0	1.6	1.8	-1.7	-0.9	2.4	0.4	1.2	0.6	1.2
Italy	0.3	0.1	0.9	0.1	1.9	1.9	1.3	-1.2	-1.0	-0.5	-0.9	2.4	1.8	1.4
UK	2.1	2.7	3.3	1.9	2.7	2.3	2.0	-1.9	-0.3	0.8	-1.8	0.2	0.6	0.7
Euro 13	0.9	0.7	1.7	1.5	2.8	2.2	1.9	-0.7	0.1	1.9	0.9	3.8	2.5	2.0
S Korea	7.0	3.1	4.7	4.0	5.2	5.6	5.3	8.0	5.3	10.2	6.2	10.1	5.2	5.5
Taiwan	4.2	3.4	6.1	4.0	4.6	3.5	4.2	7.9	7.1	9.8	4.1	4.9	4.9	5.2
China	9.1	10	10.1	10.2	10.7	10.0	10.5	10.0	12.7	11.4	11.6	16.2	15.8	16.0
G7	1.2	1.9	3.1	1.8	2.8	2.0	2.1	-0.3	0.7	3.4	1.9	3.5	1.3	1.9
World	2.8	3.8	4.9	4.5	3.6	3.0	3.1	3.0	4.2	6.3	4.9	6.6	5.0	4.9

Source: HSBC

dollar weakness, slower US growth, continued very strong growth within emerging markets, a threat of higher emerging market inflation, an unstable narrowing of global imbalances, and uncertainties over monetary conditions outside of the US. Many, if not all of the above, are supportive to varying degrees of gold prices.

HSBC currency outlook: Dollar judgment day

HSBC's foreign exchange analysts (see *Currency Outlook: Dollar's Judgment Day*, HSBC Research March 2007), believe that the financial markets have realized that the US economic slowdown is far from over and may intensify. Our currency team believes that the US dollar will continue to move lower across the board. The following is a synopsis of the conclusions of HSBC's currency outlook, which we believe has relevance for gold, given the historical inverse relation between gold and the US dollar.

Foreign exchange markets are more concerned with the prospects of weaker US growth than with rising inflation. Inflation fears dominated the market in May of last year, for example, when gold reached a high of USD730/oz, and fell steeply on the realization of the Fed's determination to fight inflation.

The heavy reduction of excessive short JPY and CHF positions has mistakenly been attributed to the unwinding of the Japanese yen carry trade. Our currency team argues that the scaling back of the long carry positions is a by-product of the reassessment in US growth. US dollar currency weakness (and therefore gold strength) is, to a degree, the rational result of reduced expected returns for US assets.

Dollar weakness in the foreign exchange markets reflects this overall re-assessment of the US economy and global growth. HSBC's currency team believes a renewed US dollar sell-off, accompanied by a genuine unwinding of the carry trade, could occur. The team warns that when equities and fixed income yields move in the same direction, the dollar's response can be substantial. The possibility of lower yields and a declining stock market hold out the possibility of further US dollar weakness, in our team's view. This combination is, theoretically, gold-bullish.

Current account balances also influence currency movements. Our currency team points out that, for a considerable time, structural issues (such as the US current deficit) have not been a prime concern in the foreign exchange markets. However, our team believes that, as investor attention shifts from cyclical issues (which have tended to favor

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HSBC currency forecasts

end period:	2004	2005				2006				2007				2008	
	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1f	Q2f	Q3f	Q4f	Q1f	Q2f
Americas															
Canada (CAD)	1.20	1.21	1.22	1.16	1.17	1.17	1.11	1.12	1.16	1.17	1.16	1.16	1.16	1.16	1.18
Western Europe															
Eurozone (EUR)	1.36	1.30	1.21	1.21	1.18	1.21	1.28	1.27	1.32	1.30	1.33	1.37	1.40	1.40	1.40
Other Western Europe															
UK (GBP)	1.92	1.89	1.79	1.77	1.72	1.73	1.85	1.87	1.96	1.97	1.97	1.96	1.93	1.90	1.90
Asia/Pacific															
Japan (JPY)	102.00	107.00	111.00	113.00	118.00	118.00	114.00	118.00	119.00	120.00	117.00	113.00	110.00	110.00	110.00
Australia (AUD)	0.78	0.77	0.76	0.76	0.73	0.71	0.74	0.75	0.79	0.77	0.75	0.74	0.73	0.73	0.73
China (CNY)	8.28	8.28	8.28	8.09	8.07	8.02	7.99	7.91	7.81	7.73	7.66	7.58	7.40	7.32	7.24
Hong Kong (HKD)	7.78	7.80	7.77	7.76	7.75	7.76	7.77	7.79	7.77	7.80	7.80	7.80	7.80	7.80	7.80
Africa															
South Africa (ZAR)	5.63	6.22	6.67	6.36	6.34	6.16	7.13	7.77	7.05	7.00	6.50	6.75	6.75	6.75	6.75

Source: HSBC

the dollar) back to structural issues (such as the current account deficit), the dollar is likely to weaken further.

Gold has derived support from the decline in the US dollar, in our view, and, if events continue to unfold as our currency team expects, gold is likely receive additional support throughout the rest of this year. HSBC's currency team forecasts that the USD/EUR exchange rate will reach 1.40 by Q4 2007, with the US dollar stabilizing at around that level in the first half of 2008. If this proves to be the case, gold prices should be supported for the remainder of the year but may stabilize in the absence of further pronounced US dollar weakness in 2008.

Our currency analysts also identify ongoing diversification away from the US dollar as another factor that could contribute to the dollar's decline. Countries with rapidly accumulating US dollar reserves may be increasingly tempted to diversify away from the dollar, particularly after the Intentional Monetary Fund (IMF) recommended emerging markets with high US dollar reserves diversify to other currencies in case there is a prolonged decline in the dollar. This is already a stated policy of the Russian central bank, as well

Gold and the dollar: Re-establishing the inverse relationship

Source: Reuters

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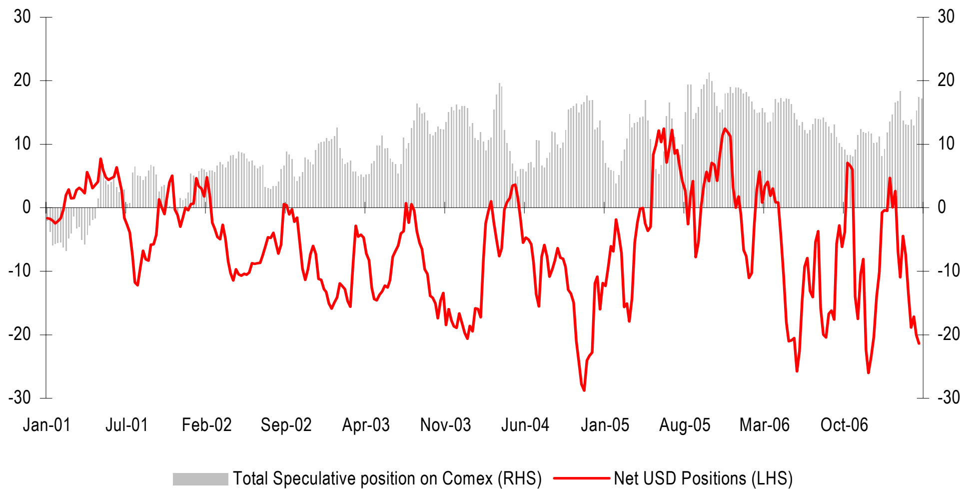
Net fund positions: Gold and US dollar



Source: HSBC, CFTC

as that of several Middle Eastern and Latin American central banks. European Central Bank Governing Council member Christain Noyer stated in April that the euro was an extremely attractive reserve currency, potentially rivaling the dollar.

Gold, theoretically, stands to benefit on two counts by central bank diversification. A gradual shift out of the dollar is likely to weaken the US currency and therefore support gold. Also, the possibility exists that any policy of diversification may include the outright purchase of gold by central banks.

As another illustration of the inverse relationship between gold and the US dollar, investors have tended to take opposite positions in the gold and dollar markets (see chart above). The increase in net dollar short positions has accompanied an increase in gold longs on the Comex. Given that funds are active traders in both markets, their trading strategies are significant to the price direction of gold.

Inflation and US interest rates

A noteworthy feature of the current gold rally is that it is occurring against a background of relatively benign inflation. The combination of tight monetary policies and a slowing US economy are forecast by HSBC's economics team to lead to US consumer price inflation of just 1.7% this year, with a modest rise to 2.0% in 2008. This would put inflation well below the Fed's "comfort level" of 2.0% for this year and keep it around that level for 2008. Our economics team notes that higher US unit labor costs over the last several quarters have had only a muted impact on inflation, with the most recent monthly inflation data coming in below expectations.

A benign inflationary environment could well restrain investor interest in gold this year. While we expect gold prices to remain strong, muted inflationary expectations could hamper future rallies, particularly over USD700/oz, in our view.

It is possible that gold is taking its cue from higher commodity prices, rather than the broader inflation indices. Although higher commodity prices have not translated into broad-based increases in consumer inflation, they have ratcheted up commodity inflation considerably, and remain buoyant despite evidence of a slowing US economy. The possibility that commodity

prices will feed more directly into the overall price indices cannot be dismissed. Were this to occur, we would expect an increased correlation between gold and the broader inflation indices.

Gold may also be influenced by the inflationary climate outside of the US. While HSBC forecasts developed world inflation to decline from 2.3% in 2006 to 1.5% this year (and to remain low at 1.6% in 2008), our forecast for the emerging world is for inflation to remain unchanged at last year's level of 4.4%, for this year and next. Of importance for gold, HSBC's economics team forecasts that inflation in India, the world's largest gold consumer, will rise from 6.3% in 2006, to 7.2% this year, and to 8.5% in 2008.

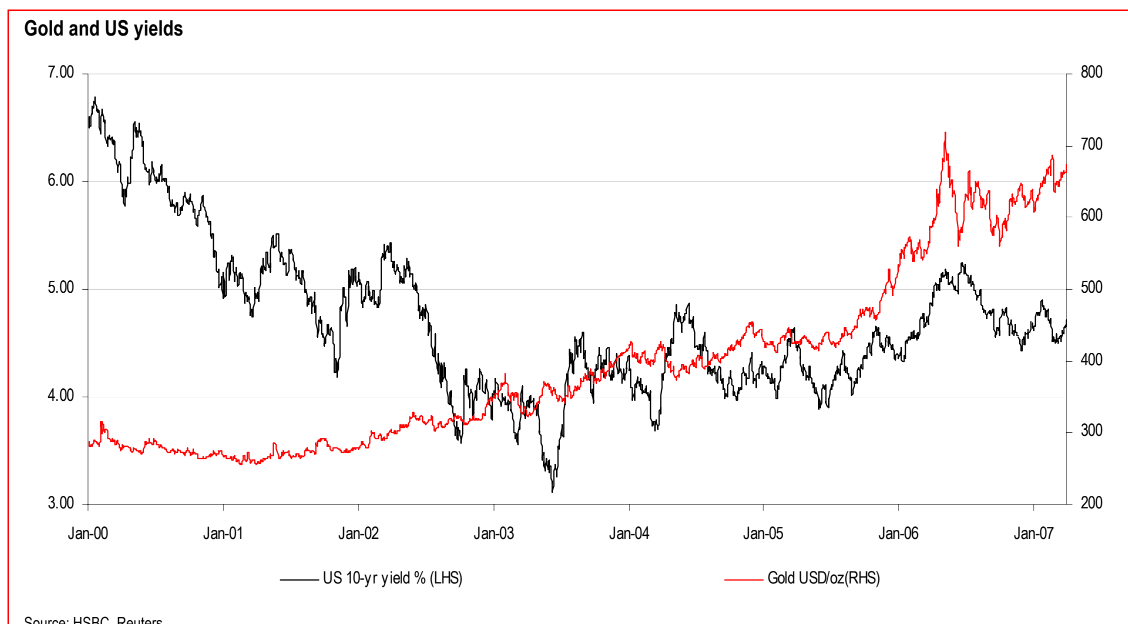
The graph illustrating gold and US yields (see below) shows gold prices dropping at the end of a long period of Fed tightening last May. Higher interest rates are consistent with reduced inflationary expectations and are, therefore, potentially negative for gold prices. Higher US interest rates also tend to make alternative assets, mostly in the emerging world, appear less attractive.

Lower interest rates, in line with a weakening economy, are consistent with our forecast of higher gold prices. HSBC forecasts Fed Funds falling to 4.5% in H2 2007, which would likely support gold prices, in our view. Currently, however, yields have softened, with the yield on the 10-year Treasury dropping below 4.7%.

Gold is also influenced by the shape of the yield curve, as well as by outright interest rate levels. A flat to slightly negative yield curve has been the norm in the US fixed income market for more than a year. Typically, a flat curve is associated with recession, falling inflation, and reduced risk, and is therefore generally negative for gold. However, higher gold prices and a fairly robust economy are inconsistent with this explanation.

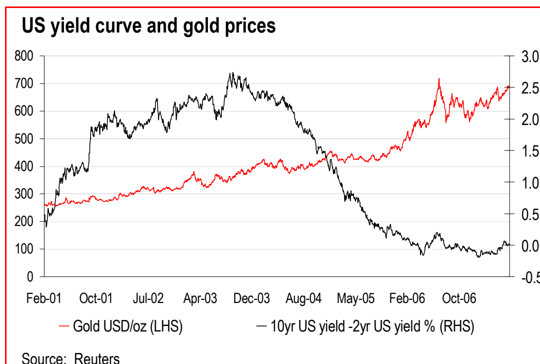
An alternative economic justification for the flat yield curve is the possibility that excess savings in the Far East and the oil-exporting countries have found their way into the US Treasury market, thereby depressing yields. A flat or negative yield curve under these conditions is not necessarily negative for gold.

Gold and US yields



Source: HSBC, Reuters

US yield curve and gold prices



Source: Reuters

Notwithstanding this, the curve is now slightly positive, and a positively sloping yield curve is generally interpreted as bullish for gold. Further, it is possible that the curve becomes more positively sloped as the year progresses. As previously mentioned, the HSBC economics team is forecasting a cut in Fed Funds to 4.5% by the end of 2007, with the possibility of further cuts in 2008. Stimulative monetary policies traditionally support gold prices. However, if inflation pressures resurface, the Fed may have to tighten, resulting in a more flattened yield curve, which could put pressure on gold prices.

The commodity factor

Commodities and gold: Hither from here?

It is our view that commodity price movements will continue to play an important – if not crucial – role in determining gold prices in the short term. The rally in gold, as well as that of most commodities, began in late 2001, and gold prices have tended to reflect trends in the broader commodities sector from that period onward. Since mid-January 2007, commodities prices have generally trended higher and, in doing so, helped to propel gold prices to over USD690/oz in late April.

Commodity indices support gold

There are sound economic reasons that address why gold has become more correlated with the commodities complex in recent years. One of the most compelling arguments, we believe, is that gold is a component in the various commodity indices – passive commodity-linked instruments – that provide investors exposure to energy, agricultural commodities, and base metals (as well as gold). These indices appear to be highly successful, attracting considerable investor interest Although gold has a much smaller weighting than energy and other commodities in these indices, any net inflows into these products – driven by investor interest in the broader commodities complex – should result in additional demand for gold, we believe.

The commodity indices include the Goldman Sachs Commodity Index, the Dow Jones-AIG, and the CRB-Jefferies – among others – all of which contain various weightings in gold. Therefore, they influence bullion's physical supply/demand balance. While precise data are not available, we estimate that over USD120bn was invested in these indices at the peak of the commodities rally in May 2006. The GSCI has a gold weighting of around 2% and, although other commodity indices afford gold a heavier weighting, the GSCI is the largest of the commodity indices.

Taking the GSCI proportions as a rough proxy for gold's share in the indices, we assume the investment in gold totaled c3moz at the peak of the commodities rally in May 2006. We believe the correction in commodities last year reduced the value of the indices by at least USD30bn by the end of the 2006. Assuming this last figure is correct, a decline of that magnitude would have resulted in the disinvestment of about 1moz of gold, based on an average price of USD600/oz.

Since then, however, investor interest in commodities has recovered, resulting in renewed inflows into the commodity indices. We estimate that as much as USD15-20bn may have flowed back into the indices since the beginning of 2007.

Taking an average gold price of USD650/oz, the equivalent of c600,000oz has likely been invested in gold so far this year.

Admittedly, the numbers involved are not great compared to the overall gold market (consider the movements on the Comex, where net long speculative investment recently topped the equivalent of 16moz). Nevertheless, they comprise another form of demand – albeit, passive for gold.

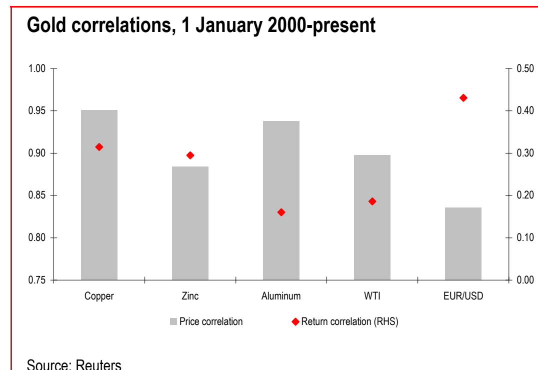
Oil and other commodities

Gold and oil have moved alongside one another for long periods in the past. For example, the OPEC-inspired oil price rises of the 1970s and early 1980s occurred against a backdrop of escalating gold prices. However, no reliable statistical relationship between the two was evident again until 2001. Since then, a strong positive correlation has developed that, despite occasional lapses, has intensified in the last 24 months.

The rationale supporting such a relationship is reasonably straightforward. Important oil-exporting regions in the Middle East, West Africa, and the Caspian basin, are among the most politically volatile in the world and are often the center of political or military disputes that can threaten the flow of oil. Furthermore, many of the same issues that impact oil – terrorism, war, complicated international relations, economic rivalries – also impact gold prices.

The link between geopolitical tensions and gold is reinforced by the relationship between oil and gold. Of the seven top geopolitical risks for 2007, as outlined by the *Eurasia Group,* four are in oil-producing nations and relate directly to oil. Given the levels of international attention directed towards the oil market, it is reasonable to expect gold might track oil price movements. Further, oil prices are an important element in inflation and

Gold correlations, 1 January 2000-present



Source: Reuters

inflationary expectations. Changes in the price of oil can shape public and investor perceptions of inflation, which also impacts gold.

The chart above shows that gold prices are positively correlated to a number of metals, in addition to oil, and to the EUR/USD exchange rate, for the period from 1 January 2000. It should be noted, however, that the correlation of returns is not as significant as the price correlation, with a correlation coefficient ranging from c16% for aluminum to c43% against the euro.

Current oil prices, while high, remain below the USD73 per barrel record set last year. The International Energy Agency (IEA) recently warned of the possibility of higher oil prices as a result of slumping inventories in consumer nations following a large drop in supply in the first quarter. The Centre for Global Energy Studies (CGES) recently blamed higher oil prices on restrictive OPEC policies, which have curtailed member output on unrealistically optimistic forecasts of non-OPEC production.

According to the IEA and the US Energy Information Agency (EIA), low levels of spare productive capacity in the global petroleum industry make production increases difficult to achieve. Shortages in world refining capacity are a further factor supporting higher oil prices, according to the IEA and EIA. Both the CGES and the IEA state, however, that although oil consumption will increase again this year, there is

evidence that high prices have at least curbed demand growth.

Recent Saudi assurances that the kingdom will restrain further oil price rises for the benefit of producers and consumers holds out the promise of lower and less volatile prices going forward. It is stated Saudi policy to increase the kingdom's spare productive capacity by 3-3.5mpd, according to the Saudi oil minister. This level of spare capacity is historically consistent with lower oil prices.

If Saudi Arabia manages to considerably increase spare productive capacity while satisfying current demand, inventories may rebuild and the longer-term outlook for prices may be lower. However, this assumes no major dislocation in oil supplies. If oil prices weaken, gold prices may soften.

There is also a strong correlation between base metals prices and the gold price. Many base metals ended 2006 with historically low inventories (some of which have fallen even further this year). Although some blame investor speculation on the sharp price rises (nickel recently reached a high in excess of USD50,000/t), we believe that the cornerstone of the rally in base metals is the ongoing demand from the emerging world.

The IMF's recently released World Economic Outlook forecasts continued strong economic growth in these industrializing economies. While we would expect that a US slowdown would lead to reduced commodity demand in the developed world, emerging world demand is anticipated to remain buoyant. Given that much of the emerging world is in the midst of a commodities-intensive phase of development, this should continue high levels of commodity demand.

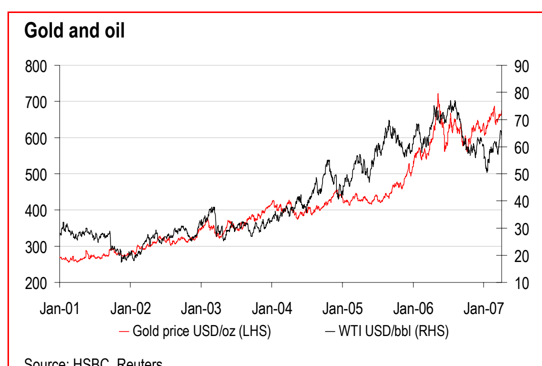
However, we note that such strong levels of emerging market demand are no longer unanticipated; producer and consumer firms and countries have factored in continued robust demand, and may therefore be better prepared to keep markets roughly balanced going forward. Given the strong correlation between gold and commodities, any surprise decline in commodity prices would likely weigh on gold, in our opinion.

Geopolitical dynamics likely to remain supportive

In addition to reflecting economic and financial conditions, gold is also a barometer of geopolitical events, trending higher during periods of mounting political tensions and tending to relax during periods of relative calm. Professor Robert Barro, a noted international economist who has written extensively on gold (see *Rare Disasters and Asset Markets in the Twentieth Century and an examination of the Gold Standard*), attributes part of the long running decline in gold prices between 1991 and 2001 to a relaxation in global tensions associated with the end of the cold war.

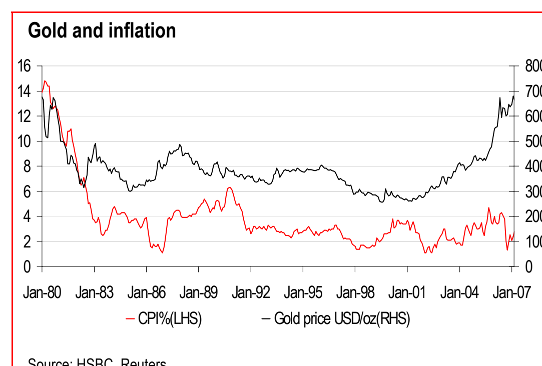
As European monetary authorities no longer felt compelled to accumulate substantial gold reserves

Gold and oil



Source: HSBC, Reuters

Gold and inflation



Source: HSBC, Reuters

in the event of a major conflagration, the decision was made to sell excess gold stocks. The process of globalization and the continued reduction in geopolitical tensions further accelerated central bank sales. Sales of central bank gold during this period are credited with playing a significant role in weakening gold prices. This is borne out by the fact that the IMF urged European central banks to restrain sales to safeguard poorer gold-producing nations.

Since 2001 and the events of September 11, new sources of geopolitical tensions, radically unlike those in the post-war period, have arisen, according to political theorists, including Harvard's Samuel P. Huntington. Although it is difficult to prove causality, the current rally in gold can be traced to 2001 and only predates the events of September 11 by a few months.

Trends in supply and demand

Mine supply comes up short

Despite years of consistently high prices, mine output remains sluggish as the industry faces a host of obstacles that have prevented increased production. According to the *World Demand Trends,* published by the World Gold Council, mine output contracted about 3% in 2006, to 2,471t. This decline effectively reversed the hard-won production gains of 2005.

Production losses were most severe among the more mature producers, namely the US, Canada, and South Africa – regions that have been extensively mined and for the most part are facing declining ore grades. With some local exceptions, these producers appear to be in long-term decline. Out of the 20-largest gold-producing nations, 12 experienced a drop in gold mine output in 2006.

Nowhere was the decline in mining production more visible than in South Africa, the world's largest gold producer. The Chamber of Mines reported that gold output fell by 7% in 2006, while Q4 2006 output fell nearly 10% versus the year-earlier period. This is the lowest level of production in South Africa since 1922.

In addition, the Chamber reported worrying structural trends, including a 9.3% decline in the average grade mined for the fourth quarter of 2006. Total production costs showed an increase, before capital expenditure, of 11.9% on a year-on-year basis in rand terms, with the Chamber citing higher input costs for the rise. Production costs, including capital expenditure, rose by 20.8% in rand terms. An increase in tonnage milled failed to reverse the downtrend in production, due to the decline in average grades.

According to Chamber of Mines chief economist Roger Baxter, it is possible that the worst is behind the South African gold industry. He notes that South African gold producers increased capital expenditures by 26%, to ZAR5.9bn (cUSD801m), in 2006, and committed ZAR10bn (USD1.3bn) to the development of brownfield expansions over the next 10 years. The investment should extend the lifespan of existing gold mining projects.

While lower ore grades are usually thought of as a negative by producers, it is worth noting that lower grades are not necessarily a sign of a declining industry. Rather, they may simply reflect the move towards lower cut-off grades as prices have risen. But output will only rise if mining rates can be increased to counter the decline in grades, something that – thus far – has eluded the South African gold industry.

Russian gold output fell in the first quarter of 2007, despite the rising gold price. According to the Russian Gold Industrialists Union, gold supply dropped 6%, to 21t from the same period last year, mainly due to lower mine output. This is far worse than the modest 2-4% decline forecast by the union for the entire year of 2007. The Union

said that gold production from mines fell 6.8%, to 16.8t, from 18.04t in Q1 2006. Depleted placer deposits were blamed for most of the output decline. Output of refined gold from scrap was estimated to have risen 18.8%, to 1.2t, from 1.00t. Production of gold as a by-product of other metals fell 8.8%, to 3.0t, from 3.3t.

Difficulties raising output

Traditional economic theory opines that if the price of a good remains above the marginal cost of production for a prolonged period, above-normal profits will be generated, attracting increased resources into the sector and eventually raising output. This has not proved to be the case with gold mine production, however, leading to the assumption that the sluggish supply-side response is structural in nature, and not simply the result of unattractive prices.

Mining executives and economists have cited a number of challenges facing the industry in its quest to increase production. The fact that marginal prices are high does not, in every case, guarantee increased investor interest. In the case of mining, there are enormous barriers to entry; these barriers traditionally channel new investment into existing companies rather than into the creation of new and possibly more competitive firms.

Furthermore, increased investment cannot alter geology. As noted, ore bodies are being depleted in the mature producers and cannot be quickly or easily replaced. As this easier and more accessible gold is mined, much of it in the most politically secure regions such as North America and Australia, the issue of reserve replacement becomes more pronounced.

The industry is therefore going to need to become increasingly reliant on more inaccessible and sometimes politically more challenging regions in search of reserves. This can lead to complications with host governments that may not be familiar with the complexities of mining, social issues surrounding the rights of local communities, and a lack of necessary infrastructure to support large-scale mining projects. This is a primary reason why the average period of construction for a mine, from inception to production, has increased from six years to 10 in the past decade, according to the Mining Journal.

According to *Metals Economics Group,* large deposits, defined as 2.5moz or more, are not being located fast enough to replace the current rate of production by the major mining companies. Exploration is effectively becoming more difficult and more costly. Although some of the difficulty in locating new reserves dates back to the severe cuts in exploration budgets in the 1990s, global exploration budgets have been rising for the past few years, and may yet reverse this trend.

Another problem that cannot necessarily be solved with additional funds – at least in the short term – is the lack of trained personnel, ranging from geologists and mining engineers, to skilled workers and forepersons. A shortage of geologists and mining engineers has affected projects to the point where retired professionals are being hired as consultants in record numbers. Similarly, there is a shortage of skilled workers, even in areas of high unemployment. The lack of personnel has contributed markedly to rapidly rising labor costs.

In addition to a lack of trained personnel, the industry continues to face equipment shortages. Mining is a highly mechanized industry, which demands specialized equipment made by just a handful of manufacturers. Drilling equipment, specialty tires, and materials for processing facilities cannot be obtained easily or quickly in the current environment. Manufacturers report brimming order books and long lead times. The tightness in the market is such that many producers anxious to secure equipment promptly

have, anecdotally, paid higher prices for secondhand equipment than they would for new – provided the supplier can assure delivery.

Increased environmental and government scrutiny has also led, in many cases, to lengthy administrative procedures that have further delayed production. This is part of what is termed "resource nationalism," the term for the trend among host countries to take a harder negotiating line in terms of royalties, taxation, profit sharing, and the treatment of local communities in those areas that would be affected by mining. In addition to extending the time frame for new development, the need to address the needs of other stakeholders has led to higher development costs.

Based on a recent analysis of mining cost trends, HSBC's mining team estimates that the marginal cost of production for the senior gold mining companies is now cUSD575/oz. Although the oft-quoted "total cash costs" are probably in the range of USD350-400/oz, our team included the cost of ongoing capital, exploration, corporate overheads, and the cost of finance. It is for this reason that we have raised our long-term gold price forecast to USD550/oz.

Striking potential

The question of pay and other benefits for mine workers may impact gold output this year in more than one country. In South Africa, the biennial wage negotiations between the industry and the major unions are set to begin, and the National Union of Mineworkers (NUM), South Africa's largest mineworkers' union, has set the stage already by indicating that it will seek a double-digit increase (according to Frans Baleni, the general secretary of the NUM). We expect that this year's round of wage negotiations could be protracted and possibly even confrontational.

Going by recent history, the possibility of industrial action is real. South Africa was hit in 2005 (when the last round of wage negotiations took place) by the first industry-wide gold strike in 18 years, halting production for five days. The impact on production of that strike, however, was not meaningful.

We are forecasting total global gold production of 2,497t in 2007, an increase of 1% with respect to last year's production of 2,472t.

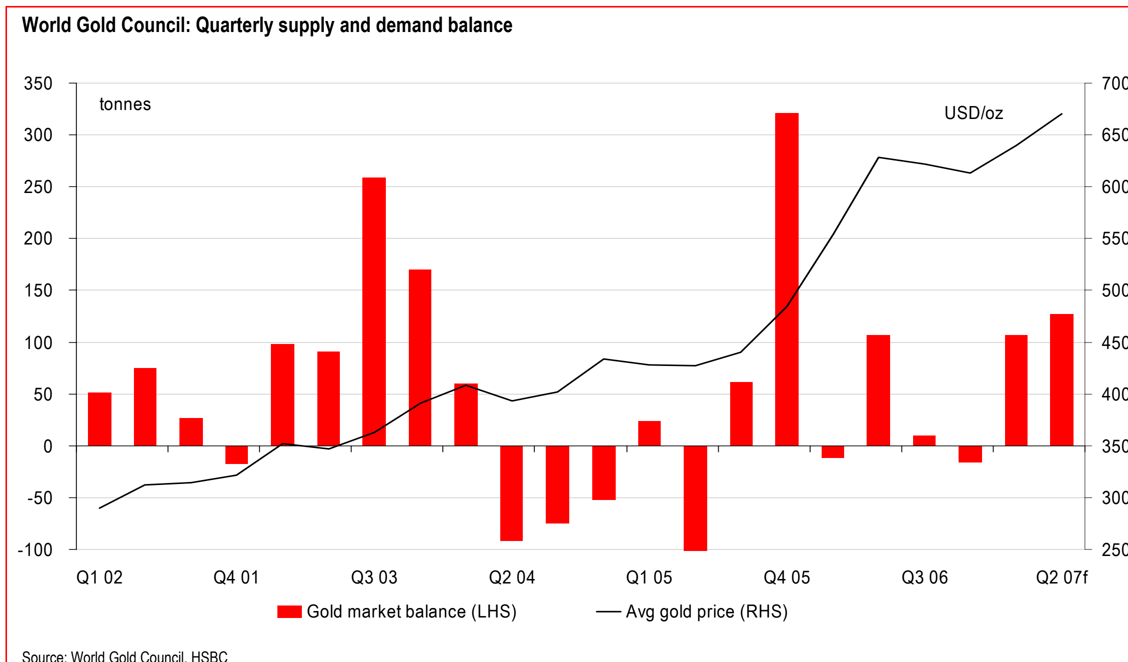
Continued producer de-hedging

Producers continue to buy back and close out hedge positions, reducing the global hedge book. While precise figures are not yet available, hedging levels may have fallen by c4moz in Q1 2007. Barrick alone reduced its hedge positions by c2.0moz, meeting its goal to close out all outstanding positions save those (totaling 9.5moz) specifically assigned to the development-stage Pascua project. Gold Fields bought back the remaining 730,000oz position it inherited from its acquisition of Western Areas, and AngloGold Ashanti eliminated 570,000oz of hedges as part of its ongoing strategy to work down the hedge book. Buenaventura also bought back a portion of its hedge book during the first quarter of 2007, amounting to c480,000oz.

In April of this year, Lihir Gold announced that it would be buying back its hedge book, totaling 934,500oz, and its 480,000oz gold loan with part of the proceeds from an AUD1.2bn right issue.

Closing out of hedges creates demand, and is therefore potentially bullish for gold. However, the fact that the global hedge book has declined for years leaves fewer ounces left to potentially buy back. At the end of 2006, we identified some 35.1moz of hedge positions held by the world's largest gold mining companies. Based on the information presented above, this has declined by over 10% in the first quarter of this year alone.

World Gold Council: Quarterly supply and demand balance



Source: World Gold Council, HSBC

While it is possible that junior producers seeking financing for new projects may take on some hedging, most companies continue to eschew it.

In 2006, we estimate that hedge buybacks and regularly scheduled hedge book deliveries generated 403t of additional gold demand. For this year, we are estimating a more modest 250t, of which approximately two-thirds has already taken place in the first four months of this year.

Scrap recycling

The scrap market is a useful barometer to gauge the state of the gold market. Scrap supplies tend to be highly price-responsive, rising during periods of escalating prices and contracting on downswings. The most recent hard data provided by the World Gold Council in its publication *Demand Trends* put Q4 2006 scrap supply at 238t, a 14% decline from Q4 2005. But for the entire year (2006), scrap supplies were up 20%, at 1,069t, which is the highest level of scrap supply since 1998. The decline in Q4 is merely a function, in our view, of the lower gold price in H2 2006 relative to the first half of the year. It stands to reason that the majority of scrap supply in 2006 was concentrated in H1, when prices were high.

Given the recent rally in the gold price to near USD700/oz, we suspect that scrap supplies are also increasing. Traditionally, Indian, Middle Eastern, and other emerging markets are sensitive to price changes and are active participants in the scrap market. Last year, however, while the Middle East and Far East sold recycled gold back into the market during H1 2006, Indian merchants were less active, possibly waiting for higher prices (which did not materialize). In the current rally, merchants may be quicker to take advantage of high prices and increase scrap sales for fear of missing another opportunity. Therefore, we expect higher levels of scrap sales in H1 2007 relative to H1 2006.

As long as prices remain over USD650/oz, the recycling market is likely to remain active. The potential for scrap supplies to rise further will increase, in our view, if the gold price were to exceed USD700/oz. We are forecasting total scrap supplies this year at 1,150t.

Official sector activity

Look to the Middle, not the Far, East

Given that central banks have the potential to wield massive influence over gold prices, they are the subject of constant conjecture in the market. As the chart below (left) shows, central bank holdings of gold are not uniformly distributed across central banks. The Eurozone central banks, along with the US and Japan, hold the majority of the gold held by central banks, while most other central banks hold relatively small amounts. The dichotomy is even more pronounced when gold holdings are examined as a percentage of foreign exchange reserves. In the case of the US, Germany, and a few others, gold accounts for a significant percentage of foreign exchange reserves. In the case of China and many emerging economies, it accounts for only a tiny fraction of reserves.

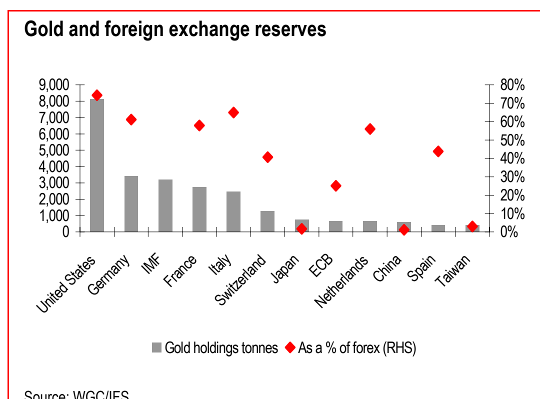
While a number of economists at think tanks loosely associated with the central bank of China have recommended the purchase of gold as part of a policy to diversify away from the US dollar, no such purchases have materialized. However, recently, senior officials with policymaking powers have recommended the creation of an investment fund to purchase commodities, including gold. Given the seniority of the commentators, the suggestion may be taken more seriously.

Meanwhile, debate continues as to whether the IMF should sell a portion of its gold reserves to balance its budget. The IMF is the third-largest holder of gold, after the Federal Reserve and Bundesbank. If it were to sell even a small portion of its reserves, it could significantly impact the market.

Those in favor of IMF sales (notably Gordon Brown) won an important ally when the Japanese Finance Minister recently endorsed a proposal that the Fund sell at least a portion of its gold holdings. But it is difficult to envision how the pro-sales lobby will achieve the required 85% of the voting rights that are needed to endorse a sale. The US and a number of other members are known to be adamantly opposed to any such sales and, given that the US has 17% of the IMF voting rights, there is unlikely to be any such sales in the near future.

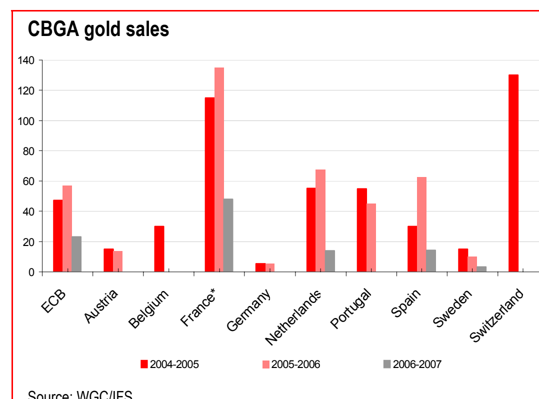
The vast majority of official sector sales continue to come from the signatories of the CBGA. The CBGA conspicuously sold 100t less than the allotted 500t quota in the second year of the agreement, which ended on 26 September 2006. In the current year of the agreement, the Eurosystem reported that CBGA signatories sold 208t through 27 April of this year. Although CBGA sales picked up in March and April (Spain and France were notable sellers), they still remain below last year's levels. Given that the Bundesbank is on record as saying it will not sell

Gold and foreign exchange reserves



Source: WGC/IFS

CBGA gold sales



Source: WGC/IFS

any gold this year, it is quite possible the CBGA will come in well under quota again this year.

Meanwhile, as attention focused mainly on China and the possibility that the People's Bank might buy gold, the central bank of Qatar and several other central banks made modest purchases of bullion. The central bank of Qatar released official data showing its gold holdings increased five-fold from January to February, and Qatari monetary officials are on record as stating they wish to diversify their foreign exchange reserves. The bank's website reports that the central bank held SAR240m (cUSD66m) in gold at the end of February, compared with SAR44.3m (cUSD11.8m) worth of gold at the end of December 2006. This implies that Qatar purchased about 80,000oz of gold.

HSBC's regional economist, Simon Williams, explains that Qatar's gold purchases are a part of a diversification strategy designed to reduce exposure to the US dollar, as officials in Qatar and other regional central banks are concerned with the currency's weakness (especially since the SAR is pegged to the US dollar).

While the amount of gold that was recently purchased is fairly small, the fact that a central bank has purchased bullion as part of a strategy to diversify away from the US dollar may be important. Should other banks follow suit, gold prices could receive additional support, in our view. Russia and Argentina have also been buyers of gold, but we find the Qatari purchase interesting as it is directly tied to a diversification strategy.

Last year's net official sector sales totaled approximately 319t. We are estimating further net disposals of 350t this year, which may prove to be an aggressive figure given the timid level of sales by the CBGA signatories and the small purchases that we are seeing from other central banks.

Exchange-traded funds (ETFs)

The more the merrier

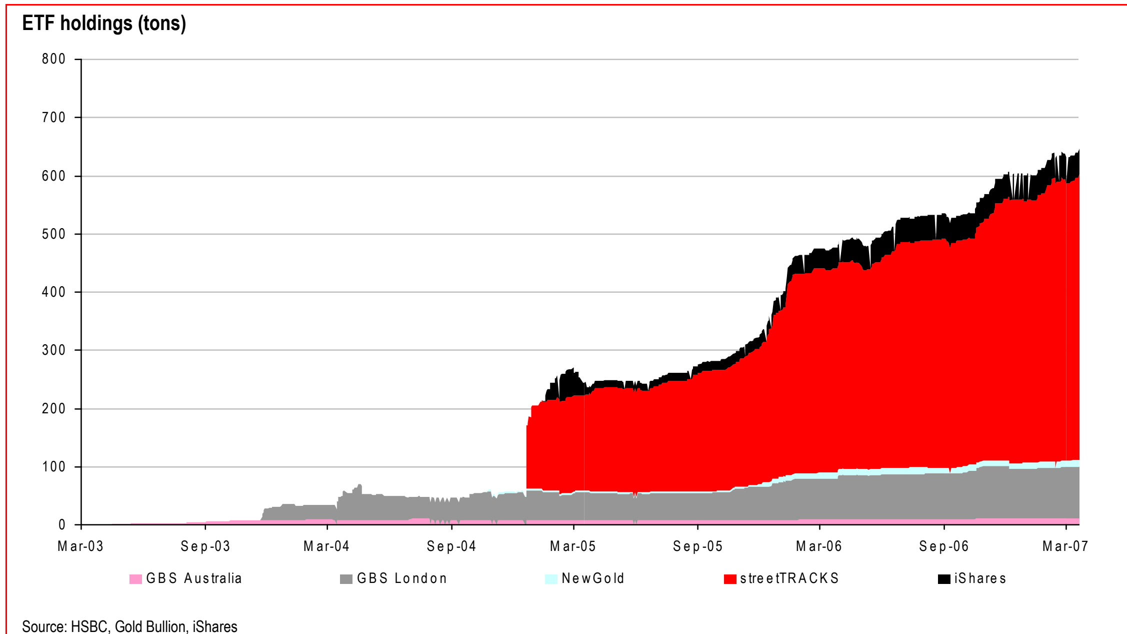
The gold ETFs continue to accumulate bullion and have, in our view, measurably altered the underlying supply/demand balance in the bullion market by reducing or eliminating many of the barriers to entry for investors wishing to participate in the gold market. In doing so, the ETF has opened gold investment to a new range of potential investors.

Despite the fact that these products are no longer "new," investment demand in the ETFs rose 6% in the first quarter of this year. And, while the growth trajectory has flattened since the introduction of the first ETF products, it remains positive. Total gold holdings by the six ETFs (five sponsored by the World Gold Council, and the Barclay's iShares rose to over 650t by late April.

In addition, new gold-based ETFs have been unveiled across the world, the latest of which is the ETF Securities on the London Stock Exchange. The Osaka Exchange is also close to unveiling a gold-based ETF, according to exchange executives.

Two look-alike ETF products were also recently launched in India (although there is some debate as to how popular the new Indian Benchmark and UTI are likely to be in a nation where direct physical ownership is prized and a large number of consumers do not have access to financial markets). If, however, the ETFs were to appeal to the increasingly affluent Indian upper-middle class, these could become successful products. Although it is difficult to quantify at this time, the new gold ETF products could lead to further accumulation of physical bullion.

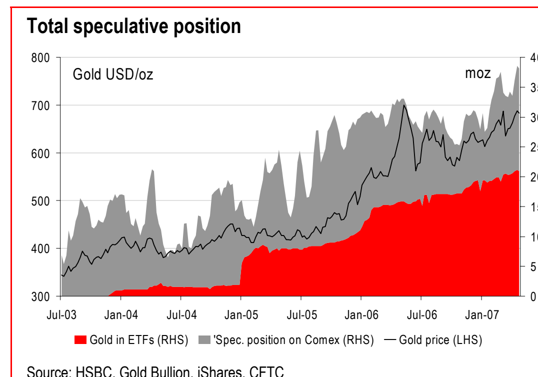
ETF holdings (tons)



Source: HSBC, Gold Bullion, iShares

Moreover, the ETFs have proven to be remarkably stable thus far, even during periods of substantial gold price weakness. This stability is possibly best appreciated when contrasted with the volatility of the net long positions on the Comex, as evinced in the chart at right. While long positions on the Comex can shift rapidly, the ETFs have behaved stolidly by comparison.

Total speculative position



Source: HSBC, Gold Bullion, iShares, CFTC

The steadfast behavior of the gold ETFs is likely, in our view, the result of the unique profile of the buyers of the product. Pension funds are known to be important purchasers of the gold ETFs. This group typically employs long-term investment strategies. In addition, they may not be seeking outright price appreciation as much as portfolio diversification.

This leaves open the possibility that pension funds may remain active in the ETFs even in the face of severe price declines. High-net-worth individuals have also been important buyers of the ETF, and may also be accumulating bullion as part of an asset diversification strategy.

This group may also be willing to ride out periods of price weakness if, as we believe, they view gold as a long-term strategic investment. In summary, buyers of the ETFs appear to exhibit a strong "buy and hold" mentality, and seem to treat gold as a long-term strategic investment.

However, it is unclear how investors will react should gold fall into a prolonged bear market. The attractiveness of the ETF stems from the ease with which investors can accumulate bullion, free of the burden of physical ownership. Should investors become disenchanted with gold, this key group of buyers could easily liquidate, thereby

potentially putting hundreds of tons of bullion back into the market.

Commitment of traders

The rally in the gold price since the beginning of the year is clearly reflected in the net long speculative positions on the Comex. In addition to the fact that the net speculative position on the Comex has been long since 2001 – the genesis of the current bull market rally – long positions have increased markedly in the last few months. The most recent net long position in gold totals 16.6moz, showing a very rapid accumulation of long positions from the low for the year of 8.2moz on 9 January 2007. In addition, long positions have continued build this year despite the brief retracement in gold prices earlier in the year.

The sheer level of longs, however, has led to speculation that a sizable long liquidation could occur at anytime. Traditionally, high levels of volatility, such as those that the market is currently experiencing, have tended to result in a reduction in long positions. Technically-oriented trading, moreover, is an important feature, in our view, of the trade in gold on the Comex. Therefore, failing to penetrate an important technical resistance level, such as the psychologically important USD700/oz level, could trigger liquidation by disappointed longs.

Fabrication demand

The impact of higher prices is readily evident in the data for fabrication demand, which declined by 13% in 2006, to 2,725t, its lowest level since 1991. Jewelry demand, which accounts for approximately two-thirds of fabrication demand, declined to 2,267t (-16% year on year), its lowest level since 1990. The statistics confirm what has been widely known in the market: the rapid rise in the gold price during early 2006 has had a significant impact on the most price-elastic segment of gold demand.

Given the current high price of gold, we forecast jewelry demand will remain sluggish this year, especially in India. The likelihood that Indian demand may be slack again this year was given support by the head of India's largest gold importer, MMTC, who recently told Reuters that demand had weakened on high prices. Looking at last year's data, Indian demand dropped when the gold price exceeded USD600/oz, with the drop becoming even more evident when the gold price traded over USD700/oz. We use India as a barometer for emerging market demand, as India imports the equivalent of one-third of annual gold output.

The Middle East is another important region in terms of gold demand but, unlike India, higher prices have not had the same impact on demand. According to the World Gold Council, gold sales in Saudi Arabia in Q1 2007 jumped almost 20% from a year earlier, despite high prices. First-quarter gold sales in the United Arab Emirates were unchanged in volume terms in Q1 2007, but were higher in terms of value. Demand in Egypt, the most populous Arab country, rose slightly, which was partly the result of efforts by the government and retail jewelers to increase sales.

The Dubai Gold and Jewellery Group has said that gold industry sales in the emirate rose more than 30% in the first quarter of this year, but declined in Abu Dhabi. There appear to be specific factors in the Middle East markets that are particularly supportive of gold and may not apply to other gold-consuming regions. GDP and incomes are rising in many countries in the region at a pace above historical averages, supported by high oil prices. This has encouraged gold off-take and appears to have at least partially offset the impact of higher gold prices. In addition, global geopolitical tensions tend to be centered in the region, and political turbulence may fuel additional demand for gold, in our view.

In a less-than-encouraging indicator of Western jewelry demand, television retailer QVC is considering a reduction in the airtime allocated to gold jewelry because high prices have sapped its appeal, according to its director of merchandising. The television retailer has report weakness in gold jewelry sales that coincides with the gold price run-up last year. QVC also indicates that customers have shifted to cheaper alternatives. While we are careful not to draw too many conclusions from this, the wide appeal of home shopping coupled with the comments from QVC lead us to suspect that this element of the jewelry market remains weak.

Although there are a few pockets of strong jewelry demand, such as the Middle East, we estimate that jewelry and fabrication demand will decline yet again in 2007. Our forecast for jewelry demand this year is 2,155t, a 5.2% decline with respect to last year, while our forecast for total fabrication demand is 2,620t, a c3.9% decline from last year. We expect fabrication demand will be somewhat more resilient than jewelry demand given the growth in gold demand for certain industrial applications.

Conclusion: Optimistic but wary

The single most important fundamental influence on gold prices, in our view, is the direction of the US dollar. We believe that a lower US dollar by year-end, combined with the prospect of lower US interest rates, creates an atmosphere conducive to further gold price appreciation.

Commodity prices will also, in our view, remain an important influence on the gold price and may, on occasion, eclipse the dollar as the main driver of gold prices. In this regard, the direction of oil prices will, in our opinion, play a key role. However receding inflationary pressures could help restrain gold price advances, in our view.

Physical demand will exert a less obvious (but nonetheless important) influence on the gold price, we believe. While we expect mine output to be restrained, scrap supplies will probably remain high due to the high gold price. Conversely, jewelry demand is unlikely to recover, in our opinion. We continue to forecast reasonably strong ETF demand, due in part to the spread of these products into new markets. Notwithstanding this, the market may be faced with a surplus of physical gold that could dampen future rallies, which implies that robust speculative interest will be needed to drive prices higher.

Taking these various factors into consideration, we are keeping our 2007 gold price forecast unchanged at USD680/oz, but are raising our 2008 forecast to USD660/oz (from USD630/oz), and our 2009 forecast to USD600/oz (from USD520/oz). Significantly, we are raising our long-term price forecast to USD550/oz (from USD500/oz), due to the increase in the marginal cost of production.

HSBC

Supply/demand balance in gold (tons)

	2000	2001	2002	2003	2004	2005	2006	2007e	2008e
Mine production	2591	2621	2589	2593	2463	2,522	2,472	2,497	2,520
Official sector net sales	479	527	545	617	474	659	319	350	400
Old gold scrap	610	708	835	939	829	888	1069	1150	900
Producer hedging	-15	-151	-412	-279	-427	-86	-403	-250	-100
Total supply	3665	3705	3557	3870	3339	3,983	3,451	3,747	3,720
Jewelry	3222	3016	2667	2481	2610	2,709	2,267	2,155	2,417
Electronics	282	200	207	235	261	281	312	325	315
Dentistry	69	68	69	67	68	62	60	60	63
Other indus & decorative	99	97	82	80	83	85	86	80	84
Other fabrication	450	365	358	382	412	428	458	465	462
Total fabrication	3672	3381	3025	2863	3022	3,137	2,725	2,620	2,879
Bar hoarding	241	261	264	178	245	262	215	208	225
Official coins	77	82	96	105	114	112	129	115	120
Medals, imitation coins	29	29	26	27	29	37	56	40	40
Other retail	-163	2	-26	15	-30	-24	-28	-30	-40
Exchange traded funds	0	0	3	32	119	208	265	300	275
Total identifiable investment	184	374	363	357	477	595	637	633	620
Total demand	3856	3755	3388	3220	3499	3,732	3,362	3,253	3,499
Balance = net investment	-191	-50	169	650	-160	251	90	494	221
Gold price USD/oz	279	271	310	364	410	445	604	680	660

Source: HSBC, WGC, GFMS

HSBC

Silver

- Supply/demand balance swings to surplus; price rally threatens Indian demand
- Mine supply ramping higher; industrial demand stable
- ETF investment demand absorbs much of the potential surplus

Caution ahead

Despite strong inflows into the silver ETF, and the possibility of greater physical off-take with the launch of a second ETF in London, we believe the silver market will move into surplus this year.

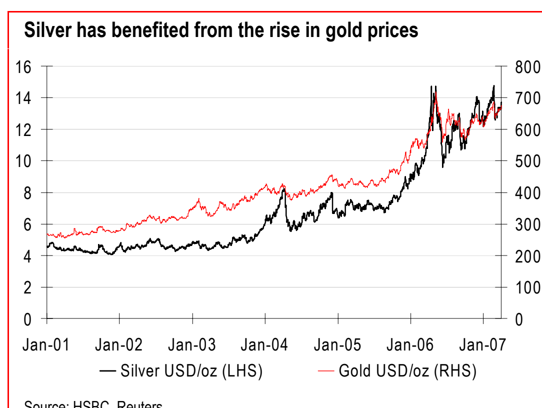
This is because increased investment and exploration are finally translating into increased mine production. On the demand side, despite continued growth in industrial production, jewelry demand in the price-sensitive emerging markets is also likely to remain weak as high prices crimp demand. A decline in the US dollar and gains in disposable income may partially offset the impact of rising silver prices in US dollar terms, in our view. We expect that movements in the silver price will remain strongly tied to those of gold and the wider commodity complex, as well as to movements in the US dollar.

We are therefore raising our 2007 average price forecast to USD12.55/oz (from USD12.25/oz), but are keeping our 2008, 2009, and long-term price forecasts unchanged at USD10.25/oz, USD9.00/oz, and USD8.50/oz, respectively.

ETFs and commodity indices

Since its launch approximately one year ago, the silver ETF has accumulated about 136moz of silver, providing a new source of demand without which the silver market would have been in surplus last year, according to our supply and demand estimates. Since the beginning of 2007, the ETF has acquired an additional 15.5moz, indicating a slowing from last year's levels, but still an impressive rate of off-take nonetheless.

Silver has benefited from the rise in gold prices



Source: HSBC, Reuters

Speculative interest in silver has dropped sharply

Source: HSBC, CFTC

Like the gold ETFs, we believe the interest in the silver ETF is due, at least in part, to wider investor interest in the commodities complex. Unlike gold, silver ETF investors have, until recently, had only one ETF product from which to choose.

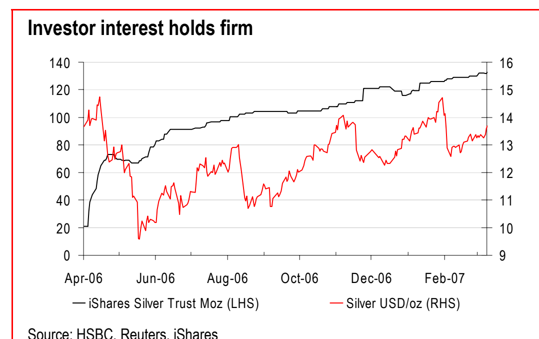
However, a second, silver ETF was launched by ETF Securities on the London Stock Exchange in April, and could attract additional investor interest. While it is too early to gauge the success of the new product, officials of ETF Securities are on record as expecting the new ETFs to attract USD100m each in the first 12 months. Assuming a silver price of USD13.00/oz, this represents over 7.5moz of potential, additional silver demand. We believe this to be a very modest figure, and would not be surprised if the ETF attracted much greater participation.

The very success of the ETF may be cause for concern, however. While the silver ETF has been remarkably firm despite periodic corrections in the silver price, we note that there was a drop (albeit temporary) in the holdings of the EFT earlier this year. In mid- to late January, the iShares ETF shed c6moz, about 5% of total holdings; although it quickly recouped the losses, the decline was the first notable drop in off-take since the product was launched.

Moreover, we believe it may be more vulnerable to a correction than the gold ETFs, for several reasons. The silver ETF accounts for a far greater proportion of the silver market than the corresponding gold ETFs. The holdings in the silver ETF now equate to about one-fifth of mine output, over 90% of photographic demand, and over half of jewelry demand. Note that the holdings in the gold ETFs represent a far smaller share of the total market. The sheer scale of silver ETF holdings makes the market vulnerable should there be a shift in investor sentiment.

However, a mass exodus out of the silver ETF is unlikely, in our view. We believe the silver ETF investors to be long-term strategic investors that can be divided into two, broad categories. The first consists of pension funds that seek portfolio diversification and may wish to allocate resources to commodities. The second group is composed of high net-worth individuals who may have been previously reluctant to invest in silver because of the costs and complications of physical ownership.

Investor interest holds firm



Source: HSBC, Reuters, iShares

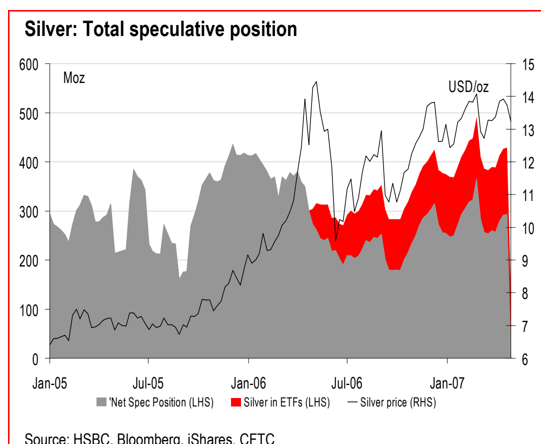
The silver ETF was launched as mine supply was increasing and jewelry demand was contracting (both the result of rising prices). Consequently, the ETF absorbed silver that would otherwise have accumulated as excess stocks, and would have likely weighed on the price. As mentioned, should investor sentiment shift for any reason, leading to a period of sustained ETF liquidation, prices could fall sharply. Moreover, outright liquidation may not even be necessary for silver prices to weaken. If the ETFs fail to attract sufficient investor demand the market could move back into surplus, pushing prices lower.

Silver occupies a relatively small place in the commodity-linked indices. While no hard data are available, using widely accepted industry estimates, about USD120bn was invested in commodity-linked investments when commodity prices were at their May 2006 highs. We estimate that silver accounted for c24moz of this, based on its relatively small weighting. Assuming disinvestment of USD30bn last year in the

indices, this would have resulted in net liquidation of about c7.1moz of silver. Since the beginning of this year, an approximate USD20-30bn has flowed back into the indices, which we estimate would translate into about 4.5moz of additional silver demand. While these are relatively small sums, we are forecasting a modest surplus of 24moz this year, and even small changes in demand due to the commodity-linked indices could move the market back into deficit.

The relatively steady performance of the ETF stands in contrast with the more volatile trading patterns on the Comex. Typically, trading on the Comex is short term in nature, with investors moving in and out of positions quickly. As we can see from the chart below, the combined net longs on the Comex fell from a high of 436moz in December 2005, to a low of 179moz on 10 October 2006. Since then, the most recent high was 365moz at the end of February, with positions falling to 268moz as of 1 May.

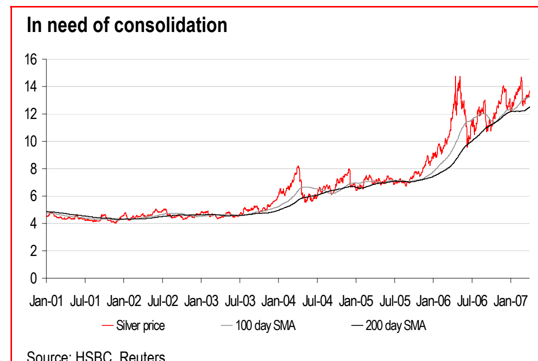
Silver: Total speculative position



Source: HSBC, Bloomberg, iShares, CFTC

On a technical basis silver is holding above its 100- and 200-day moving averages. The market faces upside resistance at the old highs just below USD15.00/oz.

In need of consolidation



Source: HSBC, Reuters

Trends in supply and demand

Mine supplies increasing

High prices are finally translating into significantly higher new mine production, which we forecast will rise by at least 20moz this year, to 664moz. Mine supply is rising in both primary silver mines and as a by-product from gold and base metals mines.

While last year's increase in new mine output of c4moz can be described as disappointing, a closer inspection of events paints a more positive picture. The temporary suspension in production at the Canington mine in Australia (for maintenance and repairs) took a substantial portion of global production off the market in 2006. Canington produced c47moz in 2005 and the drop in output last year may have accounted for over one-third of production, or c17.5moz, according to the company. Moreover, the losses at Canington were more than offset by increases elsewhere.

Mexico and Peru remain the world's largest silver producers. Company data show that Peru's silver output rose 8.5moz in 2006, based on increases from Colquijirca (El Brocal), the three mines – Ares, Arcata, and Selene – operated by Hochschild, Volcan's Yauli mine, and Fortuna Silver's reactivated Caylloma mine. Increases in those operations more than offset modest declines in output at other mines, such as Buenaventura's Uchucchacua operation. Mexican production rose

notably in 2006 with increasing production from both Peñoles and Grupo México.

We expect production to rise again this year. Even a partial recovery in Canington, which can be reasonably expected, will boost global production. In addition, Mexican output is likely to rise significantly this year. The CEO of Peñoles recently stated that output would rise at least 3moz this year, to 52moz. Grupo México's production should increase as well, according to CRU. In addition, the start-up of several other mines, including Ocampo, Alamo Dorado, Dolores, La Parrilla, and Cerro San Pedro, should add to Mexican silver production.

Other mines throughout the world are ramping up production wherever possible due to high prices. In Bolivia, output at the San Martín mine should increase after last year's industrial action. Smaller mining companies, according to CRU, also report favorable growth prospects, mostly in Latin America. We remain optimistic on Mexican production despite recent data from the National Statistics Institute (INEGI) showing a surprise drop in February production.

The key to increased silver supply, however, is the by-product recovery of silver from base metals mines. In addition to our supply and demand models for copper and zinc, other industry groups, including CRU, the International Lead-Zinc Association, and the International Copper Study Group, are forecasting substantially increased based metals output.

Other supply sources stable

Scrap supplies inelastic

One of the principal differences between the gold and silver markets is that the silver scrap market has been relatively inelastic in response to high silver prices. Historically, when gold prices rise markedly, substantial amounts of gold are mobilized and reintroduced to the market in a relatively short period of time.

This is not the case with silver, where scrap supplies appear unrelated prices. This is primarily due to the fact that small amounts of silver are held by many millions of households worldwide, thus making for a highly fragmented market. Scrap supply is thus more a function of available recyclable material, notably from the photographic industry. With the advent of digital technology reducing this component of supply, we see little change in scrap supplies. Significant amounts of scrap did appear on the silver market during the Hunt Brothers price run-up in 1980, but at far higher prices than is currently the case.

In our supply and demand model, we are estimating silver scrap will add 190moz to supply in 2007, a marginal increase relative to last year's figure of 188moz. We estimate silver would need to trade in excess of USD20/oz for a substantial period to attract new scrap supplies.

Official sector activity

Another feature that separates silver from gold is the lack of significant levels of government stocks. According to the Silver Institute, India and China, along with Russia, account for most of the world's government sales. Traditionally, government sales have been price-sensitive. Given current high prices, we expect last year's sales levels, at 70moz, to be repeated this year. However, we do not discount the possibility that government sales may decline if stock levels – which are not disclosed to the public – are lower than are generally believed.

Hedging…what hedging?

Producer hedging remains almost negligible and we see no evidence to convince us that this might change. The small amount of hedging that might be done would be tied to project financing and should have little market impact, in our view.

Moreover, lease rates in silver remain tight, further reducing the attractiveness of hedging. We have factored 5moz of hedging supply into our model.

Fabrication and jewelry demand

Although industrial and decorative applications have replaced jewelry as the principal source of demand, silver for adornment and related purposes is still an important component of silver demand. Jewelry consumption – unlike other forms of silver demand – is reasonably responsive to price movements, and especially to price volatility. High and volatile prices are the overriding reason for the decline in demand in recent years. Demand from other sectors, such as industrial demand, tend to be more a function of aggregate industrial demand, rather than the silver price.

Given similar price trends to last year's, and less-than-enthusiastic comments from jewelry manufacturers regarding demand, we estimate that silver jewelry demand this year will fall slightly (c5moz, or c2%) with respect to 2006. It is possible, however, that demand will at least remain flat, as higher income levels in the emerging world support off-take. Outright gains in demand, should they materialize, will be modest (c3moz, at most), in our opinion. Silver jewelry, while winning some market share from gold due to the price differential, lacks the lavish promotional support from which advertising campaigns for gold and other forms of jewelry benefit.

Industrial demand is a crucial component of silver usage and accounts for almost half of all fabrication demand. Due to its chemical properties, silver also has increased uses in a number of bio-science and other applications, according to reports from the Silver Institute. Steady growth in global industrial production is bolstering silver demand in certain end-use markets. However, industrial consumers, where possible, are reducing their consumption of silver and, in some cases, increasing their use of base metals. HSBC forecasts that industrial production will grow 5.0% this year and 4.9% in 2008, which supports our estimate of a small increase (to 430moz) in silver demand for industrial uses.

Given that industrial demand for silver is relatively inelastic, at least in the short run, the metal freed up by declining jewelry demand has helped limit the size of the supply/demand deficit, thereby helping to restrain price advances.

Other components of fabrication demand are not buoyant. The steady rise of digital photography is hurting this source of silver demand, but given the level of market erosion, it is possible that demand in this category is bottoming out, as digital cameras will not entirely replace traditional photography. Anecdotal evidence from the coin industry implies that high prices have reduced demand, with some coins being sold back into the market as owners take advantage of higher prices.

Conclusion: Potential problems

Rising mine production, in our view, will lead to increased silver supply. Meanwhile, physical demand will likely remain sluggish at current high prices, we believe. In our opinion, investor interest will remain the principal driver of prices. Should investor interest flag, prices may come under pressure and leave silver vulnerable to a correction. Changing investor sentiment could reduce ETF holdings and/or speculative long positions on the Comex. Continuing off-take in the ETF is crucial if current price levels are to be maintained, in our view.

HSBC

Supply/demand balance in silver (million ounces)

	2000	2001	2002	2003	2004	2005	2006e	2007e	2008e
Mine production	587	612	607	611	634	640	644	664	695
Official sector sales	75	72	55	88	62	68	70	70	70
Old silver scrap	180	182	187	184	181	187	188	190	180
Hedging	0	19	0	0	2	15	5	5	0
Total supply	**842**	**885**	**849**	**883**	**879**	**912**	**907**	**929**	**945**
Fabrication									
Industrial and decorative	375	336	340	351	367	409	425	430	425
Photography	218	213	204	193	181	165	148	138	130
Jewelry and silverware	278	287	263	274	247	250	225	220	250
Official coins	33	31	32	36	41	41	45	42	41
Total fabrication	904	867	839	854	836	864	843	830	846
Exchange traded funds	0	0	0	0	0	0	121	75	50
Hedging	27	0	25	21	0	0	0	0	0
Total demand	**931**	**867**	**864**	**875**	**836**	**865**	**964**	**905**	**896**
Market balance	**-89**	**18**	**-15**	**8**	**43**	**47**	**-57**	**24**	**49**
Market balance ex-govt stock sales	**-164**	**-54**	**-70**	**-80**	**-19**	**-21**	**-127**	**-46**	**-21**
Price USD/oz	**4.95**	**4.37**	**4.6**	**4.88**	**6.66**	**7.29**	**11.55**	**12.55**	**10.25**

Source: HSBC, CRU International, GFMS

HSBC

Platinum

- If successful, the new platinum-based ETFs could keep the market in deficit
- Autocatalyst demand, coupled with environmental concerns, assure rising platinum demand; mine output trying to keep pace
- High prices, however, continue to erode jewelry demand

The theme is green

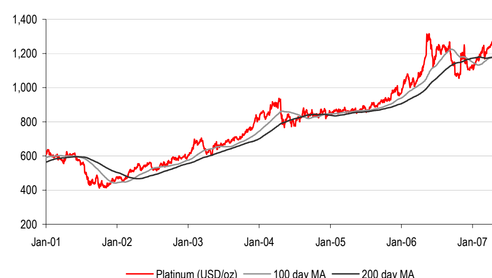
Platinum prices have moved steadily higher since the beginning of the year, considerably outpacing gains in the other precious metals. After holding above USD1,100/oz in early January, the market went on to trade at a record high of USD1,340/oz in early May. In addition to garnering support from the commodities boom, platinum is also benefiting from increased investor interest due to its perceived status as a "green metal," given its applications in autocatalysts and fuel cells. The announced launch of new ETF products, which offer exchange-traded ownership of platinum (backed by physical metal) for the first time, further tweaked investor interest.

Beyond the impact of increased investor interest, the platinum rally appears firmly rooted in bullish supply/demand fundamentals, in our view. While concerns of a slowdown in the US automotive industry are well founded, auto production abroad is more than offsetting declines in North America.

The center of gravity in automobile production continues to shift to the Far East; the China Association of Automobile Manufacturers, for example, is forecasting automobile production growth of close to 14%pa for the next 15 years. In 2006, according to Johnson Matthey, Chinese light duty vehicle production increased 29% with respect to 2005.

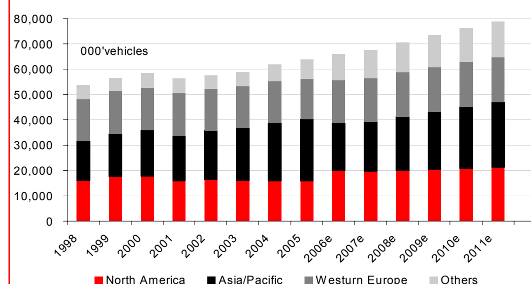
This seemingly insatiable demand for platinum from the auto makers should lead to ongoing strong demand, in our view. In addition to autocatalysts, platinum is a necessary input in oil refining, glass production, and the manufacture of certain electronic goods and chemical products.

Platinum remains in a technical bull market



Source: Reuters

Automobile production forecasts



Source: HSBC

HSBC

According to the Platinum Guild, platinum is a component – albeit, sometimes a small one – in one out of five consumer goods. We believe that strong growth in global industrial output, which economists at HSBC believe will continue this year and next, should underpin firm industrial demand for platinum.

Platinum is in the midst of a technical bull market, in our view. It is trading well above the long-run 100- and 200-day moving averages. It recently broke over new highs at USD1,330/oz. The nearest major chart support, should the market retrace, is USD1,250/oz. On the upside, the market is now in uncharted waters, but we believe USD1,400/oz (due to the fact that it is a round figure) presents the first major upside resistance.

Trends in supply and demand

Finely balanced market

The underlying supply/demand fundamentals in the platinum market continue to be finely balanced, in our view. We estimate that the market was in a very mild deficit of 39,000oz for 2006, having widened slightly from a deficit of 20,000oz the year before. The fact that deficits have remained modest in the face of demand growth averaging c5%pa implies that production has managed to keep abreast, but not overtake, demand growth. However, if the new platinum-based ETFs are even modestly successful, the market could experience an even greater deficit this year and next. Further losses in jewelry demand, due to higher prices, may help keep these deficits manageable.

An important assumption in our model is that above-ground stocks have been materially depleted. While precise levels of above-ground stocks are not available, inventories are known with reasonable certainty to have fallen by more than 2moz since 1999. It is only by tapping into these above-ground stocks that the market balance has been achieved over the past few years. The market's volatile reaction – as measured by rising lease rates – to any real or imagined supply shortages provides further evidence, we believe, of the paucity of inventories.

While the probable levels of deficit – or surplus – are likely to be relatively small, even a small change in the supply/demand balances in platinum have the power to move prices sharply. In recent years, platinum prices have climbed steadily higher despite accruing only small deficits.

The continued suspension of exports from Norilsk, due to delays in obtaining the required export licenses from the government, did not result in a shortfall in supply. The company has assured the market that all contracted deliveries were being met, presumably by running down stocks held outside of Russia.

South African producers, meanwhile, continue to ramp up output, but face a host of challenges, and supply increases have generally been lower than some of the company's original projections.

Autocatalyst and industrial demand

Despite HSBC's expectations of a slowdown in the US economy and the well publicized challenges facing the US auto industry, autocatalyst and other industrial forms of demand for platinum remain strong. Autocatalyst demand is the single largest demand component of platinum, by our estimates accounting for just over half of all demand (a level held by jewelry as late as 2000).

The latest estimate for autocatalyst demand for 2006 from Johnson Matthey is 4.38moz, which, based on strong auto demand, was likely achieved, in our view. This represents a significant 14.6% increase in platinum demand for autocatalysts relative to 2005. We are estimating gross demand for platinum in autocatalysts will total 4.6moz in 2007, with a net autocatalyst

demand of 3.75moz after factoring in 850,000oz recovered through recycling.

Platinum demand will be aided by two key factors going forward, in our view: the implementation of stricter emissions standards and increasing vehicle production worldwide, especially diesel automobile and light truck production. The ongoing implementation of Euro 4 emissions standards in Europe and the increased application of particulate filters in vehicles have boosted platinum demand noticeably. While platinum demand for gasoline engine autocatalysts is edging lower, demand is increasing markedly for diesel engine autocatalysts (for both passenger and commercial vehicles).

According to HSBC's automotive analysts, US auto production is forecast to stabilize this year at 19.75m units, after declining from 20.32m units in 2006, but these losses will more than likely be offset by production gains in other regions. Vehicle production in the Asia-Pacific region is forecast by HSBC analysts to increase by 5% this year, to 19.66m units. Vehicle output is forecast to edge lower in Western Europe this year, to 16.93m units (a decline of 1.2%), but Eastern European production is forecast to jump nearly 11% this year, to 5.0m units. Some of this increase is the result of the transfer of manufacturing plants from Western to Eastern Europe, and therefore does not reflect a drop in demand for vehicles by Western European consumers.

Our automotive team also expects vehicle production to rise further in Latin America, Africa, and the Middle East. On aggregate, vehicle production in 2007 is forecast by our team to rise by 2.3% this year, to 67.64m units. For 2008, our analysts forecast global vehicle production will rise even more rapidly, to 70.56m units. Gains in 2008 are expected to come from the Asia-Pacific region, which we forecast will outpace North American vehicle production for the first time ever. Chinese and Indian production – while admittedly small –is forecast to grow rapidly.

The outlook for increased auto demand is based on encouraging global economic forecasts, in particular projected gains in global income. World Bank economists estimate that an annual income of USD11,000 is the level at which individuals have the necessary income to purchase big ticket consumer items, including basic autos. At the same time, the World Bank has identified an income bracket between USD7,000 and USD12,000 (called "the world's middle class") as the fastest growing in the world.

Meanwhile, North American, including US, production is forecast by HSBC's automotive analysts to recover in 2008 as the domestic industry restructures.

As discussed in our previous report (*Precious Metals Outlook 2007: Higher Still*, HSBC Research, January 2007), the adoption of stricter emissions controls in the US, with the implementation of the US Tier 2, and in Europe, with the implementation of Euro 4, standards, imply that demand for use in autocatalysts will remain robust. Europe introduced Euro 4 regulations in 2005, a move that is increasing PGM usage, as autos produced before the more stringent standards were introduced come off the road. Also, some auto makers in Europe are preempting further tightening by raising standards unilaterally.

Despite US emissions legislation being the most stringent in the world, standards may become even tighter. The recent Environmental Protection Agency (EPA) carbon dioxide ruling by the Supreme Court may have some impact on the PGM market, in our view. Recently, the Supreme Court decided that CO_2, as a greenhouse gas, is

incontrovertibly an air pollutant that endangers the public welfare as defined by the Clean Air Act. Further, the Court ruled that the EPA has the statutory authority to regulate greenhouse gas emissions from new vehicles. Previously, the EPA argued that it did not have the legal authority to regulate gas emissions. The EPA must now, in light of the ruling, reconsider its decision not to regulate vehicle emissions of CO_2, in our opinion.

These findings reversed an earlier Court of Appeals ruling that stated that the EPA did not have the authority to regulate emissions. However, no immediate action is required by the EPA on emissions regulation. Also, the timing of any subsequent action must, according to the ruling, "permit the development and application of the requisite technology, giving appropriate consideration to the cost of compliance." This allows the EPA some leeway in the timing and nature of its response to the ruling, in our view.

The Supreme Court's decision may provide added momentum to the push for diesel autos, which are seen as cleaner than gasoline-fuelled autos. This is partly because many diesel passenger vehicles meet the Tier 2 Bin 5 emissions limits, which are stricter than the standards set for gasoline vehicles. It also seems likely to us that the ruling could be an additional spur for US auto makers to broaden their diesel product lines in compliance with Tier 2 Bin 5 emissions standards.

Since these diesel product lines require greater platinum usage, they may, therefore, tighten platinum supply/demand balances. Thus, an important question for the likely level of platinum demand growth in the next several years is the degree to which the US consumer is likely to switch to diesel engine vehicles. If anything like the success of diesel models in Europe is ever replicated in the US, platinum demand could begin to displace palladium demand from the North American auto producers (North American palladium demand totaled c1.47moz in 2006, according to Johnson Matthey). To date, however, US consumers have not embraced diesel-powered autos, which currently account for only 3-4% of the US market.

The ruling may also give impetus to the marketing of alternative fuel vehicles, which also tend to have greater platinum usage. However, it is also possible, in our view, that the ruling helps reinforce the trend towards smaller and lighter vehicles that, due to their size, require lower platinum loadings in the autocatalyst than heavier vehicles. However, any further reduction is likely to be very small, as platinum already accounts for a small proportion of the PGMs used in gasoline engine catalytic converters (often just 0.6-0.7g per vehicle).

With criticism mounting for its poor record on the environment (according to *The Economist*, 16 of the 20 most polluted cities in the world are in China), Chinese officials have begun to take action. Among the government's initiatives is a mandate that all new cars sold in China meet Euro 3 emissions standards in 2007. Although less stringent than Euro 4 (which allows a maximum of 1.0g/km of CO for petrol engines, compared to Euro 3 at 2.3g/km) this is an important step.

This comes at a time when Chinese auto demand is growing rapidly. According to the China Association of Automobile Manufacturers, car sales in China in the first half of 2006 climbed almost 50% year on year, to 1.8m. This follows on the heels of 21.4% growth in car sales for 2005, with sales of luxury cars doing particularly well. To put the growth in perspective, in 2005, there were 20m cars in use in China. By 2020, the China Association of Automobile Manufacturers estimates that there will be 140m, an annual growth rate of almost 14%. The main restraint on auto demand is not so much income and affordability as lack of infrastructure, such as roads, parking, and easy access to petrol stations.

The projected increase in vehicle sales has led to even greater concern over the level of Chinese emissions of greenhouse gases. In a report released in April 2007, the IEA estimated that China will overtake the US as the world's biggest source of greenhouse gases this year. This was originally expected to take place in 2010, but its "sizzling" economic growth has pushed the date forward, IEA chief economist Fatih Birol said in a recent interview in *The Wall Street Journal*.

The Chinese authorities may not be able to control effectively levels of pollution, however. Elizabeth Economy of the US Council on Foreign Relations wrote recently that Chinese officials are either unwilling or powerless to enforce environmental standards as a consequence of the regime's emphasis on development. Auto emissions, however, may be one factor that the authorities can control.

Matched against this increased demand is the traditional response from the auto makers, who continue to search for substitutes to platinum in autocatalysts. While no meaningful breakthroughs have been reported, the industry continues to thrift wherever possible, partially offsetting demand increases.

Autocatalyst recovery increasing, but below expectations

The recovery of platinum from spent autocatalysts remains an important source of secondary supply. Supplies have not been as high as hoped, however, as fewer autos than expected have been recycled. Johnson Matthey estimates about 830,000oz was recovered from spent autoctalysts last year. While we are estimating a modest gain this year, adding 850,000oz to supplies, the fact that new model cars have a longer life span than earlier models is keeping spent auto recovery levels lower than forecast by the industry.

Jewelry: Not at any price

In contrast to automotive and industrial demand, jewelry consumption continues to shrink as consumers react to high prices. Jewelry's share of total platinum demand has dropped from 50% in 2000 to just over 26% in 2006. A positive side effect of reduced jewelry demand is the release of much-needed metal to the auto and industrial markets. Without the benefit of this additional supply, existing supply/demand balances would be even tighter and – based on our supply and demand model – the market would move into a substantial deficit.

Jewelry is the only major component of platinum demand that is highly price elastic, and demand continues to contract in the face of high prices. This is particularly important in the key Chinese market. China's retail sales of platinum jewelry increased from several million dollars to USD2.9bn per year between 1995 and 2005. According to Sun Fengmin, the secretary-general of the Chinese Jewelry and Jade Association (CJJA), China consumed more than 60t of platinum for jewelry in 2005.

But the market began to shrink in 2006. In the first three quarters of 2006, platinum's sales decreased by 27.2% in volume and by 8.1% in value, due to platinum's lofty price. High prices have curbed Chinese jewelry demand more than in any other region. Given that prices have risen even further this year, we anticipate an ongoing contraction in Chinese jewelry demand. Of the 190,000oz reduction in platinum jewelry demand we forecast for 2007, over three-quarters of the decline is expected to be in China.

Even in the less price-sensitive, mature markets, record-high platinum prices are reducing demand in response to high prices, according to Johnson Matthey, and further declines can be expected this year should prices remain high.

The impact of changes in jewelry demand, particularly Chinese demand, should not be discounted. Chinese demand is effectively the swing factor in the global platinum supply and demand balance. Without a reduction in Chinese jewelry demand in recent years, the platinum market would have experienced much greater deficits. In years of low prices, Chinese demand expanded, thereby absorbing excess metal. Therefore, Chinese price sensitivity has played, and will likely continue to play, we believe, a balancing role in the market.

Investment: The ETFs cometh

One of the differences between platinum and the gold and silver markets is the (traditionally) smaller investment market. We believe investment demand accounted for no more than 15,000oz in 2005, and may have fallen in 2006 in reaction to higher prices. This may be about to change as two, new platinum-based ETFs are now being offered, and could potentially lead to significant growth in speculative demand. One of the platinum-based ETFs is being sponsored by Zürich Cantonal Bank, and the other by ETF Securities on the London Stock Exchange (the latter has also launched separate gold, silver, and palladium ETFs, as well as an ETF that is composed of a basket of the four metals).

The platinum ETFs are not without their critics, however. Anglo Platinum has voiced its determination not to supply platinum to the Swiss ETF. Trevor Raymond, senior manager of investor relations, said, “The reason why we as a producer are opposed to it is that it takes metal away from physical consumption and therefore would push the price up.” Mr. Raymond went on to elaborate, “To establish an ETF in platinum would be difficult given the shortness of supply and we do not believe any of the producers would support it.”

Mr. Raymond’s comments lend credence to our view that the platinum market remains tight, and slight changes in demand or supply can have a pronounced impact on the price. It also supports our contention that physical demand for platinum, with the exception of jewelry, is largely inelastic. It is also worth nothing that, although Anglo Platinum (and perhaps other producers) may choose not to provide metal to satisfy ETF-driven demand, there is probably not much they can do to prevent demand from being satisfied by other sources.

It is too early to tell how the platinum ETFs will fare. Recent data credits the ETF Securities product with accumulating 6,000oz of metal. However, given the tight supply/demand fundamentals inherent in the market, even a modest draw on metal could impact the market substantially.

Nik Bienkowski, head of listings at ETF Securities, is on record as stating that each ETF could attract USD100m in their first year. In the case of platinum, this is equivalent to nearly 77,000oz (assuming an average price of 1,300/oz). In a finely balanced market such as platinum, 77,000oz is theoretically sufficient to drive the market back into deficit, based on our estimates. We have estimated off-take from the platinum ETFs will total 150,000oz this year, and a deficit of 39,000oz. The overall level of ETF demand could well determine whether platinum remains in deficit for yet another year, or whether it finally achieves a surplus.

Although the ETF is something of a novelty, speculative investors on the Comex and TOCOM continue to view the metal favorably. Currently, the net long position on the Comex shows a marked buildup in positions consistent with bullish expectations. The net long combined position for data as of 1 May is the equivalent of 550,500oz, just edging over the record high set on

11 October 2005 of 547,950oz. That net speculative longs totaled only 100,300oz as recently as 31 January is testimony to the change in investor interest in platinum, we believe.

Supply races to keep up with demand: South African output crucial

We forecast strong output increases for South Africa for 2007 and beyond. However, given the intensity of demand growth, even substantial forecast production growth will be required to meet likely demand growth. If major industrial action can be avoided and other issues (such as reliable power supplies) resolved, South Africa has a good chance of increasing platinum mine supply by 5-6%, which is our current forecast. The management of Anglo Platinum has stated that 2007 production will be 2.8-2.9moz, in line with long-run production growth targets of c5% per annum.

But not all has been smooth sailing for the South African platinum producers. Impala Platinum's production in H2 2006 was down by 7.8%, to 545,000 ounces, as a result of a reduction in the ore mined and lower grade from the Merensky Reef. At the same time, work on the Wedza Phase V expansion project at Mimosa has started, which the company estimates will add 100,000oz pa in production during 2007. At Two Rivers, the joint venture between Implats and African Rainbow Minerals, management expects full annual production of 120,000oz of platinum in concentrate to be reached by the end of this year.

Implats' growth plan to achieve an eventual 2.8moz of platinum pa, from current production of 2.0moz pa, will be aided by its purchase of African Platinum, according to CEO David Brown.

Lonmin, the world's third-biggest platinum producer, reported it had a difficult March quarter, with sales falling by 35%, but company officials maintained that the producer remains on target to produce between 980,000-1moz of platinum for the year to 30 September 2007. CEO Brad Mills has indicated that the company had stored 185,000oz in a stockpile while Lonmin's Furnace One was being rebuilt, and that this material would be processed by the end of September.

Emphasizing the impact of increasing costs, Lonmin chief strategic officer Ian Farmer said that new projects need a platinum price of at least USD1,000/oz to be economically viable. Higher project capital expenditures, rising costs, longer lead times, and the scarcity of managerial, technical, and skilled labor are also challenges being faced by the platinum mining companies.

Striking potential

South African production could be upset if industrial action breaks out on a wide scale. Stoppages occurred last year and disputes recently hit Implats. Northam recently experienced a 10-day strike that led to production losses averaging 1,100oz of PGMs per day, according to company officials.

We expect all attention will soon focus on the biennial round of wage negotiations between the Chamber of Mines and the various mineworkers' unions, set to begin at the end of June (and which will fix wages for a two-year period beginning 1 July 2007). Given the posturing thus far by the industry and the unions, we expect this year's negotiations to be difficult.

Mineworkers unions in South Africa said in April that they would be demanding double-digit increases for workers in the gold sector – as high as 15%. This implies that the unions may seek even larger increases in the platinum sector, as union officials claim soaring prices and record-high profits entitle workers to a greater share of revenue.

Previous offers by producers have been in the single digits, and the possibility of widespread

industrial action, should the unions' claims not be met, cannot be dismissed. If strikes do break out, prices could move materially higher, especially if the platinum ETF is coincidentally absorbing metal.

From Russia, with love…and delays

Russian platinum production is now well below the 2003 high of 1.3moz, partially due to the depletion of placer operations. Norilsk produced 752,000oz in 2006 and aims to produce between 700,000-750,000oz this year. However, Q1 2007 production fell to 169,000oz (compared with 184,000oz in Q1 2006). We are estimating total Russian output of 890,000oz for this year.

In our last publication, *Precious Metals Outlook 2007: Higher Still*, we discussed the ongoing delays affecting platinum exports from Norilsk Nickel. Although President Putin signed measures abolishing quotas and authorizing the resumption of exports, exporters were still required to obtain licenses from the Economics Ministry before they could ship metal.

It was not until the end of April that the Russian news agency Tass reported that Norilsk had finally obtained licenses to export platinum and rhodium. Palladium exports were not affected, as Norilsk was previously granted licenses that are valid until year-end 2008. In April, Norilsk said it had and would continue to honor all platinum and rhodium supply contracts, despite the delays in securing its export licenses. We believe that Norilsk met its commitments by running down stocks held outside of Russia.

It may be premature to jump to the conclusion that exports will commence immediately from Russia, as further details are not yet available. Assuming that to be the case, however, the fact that platinum prices did not retreat on this ostensibly bearish news may be an indication that Norilsk will simply use that metal to replenish its offshore stocks.

Conclusion: Widespread support for higher prices

Platinum is in a unique position given increasing environmental awareness by governments and the industry, as well as the ongoing global industrial expansion. Platinum performs a vital role in curtailing auto emissions, with no sign of a viable commercial substitute or alternative process on the horizon. It is also an important component in oil refining and a range of other industrial processes.

Forecast gains in auto production and other types of industrial growth should lead, in our view, to greater platinum off-take in the coming years. The bulk of platinum usage is driven by current and future legislation that limits the emission of greenhouses cases. Therefore, most platinum demand, with the exception of jewelry, is highly price-inelastic. This explains how the market can tolerate considerable price hikes with little apparent change in demand.

Mine supply, while expanding vigorously, is not projected to overtake demand growth, based on our estimates. Recently launched ETF products have the potential, if successful, to move the platinum market back into deficit. Historically, platinum prices have been highly responsive to even relatively small changes in supply and demand. The possibility of industrial action this year, if upcoming wage negotiations do not go well, could lead to even further price appreciation, we believe. Should prices retrace, for whatever reason, auto makers and other end users of platinum may be quick to restock. Thus, we believe that price downside is limited.

A market poised to move back into deficit leads us to raise our 2007 platinum forecast to USD1,305/oz (from USD1,225/oz), our 2008 forecast to USD1,250/oz (from USD1,150/oz), our 2009 forecast to USD1,150/oz (from USD1,050/oz), and our long-term price to USD1,100/oz (from USD9,00/oz).

HSBC

Platinum supply and demand balance (000 ounces)

	2000	2001	2002	2003	2004	2005	2006e	2007e	2008e
South Africa	3776	4173	4498	4635	4975	5,115	5,430	5,700	5,932
Russian production	900	910	900	880	880	890	895	890	900
Russian stock draw	200	390	80	170	-30	0	0	0	0
Russian sales	1100	1300	980	1050	850	890	895	890	900
North America	266	344	389	294	359	365	365	365	375
Others	105	110	150	225	240	280	310	270	270
DLA	125	51	88	0	17	13	0	0	0
Total supply	5372	5978	6105	6204	6441	6,663	7,000	7,225	7,477
Autocatalyst gross	1840	2435	2830	3300	3505	3,820	4,380	4,599	4,783
Recovery	-470	-520	-565	-650	-705	-770	-830	-850	-850
Net autocatalyst	1370	1915	2265	2650	2800	3,050	3,550	3,749	3,933
Chemical	295	290	325	320	325	325	345	350	345
Electrical	455	385	315	260	300	360	425	440	400
Glass	255	290	235	210	290	360	325	315	315
Jewelry	2830	2590	2820	2505	2160	1,965	1,740	1,550	1,600
Petroleum	110	130	130	150	150	150	185	200	220
Investment	-60	90	80	15	5	15	-30	15	15
ETF	0	0	0	0	0	0	0	150	125
Other	375	465	540	460	455	465	480	495	515
Total demand	5630	6155	6710	6565	6530	6,690	7,020	7,264	7,573
Market balance	-258	-177	-605	-361	-89	-27	-20	-39	-96
Inventory build by auto cos.	100	150	-330	-70	0	0	0	0	0
Real market balance	-358	-327	-275	-291	-89	-49	-20	-39	-96
Platinum price (USD/oz)	545	530	539	692	846	897	1,139	1,375	1,275

Source: HSBC estimates, CRU International, GFMS, Johnson Matthey

HSBC

Palladium

- A successful ETF could narrow, but not erase, palladium's substantial surplus, in our view
- Auto catalyst consumption is positive and jewelry demand is rising, but Russian stockpile sales continue
- Palladium will remain dependent on other metals for direction, and could be the most vulnerable precious metal to a price correction

From vault to vault

Palladium rallied from a low of USD323/oz early in 2007, to a recent high of USD385.75/oz, before retracing modestly. Although physical demand is picking up and the inherent surplus in the market does not appear to be widening, these are sufficient reasons, by themselves, to sustain a palladium rally, in our opinion.

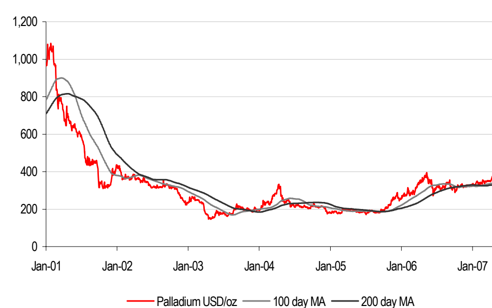
In addition to benefiting from the commodities boom, palladium is attracting investor attention by its association with the other precious metals, particularly platinum. In addition, the new ETFs in palladium, sponsored by Zuercher Kantonalbank in Zürich and ETF Securities on the London Stock Exchange, respectively, could absorb some surplus metal. Unlike platinum, however, we believe there are adequate, if not ample, palladium stocks to supply even a highly successful ETF. Thus, the outlook for palladium could well depend on the flow of metal from Russian vaults, to vaults in Zürich and London. This does not preclude the possibility that palladium can trade significantly higher in the near term on a euphoric reaction to continued increases in the platinum price or ETF off-take.

Demand trends

Autocatalyst demand

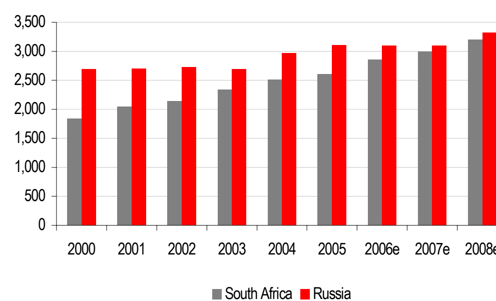
Last year, palladium demand for use in autocatalysts was at its highest level since the 1990s. By our estimates, demand increased nearly

An improving technical picture?



Source: Reuters

South Africa and Russia yearly mine production ('000oz)



Source: HSBC, CRU International, GFMS, Johnson Matthey

7%, to 4.14moz. Palladium benefited from substitution with platinum, particularly in North America, where gasoline-fuelled vehicles remain the norm. We believe, further gains are likely this year, but may be limited by weaker US auto production and the increasing preference for diesel vehicles over gasoline in much of the world.

After strong growth in 2005, demand for palladium in jewelry fell by 20% in 2006, to 1.12moz, according to Johnson Matthey. Demand should recover this year, primarily due to restocking in China, which could be significant, given the run-down in inventory. While Chinese consumption of palladium jewelry is likely to get a boost given the rise in the platinum price, palladium has conspicuously not made significant inroads into the Chinese jewelry market. High profile marketing campaigns rolled out in many Chinese cities do not appear to have triggered large-scale consumer purchases of palladium jewelry to date.

Supply remains abundant

Although output fell for some producers, supply continues to outstrip demand by a considerable margin. Although South African production in 2006 appears to have failed to top 3moz (by our calculations, it was closer to 2.85moz), we believe production will continue to increase. This is based on forecast increases in South African platinum production, which should yield a commensurate increase palladium supplies. Palladium production, however, could be affected if there is any interruption in platinum output.

Russian supplies of palladium dropped on a decline in stockpile sales in 2006. While Norilsk has unveiled ambitious plans to raise output of PGMs by 2015, there is no indication of an immediate increase in production in the near term. Overall, we estimate that global palladium production, excluding sales of Russian stocks, was 7.21moz in 2006. For 2007, we are forecasting global production to reach 7.35moz, an increase of only 140,000oz.

Russia stockpile sales ensure surplus

We believe Russian stockpile sales will keep the market in substantial surplus. Although sales dropped, according to Johnson Matthey, to 1.1moz in 2006, we believe substantial stocks remain, and Russian stockpile sales will remain a significant portion of world supply. Although we do not believe that Russian sales will deluge the market, steady sales are likely going forward, in our view. In the event of a sharp rally, Russian sales may increase, thereby limiting price gains.

Technical outlook improving

Palladium prices are slightly above the 100- and 200-day moving averages. While not necessarily inspiring, the technical outlook is positive. The recent high near USD400/oz presents the most significant upside resistance. Should that level be penetrated, the market could trade closer to USD450/oz, but we do not believe the fundamentals support such a price move. On the charts, the first downside support is USD350/oz, followed by longer-term support at USD320/oz. We believe the recent technical buying evident in the palladium market is a reaction to gains in other metals, as palladium is unlikely to inspire a rally on its own merits, in our view.

Conclusion: Dependent on others

Even accepting as price-friendly a scenario as is likely to occur – namely, a successful ETF, increased physical demand, and limited increases in supply – it is difficult to escape the conclusion that the market should remain in structural surplus as a result of ongoing Russian stockpile sales. We estimate the 2006 surplus at 1.16moz, almost identical to the level of Russian stockpile sales. Increased Chinese jewelry demand and auto off-

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Supply/demand balance in palladium (000 ounces)

	2000	2001	2002	2003	2004	2005	2006e	2007e	2008e
South Africa	1838	2048	2145	2338	2515	2,605	2,855	3,000	3,200
Russian production	2700	2703	2730	2700	2971	3,111	3,100	3,100	3,325
Russian stock draw	2575	1634	-870	250	1150	1,509	1,100	1,100	1,100
Russian exports	5275	4337	1860	2950	4121	4,620	4,200	4,200	4,425
North America	635	850	990	935	1035	905	955	975	1,000
Others	105	98	170	245	265	280	300	275	275
DLA	184	194	326	141	32	0	0	0	0
Total supply	8037	7527	5491	6609	7968	8,410	8,310	8,450	8,900
Autocatalyst: gross	5990	5220	4550	3990	3859	3,870	4,140	4,250	4,350
recovery	-230	-290	-370	-410	-535	-630	-805	-1,100	-1,100
net	5760	4930	4180	3580	3324	3,240	3,335	3,150	3,250
Electrical	2160	670	760	900	920	965	1055	1,000	1,020
Chemical	255	250	255	265	310	325	315	340	345
Dental	820	725	785	825	850	815	815	850	850
Jewelry	255	230	260	250	920	1,430	1,120	1,600	1,650
Other	60	65	95	140	290	485	210	300	300
ETF							0	250	200
Total demand	9310	6870	6335	5960	6614	7,260	6,640	7,490	7,615
Movements in stocks	-1273	657	-844	649	1354	1,150	1,670	960	1,285
Inventory build by auto cos.	-350	-100	-1500	-400	100	0	0	0	0
Real movement in stocks	-923	757	656	1049	1254	1,150	1,670	960	1,285
Palladium price (USD/oz)	682	604	337	200	230	202	319	370	340

Source: HSBC, CRU International, GFMS, Johnson Matthey

take may help lower the surplus to c960,000oz in 2007. While palladium is likely to benefit by association with the precious metals, its less-than-compelling fundamentals leave it vulnerable to a potential sell-off, in our view, should the wider precious metals rally falter.

Investors have also built substantial net long positions on the Comex. Net speculative long positions are up to 1.412moz, as of 1 May. This is the longest the market has been since 11 April of 2006, when it reached 1.74moz, and is up considerably from the 415,100oz level it fell to on 17 October 2006. Given the heavy long position evident in the market, and the fact that we do not find the fundamentals compelling, we suspect the market could be vulnerable to a downside correction.

We are raising our 2007 average palladium price to USD360/oz (from USD322/oz), our 2008 forecast to USD330/oz (from USD290/oz), our USD2009 forecast to USD320/oz (from USD295/oz), and our long-term outlook to USD300/oz (from USD275/oz). Although we believe that palladium will continue to run a significant supply/demand surplus, the new ETFs and anticipated high platinum prices may support palladium.

Notes

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Disclosure appendix

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