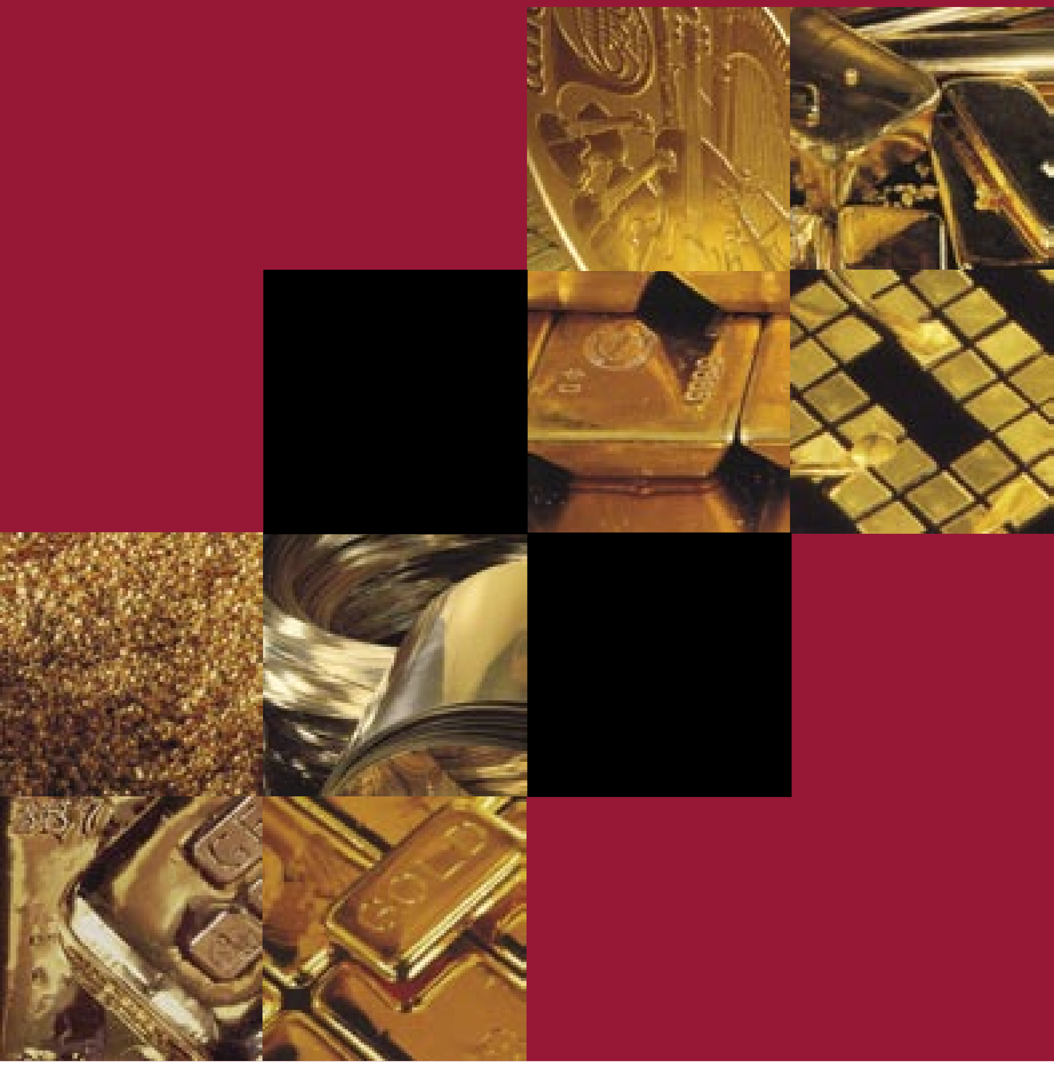
Global Hedge Book Analysis
Q3-2009



December 2009

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Contents

Key Points

- **Net producer de-hedging accelerated in the third quarter, with 3.18 Moz (99 t) removed from the global hedge book.**

- **This left the global book, at end-Q3, standing at 11.55 Moz (359 t) in delta-adjusted terms.**

- **A significant announcement came from Barrick Gold, who initiated a campaign to eliminate the entirety of its gold hedge book within a twelve month timeframe.**

- **The marked-to-market liability of the producer book contracted to negative $4.5 billion at end-Q3, an improvement of $1.7 billion from Q2.**

- **Producers' weighted average realised prices kept pace with the increase in the period average spot price, rising by 4% in Q3, to $943.81/oz for the subset of hedged producers studied.**

Composition of the Delta-Adjusted Global Hedge Book (end-period)

(Moz)	09.Q2	09.Q3	Change q-o-q
Forwards & Gold Loans	9.94	7.16	-28%
Options	4.79	4.40	-8%
Total	**14.74**	**11.55**	**-22%**

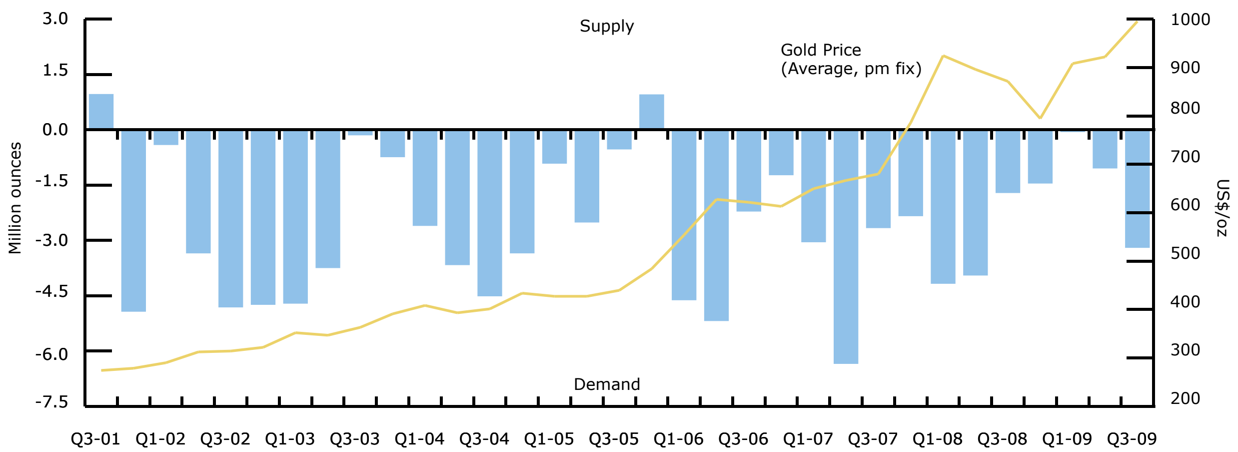
Note: Totals may not add due to independent rounding. Numbers are provisional and may be revised. At the time of going to press, some companies had not reported their hedge positions. In these cases, GFMS have made estimates.

Source: GFMS

Summary and Overview

The most important event with regard to the global producer hedge book in recent months was the announcement by Barrick Gold that it would be eliminating the entirety of its fixed price gold sales contracts within a 12-month timeframe. The third quarter represented the first three months of this period and consequently the company removed 2.50 Moz (78 t) of contracts. Barrick has also removed the balance of 2.9 Moz (90 t) in the fourth quarter to date. In combination with a cut from AngloGold Ashanti of 0.48 Moz (15 t), and smaller

Net Impact of Producer Hedging



Source: GFMS

deliveries from producers, global de-hedging was recorded at 3.18 Moz (99 t). This left the global hedge book standing at 11.55 Moz (359 t) at end-September. Interestingly, during the quarter we observed an episode of strategic options hedging by Sumitomo Metals & Mining. The company secured collar options positions, covering half its projected production from the Hishikari and Pogo mines, out to 2012 and 2014. These options do, however, carry low delta, resulting in only a 0.27 Moz (8 t) addition to the delta-adjusted hedge book.

As a consequence, the actual number of contracts on the book, expressed as the nominal hedge book volume, contracted by a lesser amount, as an increase in the number of recorded options contracts dampened the overall cut to the forward sales position. At end-September there were more options contracts recorded on the book than forward sales and gold loans.

The marked-to-market value of the book improved by $1.7 billion during the quarter, attributable to the reasonable reduction in the delta-adjusted book volume, while producers' weighted average realised prices rose by $40.22, closely in line with the rise in the period average spot gold price.

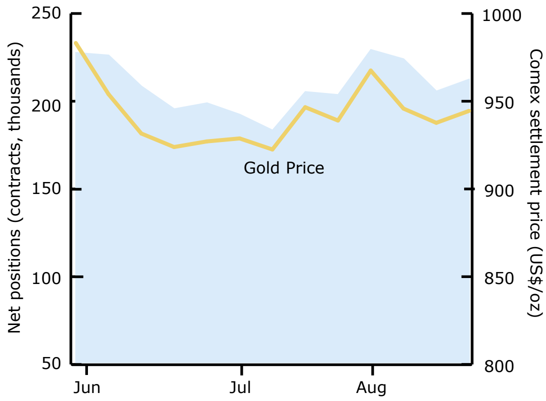
Given the activity seen in the first nine months of the year, and currently available information regarding the fourth quarter, GFMS estimates that during the fourth quarter the global hedge book volume will continue to be pushed lower, towards the 8.00 Moz (249 t) level. We caution, however, that even though the ever-decreasing volume of the book makes sustained strong de-hedging increasingly unlikely, it currently does not render it impossible, and we expect de-hedging to remain on the demand side of the market in 2010.

Market Commentary

Gold prices opened the third quarter at $938.25, before sliding almost uninterrupted to the period low of $908.50. For much of the quarter gold remained range-bound, in itself unremarkable for summer trading. The buoyant gold price during this period can be largely attributed to two factors. The first was the news in early September that Barrick Gold would be eliminating its hedge book, and that the first tranche (2.40 Moz, 75 t) had been removed prior to the September announcement. Secondly, speculative activity and technical buying in the futures market, rather than support from either physical investment or jewellery, benefitted the price. Investment into ETFs, for example, remained subdued compared to the September surge in net investors' long positions on COMEX, which grew to 287,610 contracts (895 t) on 22nd September. Indeed, September saw the beginning of a sustained bull rally, rising to the quarterly high of $1,018.50 (p.m. fix) on 17th September. The price comfortably remained above $990 until the end of the month.

Subsequent to quarter-end, the gold price has continued its upward march, to break successive record highs in short succession, though current

Speculative Net Positions in Comex Futures



* Combined non-commercial & non-reportable positions
Source: CFTC

trading prices remain well short of the historical high in real terms. Its ascent throughout the end of the quarter and beyond, driven by activity on COMEX, has been supported by a number of factors, including increased risk appetite in markets driving down the US dollar, and concerns over future inflation in the US.

Jewellery consumption remained weak during the third quarter, with high gold prices and economic uncertainty threatening demand for metal in many countries, and bullion imports into East Asia, the Middle East and India remaining weak, the one exception being China. Elsewhere Western jewellery fabrication also suffered continued weakness.

Official sector transactions appeared on the demand side of the market for the second quarter in a row, with the low level of metal released to the market by CBGA signatories proving central, rather than a wholesale return to net purchases. GFMS calculations suggest that the CBGA year just past was the lowest ever in terms of sale volumes, with only 154 tonnes sold during the year.

Looking at the supply side of the market, GFMS estimates that scrap volumes fell considerably in the third quarter, with total volumes remaining historically unremarkable. This was largely due to depletion of near-market stocks earlier in the year, and a reduction in distress selling in response to economic movements. In recent weeks we have not as yet observed a surge in scrap volumes in line with the US dollar price rise, mainly as there are some local expectations of further short term increases.

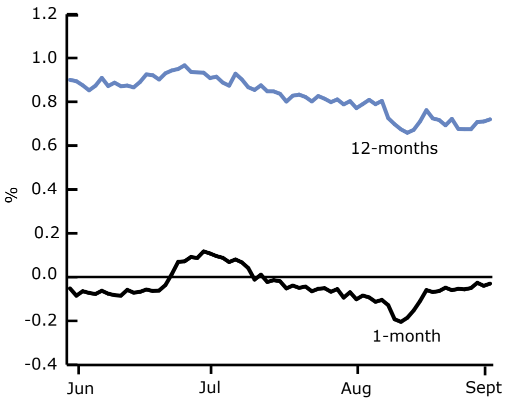
Mine supply is thought to have increased in the third quarter year-on-year, at a stronger rate than expected, with good growth seen in China, Indonesia, Russia and several African countries.

Prices (quarterly average)

	09.Q2	09.Q3	Change q-o-q
US$/oz spot	922.18	960.00	4%
US$ 12-mth	872.55	966.35	11%
Euro/kg	21,749	21,577	-1%
Yen/g	2,885	2,887	0%
TL/g	46.34	45.99	-1%
Rps/10g	14,577	15,125	4%
Rph/g	310,903	307,386	-1%
Rand/kg	250,367	240,696	-4%
A$/oz	1,211.50	1,152.01	-5%
Rouble/g	29,689	30,067	1%

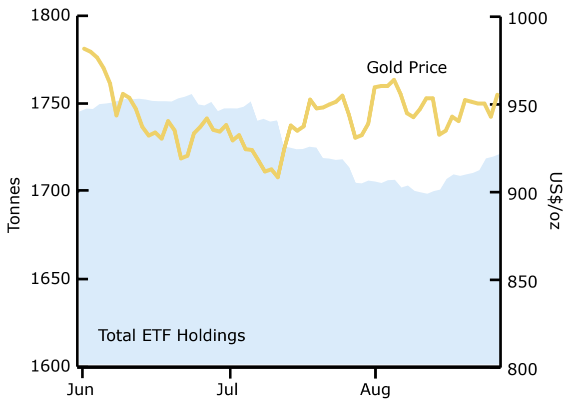
Source: Thomson Reuters EcoWin, GFMS

Leasing Rates (monthly average)



Source: Thomson Reuters EcoWin

Gold ETFs & Other Similar Products



Source: Thomson Reuters EcoWin, respective ETF issuers

Sensitivity of Q3 Options Book as of 30th Sept

Move in Volatility (%)	Move in Gold Price (US$/oz)				
	-200	-100	0	100	200
4	4.23	4.35	4.44	4.50	4.57
3	4.23	4.34	4.43	4.49	4.56
2	4.23	4.34	4.42	4.48	4.55
1	4.23	4.33	4.41	4.47	4.54
0	4.22	4.33	**4.40**	4.46	4.52
-1	4.22	4.32	4.39	4.45	4.51
-2	4.22	4.32	4.38	4.44	4.50
-3	4.22	4.31	4.36	4.42	4.49
-4	4.22	4.31	4.35	4.41	4.48

Source: GFMS, Brady Plc

Note: The matrix above shows the scope for changes in the delta-adjusted volume under different gold prices and volatilities.

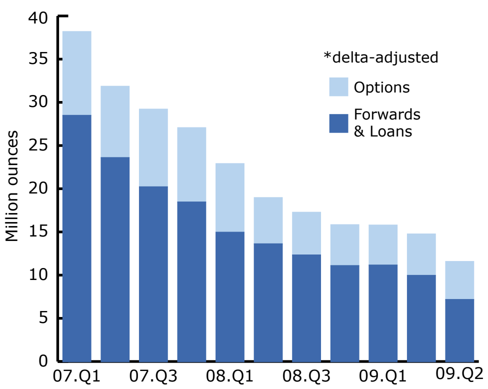
The delta-adjusted total options book at end-Q3 was calculated at 4.40 Moz, based on the end-Q3 gold price ($995.75/oz) and proprietary Société Générale market rates.

Composition and Sensitivity of the Global Hedge Book

At end-September the nominal (not adjusted for option delta) hedge book volume stood at 16.21 Moz (504 t), representing a reduction of 1.36 Moz (42 t) from the prior quarter. Of this total, 7.16 Moz (223 t) were forward sales and gold loans, while the net options position totalled 9.05 Moz (282 t). Interestingly, both the net call and net put positions increased quarter-on-quarter. This was due to a substantial collar options hedge established by Sumitomo Metals and Mining (see the company activity section). The forward sales component of the book did, however, continue to decrease, the most significant contribution being the reduction in Barrick Gold's forward sales. Both these factors mean that the volume of the options book, in nominal terms, is now larger than the volume of forward sales, whereas forward sales have historically been the larger component of the hedge book. The chart below illustrates the proportional split of the nominal book, by contract type, at end September.

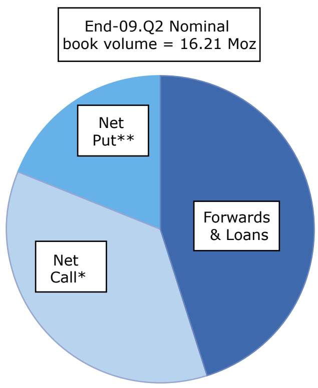
Turning to the headline delta-adjusted hedge book, this contracted by a more pronounced 3.18 Moz (99 t) quarter-on-quarter. Of this figure, the options book volume fell by 0.40 Moz (12 t), largely attributable to a reduction in the sold call position. The main reason for the disparity between the contraction of the delta-adjusted options book and the expansion of the nominal book is that the Sumitomo hedge position only carries low option delta. The wide spread in strike prices between the put options and the call options that constitute the collar, at around $1,000, means that both the put options and call options are strongly

Evolution of the Global Hedge Book Volume



Source: GFMS

Q3 Nominal Hedge Book Composition



* Sold calls, less bought calls
**Bought puts, less sold puts

Source: GFMS

Top (De-)Hedging Activity in 09.Q3

(delta-adjusted, spot basis)	% of gross:	Change
Company	**Hedging**	**(Moz)**
Sumitomo Metals & Mining	79%	+0.27
Avocet Mining	15%	+0.05
	De-hedging	**(Moz)**
Barrick Gold	71%	(-2.50)
AngloGold Ashanti	14%	(-0.48)
Xstrata	2%	(-0.06)

Note: Delta-adjusted volumes are calculated on the basis of published company data. As such disclosures are not exhaustive, the GFMS calculated position may not exactly correspond to the delta position reported by the company. In addition, GFMS value the contracts on a spot delta basis, whereas some companies report positions on a forward delta basis. This can lead to minor discrepancies between the calculated and delta-adjusted volumes. Where published data was unavailable, an estimate based on the scheduled expiry of contracts has been made.

Source: GFMS

out-of-the-money. The $61.25 increase in the end-quarter gold price had little effect on the book overall; excluding the new Sumitomo positions, the implied delta against the net put position remains just under 0.1, while the delta against the net call position remains at approximately 0.9.

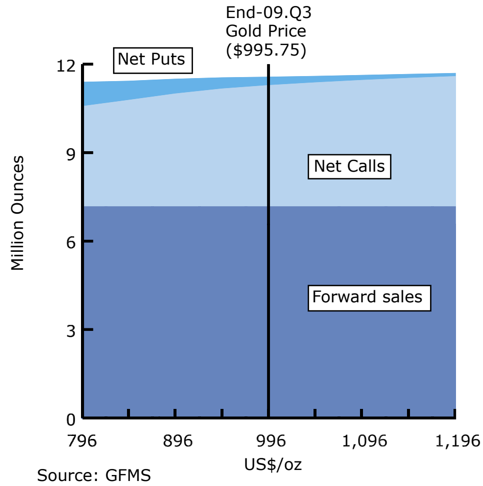
We have charted below the possible changes in the hedge book volume with projected price changes, in steps of $50. A $200 reduction in price would, all other things being equal, result in only a 0.18 Moz (6 t) reduction in the hedge book volume. Likewise, a $200 increase in price would only result in a 0.12 Moz (4 t) increase in the hedge book volume. This demonstrates that the hedge book has become marginally more insensitive to near term price changes. As we have highlighted in previous reports, the single most important factor governing the hedge book sensitivity remains the fact that a large part of the dominant component of the book (comprising sold call options which cap price upside) is heavily in-the-money.

Company Activity

De-hedging activity increased in the third quarter, with the most prominent (and well publicised) announcement in recent months being Barrick Gold's intention to eliminate its fixed price gold sales contracts. During the third quarter, Barrick reported a reduction of 2.50 Moz (78 t) to its fixed price gold sales contracts (closure of the company's floating priced contracts has no market impact). The company outlined a plan to eliminate the entirety of its fixed price hedges within a 12-month period, and completed the reduction in the fourth quarter, removing the balance of 2.90 Moz (90 t) within three months of the initial announcement.

AngloGold Ashanti continued the active management of its hedge book, removing the accumulated long bullion position, a large portion of which was accrued in the second quarter. Several tranches of US dollar-denominated forward sales contracts were reduced and reductions were also effected to the US dollar denominated sold call and sold put positions. These combined actions resulted in a net reduction to the delta-adjusted volume of AngloGold's book of 0.48 Moz (15 t), and left the company's hedge book standing at 3.93 Moz (122 t) at end-September.

End-Q3 Delta-Adjusted Position



Source: GFMS

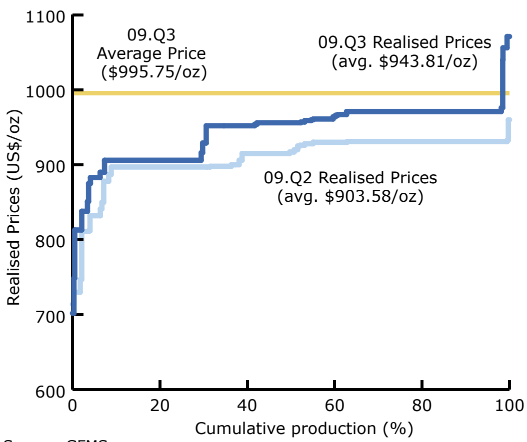
Together these two companies accounted for 85% of gross de-hedging activity during the quarter. The balance was made up of deliveries into maturing positions, rather than any meaningful accelerated reductions. The majority of companies possessing hedge books are comfortable either with the hedge book's existence, for project finance or revenue stability purposes, or are happy to simply run down the positions as they mature.

Small quantities of hedging activity continued in the third quarter and four companies were observed increasing positions. Firstly (and most importantly), Sumitomo Metals and Mining entered into a large zero cost collar position in order to provide a proportion of its precious metal production with long term price stability. The contracts protect approximately 50% of its annual production from the Hishikari and Pogo properties, the former through to June 2012 and the latter through to December 2014, at price floors of around $700 to a capped upside of $1,700 on average. However, the contract strike prices mean that when adjusted for option delta, this only amounted to a 0.27 Moz (8 t) addition to the global hedge book.

Following acquisition of Wega Mining, Avocet Mining increased its forward sales position by 0.05 Moz (2 t), while Exco Resources secured a A$16 million gold-linked debt financing facility for the construction of the White Dam Project and Couer d'Alene Mines increased their aggregate position slightly.

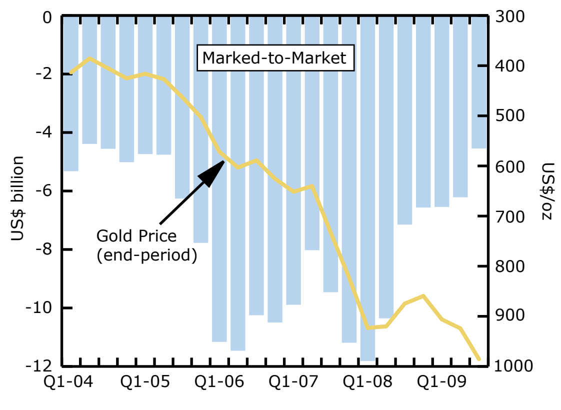
As would be expected due to the weighty cuts announced by Barrick, the mark-to-market of the hedge book improved by $1.7 billion quarter-on-quarter, to a negative $4.5 billion. This is despite a $61.25 increase in the end-quarter gold price used to value the hedge contracts and the trend of decreasing mark-to-market against a rising gold price can be seen in recent quarters on the chart below. In addition, producers' weighted average realised prices, for the subset of hedged producers studied, improved quarter-on-quarter by $40.22. This was in line with the increase in the period average spot price, which only increased by $37.82. It is also worth noting that the de-hedging currently being undertaken by Barrick will not directly impact its realised price in the short term, as the company's project gold sales contracts were not due for delivery for many years, so it was selling gold at spot prices anyway.

Realised Prices in Q3



Source: GFMS

Global Hedge Book Marked-to-Market

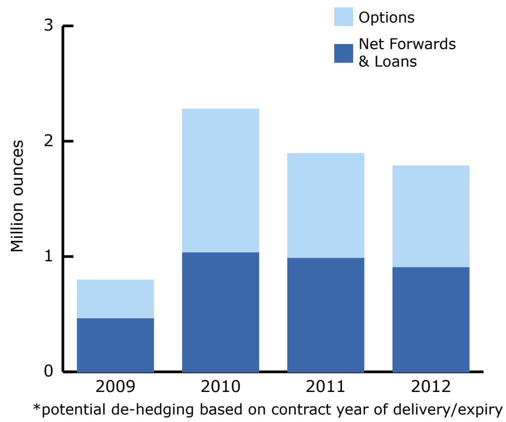


Source: GFMS

Outlook

Barrick's move to eliminate its fixed price forward sales has considerably changed the outlook for 2009 and beyond. Whereas three months ago, in the August report, we expressed the view that de-hedging in the third and fourth quarters could remain at similar levels to the first half of the year (with Barrick and AngloGold Ashanti as potential wildcards), we now expect that de-hedging for the full-year could reach around 7.88 Moz (245 t). De-hedging has picked up again in the three months to September. Barrick gold has already stated that it has completed the closure of its fixed price forward sales contracts, removing 1.00 Moz (31 t) in October, with the removal of the balance of 1.90 Moz (59 t) announced on 1st December, well ahead of the conclusion of the 12 month window.

Delivery Profile End-09.Q3 (delta-adjusted)



Source: GFMS

The delivery profile, charted opposite, indicates that there is 0.79 Moz (25 t) of contracts due to mature by end-December and, due to the large proportion of companies simply running positions to maturity, for the majority of companies we do not expect much deviation from the schedule. It should be noted that the delivery profile does not include unscheduled buy-backs, fresh hedging or the Barrick reduction.

Including the Barrick transactions, our provisional estimate of fourth quarter activity currently stands at 3.62 Moz (113 t). AngloGold Ashanti remains a candidate to undertake additional unannounced or unplanned de-hedging before year-end. We expect some limited hedging activity to materialise, with Nevsun Resources and Great Basin Gold being the most likely candidates.

Regarding fresh hedging, we still do not see strong signs of a return to outright hedging activities by producers potentially eager to lock in historically high prices, and would argue still that this would currently be frowned upon by investors. Indeed, Aaron Regent, CEO of Barrick Gold, was quoted as saying that questions from investors regarding the company's hedge book played a large role in prompting the move to de-hedge. With no return to widespread hedging, it is much more likely that (de-)hedging activity will remain a component of demand in the market in 2010, though it will still be at more limited levels than that seen in 2007 and 2008, due to the now much reduced size of the global hedge book (which we estimate could be as low as 250 tonnes by the end of the year). Therefore we will not see those levels of de-hedging again in this cycle.

Technical Annex

The GFMS analysis utilises the Brady Trinity™ Risk Management and Trading system. Each mining company's individual trades have been input to the Brady Trinity™ system.

The use of the Brady Trinity™ system is particularly relevant for the analysis of mining companies' options positions. We have entered each option trade by mid-year of expiry. Moreover, non-vanilla products such as convertible forwards have been broken down into their constituent options. This analysis enables us to accurately obtain key parameters and valuations for each instrument used by each company and subsequently for the global hedge book as a whole. This methodology also allows us to model the delivery profile of the hedge book.

All forward contracts, including spot deferred, floating rate forwards and fixed rate forwards, are input as forward sales. Options contracts, including cap and floor agreements, are entered as their constituent vanilla put and call contracts. Convertible and contingent options are unbundled into their constituent barrier options contracts. Trigger levels for barrier options are taken as the mid-point of published ranges, where available. Convertible forward contracts are modelled as a barrier call option combined with a vanilla put option.

In terms of the GFMS analysis, the key parameter of interest is the delta-adjusted position. As explained in the glossary, the delta of an option (or indeed of a forward) is the rate of change in the value of the derivative for a change in the price of the underlying. In the case of a gold forward sale (or purchase), the forward delta is 1, whilst in the case of an option, this delta is derived from the Black-Scholes option pricing formula.

The counterparties to mining companies' hedging activity (typically banks) will dynamically hedge their exposure through delta hedging. For example, suppose a mining company purchases a put option. The writer of the option (a bank) will be long the delta volume. In other words, if the delta of the option is +0.5 and the nominal volume of the trade is 100,000 ounces, the delta volume will be 50,000 ounces (of which the bank will be long). To hedge this exposure, the bank must therefore undertake a transaction that yields an equal and opposite position (i.e. short). This will typically be achieved by the bank borrowing gold (normally from a central bank) and selling this into the spot market. Through this mechanism, mining companies' hedging activities impact directly on the spot gold market.

It should be borne in mind that the value of an option, as well as the delta, will change in response to movements in key parameters, particularly the spot gold price, but also market volatility, interest rates and time to expiry. In response to this, banks will continuously or dynamically adjust their delta hedge position.

Glossary

Option - An option contract gives the holder the right, but not the obligation, to buy or sell gold at a predetermined price on or by an agreed date.

European Option - An option that can only be exercised at the expiry date.

American Option - An option that can be exercised at any time prior to the expiry date.

Put Option - An option contract which gives the buyer the right, but not the obligation, to sell a specified amount of gold (or other asset) at a predetermined price (the strike price) on or before a specified date (expiry date).

Call Option - An option contract which gives the buyer the right but not the obligation to buy a specified amount of gold (or other asset) at a predetermined price on or before the expiry date.

Barrier Option - An option whose outcome depends on the performance of the price of the underlying during the life of the option and whether that price breeches a predetermined barrier.

Forward - A transaction in which two parties agree to the purchase and sale of gold at a future date.

Gold Lease Rate - The cost of borrowing or return from lending gold, the daily level of which reflects the supply and demand for metal in the lending market.

Writer - The writer or grantor is the party who sells the option and receives that premium income.

Long - A position in an asset (e.g. gold) for which the value will rise should the price of that asset rise.

Short - A position in an asset (e.g. gold) for which the value will fall should the price of that asset rise.

Delta - The rate of change of the price of a derivative with the price of the underlying asset.

Gamma - The rate of change of delta with respect to the asset price.

Theta - The rate of change of the price of a derivative with the passage of time.

Vega - The rate of change of the price of a derivative with volatility.

Rho - The rate of change of the price of a derivative with the interest rate.

Greeks - The basket term for the above hedge parameters (delta, theta, vega, gamma, rho).

Underlying - Shortened term for the underlying commodity on which forwards and options are traded (i.e. in this case gold).

Delta Hedging - A hedging scheme that is designed to make the value of a derivatives portfolio insensitive to small changes in the price of the underlying.

Black-Scholes Model - A model for pricing European options. Developed by Fischer Black, Myron Scholes and Robert Merton. See F. Black and M. Scholes "The Pricing of Options and Corporate Liabilities" Journal of Political Economy 81, 1973 and R.C. Merton "Theory of Rational Pricing" Bell Journal of Economics and Management Science 4, 1973.

Vanilla/Non-Vanilla - Vanilla options are simple put and call options, whilst non-vanilla options are more complex, with pay-offs dependant on a variety of market factors, such as price paths or the price of alternative assets.

Volatility - A measure of the uncertainty or rate of change of an asset price.

About GFMS

www.gfms.co.uk
GFMS Ltd, the world's foremost precious metals consultancy, specialising in research into the global gold, silver, platinum and palladium markets. GFMS is based in London, UK, but has representation in Australia, India, Russia, Germany, Spain and China, and a vast range of contacts and associates across the world.

GFMS is credited with producing the most authoritative surveys of the gold and silver markets, the annual Gold Survey and World Silver Survey, and produces a range of other publications dealing with all aspects of the precious metals markets. GFMS also provides consultancy services in the form of tailor-made research into selected areas of the precious metals markets. GFMS' research team of fifteen full-time analysts comprise experienced economists and three geologists.

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Brady provides the leading trading and risk management software for global commodity markets. On a single platform, Brady provides complete integrated solutions supporting entire commodities trading operations, from capture of financial and physical trading, through risk management, to handling physical operations to back office financials and treasury settlement. Brady has more than 20 years of expertise and more than 800 users worldwide, including some of the largest financial institutions and mining corporations who depend on Brady's software solutions to deliver mission critical business transactions across their global networks. Brady is headquartered in Cambridge with offices in London and New York.

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