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Credit: Bank of England

*The LBMA recently published for the first time the amount of gold and silver held in London vaults.
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Demystifying London's Gold and Silver Vault Holdings

By Neil Harby, Chief Technical Officer, LBMA and Joni Teves, Precious Metals Strategist, UBS



Credit: Bank of England

The LBMA vault holding data outlined below represent the volume of Loco London gold and silver held in the London vaults offering custodian services. As at 31 March, 2017 there were 7,449 tonnes of gold, valued at \$298 billion and 32,078 tonnes of silver valued at \$19 billion. This equates to approximately 596,000 gold bars and 1,069,255 silver bars.

Introduction by Neil Harby Chief Technical Officer, LBMA

There are currently seven custodians offering vaulting services (all of which are LBMA members):

- four security carriers: Brinks, G4S Cash Solutions (UK), Malca-Amit and Loomis International (UK) Ltd.
- three clearing banks: HSBC, ICBC Standard Bank and JP Morgan.

In addition the Bank of England (not an LBMA member) also offers gold (but not silver) custodial services to central banks and certain commercial firms that facilitate central bank access to the liquidity of the London gold market. Those clearing banks without their own vault operations – Scotiabank and UBS – utilise their accounts with one of the LBMA custodians or the Bank of England (BoE) and therefore do not contribute to these statistics to avoid double accounting.

The physical holdings of precious metals held in the London vaults underpin the gross daily



trading and net clearing in London. The net clearing is undertaken by the members of the London Precious Metals Clearing Limited (LPMCL). London is the largest gold trading centre in the world as demonstrated by the \$18.1bn worth of gold which was cleared on average each day in March 2017 (Source: LBMA net daily clearing statistics).

Transparency

According to the Fair and Effective Markets Review¹

“...in markets where OTC trading remains the preferred model, authorities and market participants should continue to explore the scope for improving transparency, in ways that also enhance effectiveness.”

Publication of aggregate physical holdings is the first step in reporting for the London Precious Metals Market. The next step is trade reporting. The collection of trade data will add transparency to the market and provide gross turnover for the Loco London market. Previously, gross turnover had been calculated from one-off surveys or estimated from the clearing statistics.

The Bank of England

The BoE started publishing its monthly gold holding figures in January 2017². It stores allocated gold on behalf of its customers (custodian service) which include the UK Government, other central banks and commercial banks. BoE data are included in the LBMA statistics shown to the right.

The LBMA Vault Holding Data

GOLD

Month	Fine troy ounces (thousands)	Tonnes
July 2016	234,144	7,283
August 2016	239,742	7,457
September 2016	244,025	7,590
October 2016	246,141	7,656
November 2016	246,055	7,653
December 2016	241,881	7,523
January 2017	238,887	7,430
February 2017	238,776	7,427
March 2017	239,488	7,449

SILVER

Month	Fine troy ounces (thousands)	Tonnes
July 2016	951,433	29,593
August 2016	957,798	29,791
September 2016	969,175	30,145
October 2016	978,229	30,426
November 2016	993,303	30,895
December 2016	1,004,313	31,238
January 2017	1,010,942	31,444
February 2017	1,010,268	31,423
March 2017	1,031,321	32,078

Explanatory Notes

- The data is reported monthly (three months in arrears).
- The data represents the holdings on the last day of the month.
- The LBMA dataset starts from July 2016, which coincides with the current set of custodians being established.
- Loco simply relates to the place or location at which a commodity is physically held, e.g. Loco London gold. Precious metals held within the environs of the M25 are considered to be Loco London.
- All physical forms of metal are included: large wholesale bars, coin, kilo bars and small bars.
- The data only includes physical metal held within the London environs and does not include precious metals physical holdings readily available at short notice in other secure overseas vaulting facilities.
- Jewellery and other private holdings held by retailers, individuals and smaller vaults not included in the London Clearing system are excluded from the numbers.
- Conversion factor: 1 gram = 0.0321507465 troy ounces

¹ For further details see <http://www.bankofengland.co.uk/markets/Pages/fmreview.aspx>

² See <http://www.bankofengland.co.uk/what/Pages/gold.aspx> for these data.

A detailed explanatory commentary on the vault holding data from Joni Teves, Precious Metals Strategist at UBS, follows.



How many bars do London vaults hold?

Telling people outside this relatively small, rather close-knit precious metals industry that you work as a 'precious metals analyst' typically results in having blank, slightly confused faces staring back at you. You then have to explain that you actually deal with financial markets and developments in the precious metals industry rather than chemistry and the more technical aspects of elements 46 (palladium), 47 (platinum), 78 (silver) and 79 (gold) of the periodic table. It's usually not until you begin discussing the gold bars in the famous James Bond film 'Goldfinger' or the movie 'The Italian Job' (and not to mention that you've actually held a real gold bar in your hands) that they start to think you might just have a pretty interesting, albeit slightly obscure, job description.

From an analyst's perspective, there's usually no such thing as 'too much of a good thing' when it comes to market statistics. The more detail and information about the market, the better chance of understanding market dynamics and putting the various pieces of the puzzle together. But the LBMA's new data series on gold and silver London vault holdings is bound to benefit not only analysts, but the market as a whole. It is a first step in a move towards greater transparency that is in line with the broader trend in the regulatory environment. And, who knows, maybe it will even be of interest to those outside the industry to finally have some idea of how many gold bars – like the ones in the movies – are actually sitting in vaults in one of the world's busiest cities, London. (Well, according to newly launched LBMA data, gold held in London is the equivalent of close to 600,000 gold bars.)

A move towards greater transparency

Last May, the LBMA and LPMCL announced plans to start publishing data on the volume of gold and silver held in London vaults this year. This is in line with efforts to increase transparency in the market and is certainly a valuable addition to the pool of available data. Vaulting statistics is the first instalment towards further transparency, which will eventually be followed by trade reporting.

The newly launched data series covers end-period data from July 2016 through to March this year, and going forward the statistics will be published monthly, with a three-month lag. This will include gold and silver in the form of large bars, kilo bars or coins, but exclude jewellery and other private holdings held in vaults that are not part of the London clearing system. The data is collated from the Bank of England and seven custodians which offer vaulting services, and is reported on an aggregated basis. These seven are HSBC, ICBC Standard Bank and JP Morgan, which are also clearing members of the LBMA, as well as Brinks, G4S Cash Solutions (UK), Malca-Amit and Loomis International (UK) Ltd., which are also LBMA members. Clearing members which do not have their own vault operations in London use accounts with these custodians or the Bank of England (BoE), and therefore do not contribute to the statistics to avoid double accounting.

“From an analyst's perspective, there's usually no such thing as 'too much of a good thing' when it comes to market statistics.”

Understanding the data

To be clear, these statistics only represent metal that is held physically in London and exclude any metal held in vaulting facilities outside of this jurisdiction which may be made available at a short notice. An example of this would be gold and silver held in Switzerland, which is also another key hub for precious metals trading and liquidity, given the country accounts for a significant portion of global refining capacity. Precious metals typically get shipped between London and Zurich as participants manage liquidity depending on market supply and demand conditions, and this is in turn reflected in swap rates between the two locations (London-Zurich Loco swap rates). Market participants can hold gold and silver in both locations, but only metal that is held physically in London is included in the monthly data, even though gold or silver that an institution may be holding in Zurich can be easily shipped to London.

Gold and silver that is held in London vaults underpins the daily trading and clearing activity in the London bullion market. London continues to be a key gold trading centre globally, with an average of \$18.1bn worth of gold cleared each day in March 2017, according to LBMA net daily clearing statistics. Clearing data is different from turnover data. But to somehow put this into context, it probably still helps to note that the average daily turnover of physical gold spot contracts on the Shanghai Gold Exchange is over \$1bn, while an average of about \$32bn worth of gold futures trade on Comex each day.

Gold and silver held in London vaults that back shares in exchange-traded funds (ETFs) are also

included in these statistics. We estimate that there is around 2,144 tonnes of gold and about 21,483 tonnes of silver held in ETFs globally. For gold, about 55% of total holdings are accounted for by funds that trade in stock exchanges in North America, about 18% that trade in the UK and 23% that trade in Switzerland and Europe. For silver, the bulk of holdings (approximately 73%) are accounted for by funds that trade in North America and the rest by trades in Germany, UK and Switzerland, with only a modest 1% from trading in exchanges in Asia Pacific.

It is important to note that while an ETF may be listed in one location, metal that underpins this may be vaulted in another region. For instance, the largest gold ETF is traded on the New York Stock Exchange, but its designated custodian ultimately holds the underlying metal in its London vaulting facilities. Similarly for silver, the ETF with the largest silver holdings trades on the New York Stock Exchange, but the metal underpinning the shares is allocated in various vaulting facilities in England and New York, or other potential authorised locations. In this instance, silver held in England is considered 'Loco London' and therefore is included in the aggregated data provided it meets the LBMA definition of being "held within the environs of the M25". In general, this means that although gold or silver ETF shares may trade in exchanges elsewhere, as long as the metal is held physically in London, these would be considered Loco London and form part of the LBMA's monthly statistics. Our database of gold and silver ETFs suggests that, using average gold and silver prices over the past year, about 1,485 tonnes of gold worth about \$60bn and about 13,759 tonnes of silver worth about \$7.85bn are likely to be held in London to back ETF shares. This is obviously a rough estimate that's provided here only for indicative purposes.

Additional pieces in the puzzle

Given that only limited historical data is available, it is hard to fully put into perspective. For instance, we cannot compare current levels versus the amount of gold and silver held during the peak of the bull run or during the 2015 trough of the correction from 2013. Nevertheless, looking at the change in levels between July last year and the end of Q1 this year still offers some insights.



Gold

Examining the data more closely, we note some interesting observations. It is worth highlighting that the BoE has been an important contributor to this move towards greater transparency in the precious metals market. Gold holdings at the BoE account for the bulk of the metal physically held in London, representing about 68% of overall holdings at the end of March. The BoE provides custody services primarily to central bank customers, helping them get access to London gold market liquidity. To further facilitate this, the BoE also holds gold custody accounts on behalf of certain commercial banks that support central bank access to the liquidity of the London gold market. About 12 years ago, the BoE started reporting gold holdings in its annual report. This year, monthly data has been made available, with the series covering end-period data from January 2011 through to the first quarter of this year.

On the assumption that the BoE custody service primarily caters to central bank customers, it's probably fair to say that gold held outside of the BoE should better capture investor activities. Clearly, this is a broad generalisation: the BoE also has commercial banks as customers and holds gold on their behalf, while at the same time, it is also possible for central banks to hold gold in other (non-BoE) vaults. To put some context around this, let's say for illustration's sake that about 80% to 90% of BoE gold holdings are accounted for by the official sector. Further, for simplicity let's assume that the vast majority of gold held in commercial vaults is on the back of investor positions and only a negligible amount comprises official sector holdings. This suggests that over the past year, an average of about 2,945 to 3,450 tonnes (\$119-\$139bn) of investment-related gold was held in London. These inventories would include metal held on behalf of ETFs, which as mentioned above we estimate to be around 1,485 tonnes or about \$60bn worth of gold. Taking these ETF-related holdings into account would then leave roughly around 1,460 to 1,965 tonnes or about \$59bn to \$79bn worth of gold in unallocated and allocated accounts as available pool of liquidity for OTC trading activities. As details on the actual breakdown of gold holdings are not available,

all these figures are obviously only presented here for indication. Nevertheless, despite these limitations, the data still somehow supports the broad generalisation on how Loco London gold stocks may be split between official sector and investor holdings. For instance, gold held at the BoE appears to be more stable relative to gold held in other London vaults, such that changes in total Loco London gold over the past nine months have been driven more by changes in non-BoE gold. Arguably, investment-related gold holdings would tend to be more volatile relative to official sector holdings. Central banks hold gold as part of their official reserves, which also serve monetary purposes, and they typically have much longer time horizons.

“It is worth highlighting that the BoE has been an important contributor to this move towards greater transparency in the precious metals market.”

Another observation that's worth noting is the modest 2% increase in total gold holdings equivalent to around 166 tonnes from July last year to the end of Q1 this year. This change is likely a function of investor liquidations in Q4 2016, which has since reversed but at a subdued pace. This also coincides with ETF flows – heavy liquidations towards the end of last year have been succeeded by net inflows YTD, but the volumes lag considerably compared to the same period in 2016.

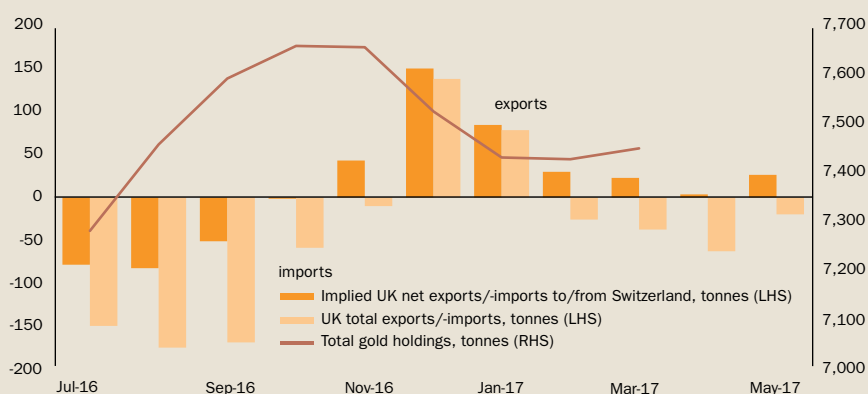
In particular, Loco London gold holdings during the first quarter of this year were relatively flat. This coincides well with the broadly limited investor participation in the gold market that we have been highlighting. Many investors are keeping an eye on the gold market and continue to appreciate gold's value as a portfolio, yet few have been actively involved in putting on meaningful, strategic positions. This has

been apparent in speculative positioning data indicated by the CFTC Commitment of Traders Report as well as gold ETF flows. In June, sentiment towards gold understandably came under pressure given the rise in real rates – not just in the US but also in Europe – and the seemingly hawkish shift in tone among central banks. As of early July, CFTC data showed that gold net longs on Comex had fallen to the lowest levels since January last year. Despite the rebound in gold prices in recent weeks, net speculative positions on Comex have remained very lean. Meanwhile, gold ETFs marked the first month of net outflows in July. Although YTD flows remain positive, gold ETF holdings are only up by 107 tonnes compared to over 598 tonnes over the same period in 2016. The relatively subdued changes in Loco London gold holdings in a way reflect these dynamics. It will be interesting to see how Loco London gold holdings look in Q2 considering these market developments. Although the data is backward-looking, this should still allow for additional insight on investment activity, considering that the series thus far appears to corroborate other indicators.

Finally, comparing total gold holdings data with the UK's gold trade flows confirms a strong link between the two. This is intuitive in that net inflows of gold into the UK should understandably translate into a build in holdings, while net outflows would suggest a reduction in overall levels. There is a shorter lag in trade data reporting, meaning that trade statistics should help market watchers anticipate changes in Loco-London inventories before getting confirmation a couple months later from the LBMA report.

In addition to UK trade statistics, Swiss data on gold flows from and to the UK is also a useful indicator of how much gold is leaving or entering London vaults. Given Switzerland's key role in global gold refining, it essentially acts as an important interface between investment demand in Western markets and consumer demand in Asia which means that Swiss gold trade flows tend to hold important insights. Combining Swiss and UK trade data with London vault holdings allows for a more complete picture (see chart 1). For instance, periods of strong physical demand out of key centres such as India and China could mean that large investment bars sitting in London vaults could be shipped to Switzerland to be transformed into kilo bars and eventually sent to physical buyers in Asia to meet consumer demand for gold jewellery and investment products. Net outflows of gold from the UK should coincide with declines in vault holdings in this case. In fact, this scenario occurred back in 2013: as the Fed's taper tantrum led to a sharp rise in US real rates, gold collapsed by 29% as investors exited gold exposures. In turn, the sharp drop in the gold price made it very attractive for physical buyers, especially in the context of a decade-long bull market. Investor gold positions held in London vaults – whether OTC or ETF-related – were being heavily liquidated. This metal then made its way to Switzerland, was converted into kilo bars, and shipped to Asia to satisfy the surge in demand in China, India as well as other parts of the region.

Chart 1: Gold: Vault Holdings in London vs exports/imports



Source: LBMA, Swiss Customs, UK HMRC, UBS

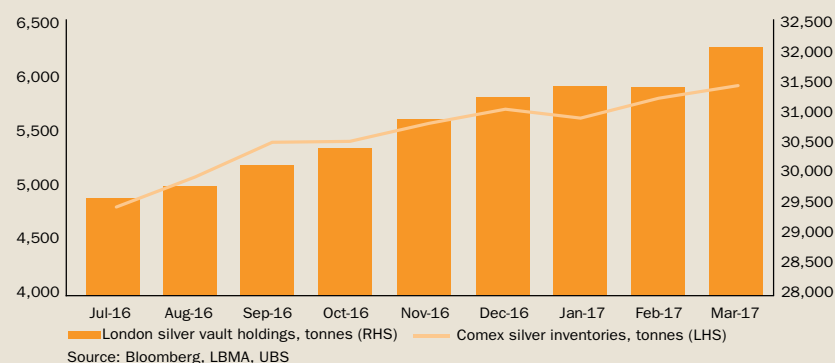
Interestingly, LBMA data shows that in Q3 last year, the opposite occurred – the UK was a net importer of gold and vault holdings increased. This coincided with weak physical demand for most of last year, which was more than offset by a pick-up in investment interest. Given strong demand from the investor community, gold still managed to rally 8% in 2016 (and as much as 30% from trough to peak) despite the weak fundamental backdrop. Towards the end of the year, market forces became conducive for gold to once again leave London vaults and be shipped out of the UK. Investors unwound positions in anticipation of the Fed rate hike, while at the same time, seasonal and regulatory factors in key markets boosted physical demand, allowing buyers in Asia to absorb the liquidation from Western investors. Demand out of China kicked in heading into year-end in anticipation of the Lunar New Year holidays, while the demonetisation of high-value banknotes in India led to a knee-jerk spike in demand. So far this year, physical markets have been more stable, while investment demand has been positive yet broadly more subdued. As mentioned earlier, the data tends to reflect this, with changes in Loco London gold holdings relatively limited during the first quarter of 2017.

Silver

There's only one component in the data series that aggregates the amount of silver held in London, unlike gold data where it is possible to split out what is held at the BoE and what is held in other vaults. This is primarily because the BoE does not provide silver custodial services. More broadly, silver tends to be considered a cheaper and more volatile way to get exposure to gold price trends, attributes that are likely more attractive for investors rather than the official sector. Silver holdings increased at a higher rate of 8% or 2,485 tonnes between July 2016 and March 2017 relative to the 2% (166 tonnes) gain in gold. Changes in global ETF holdings shows that silver positions have generally been more stable against gold in recent years. However, our database suggests that silver ETF holdings backed by Loco London metal actually declined by about 3% or 375 tonnes from July 2016 to March 2017. Relative speculative positioning between gold and silver on Comex similarly shows a stronger build in investor positions in silver than gold, at least during the first half of the year (see chart 2). Given silver's large industrial demand component, it initially attracted some



Chart 2: Silver: Vault Holdings in London vs Comex Inventories



attention on the back of growth and risk optimism amid the reflation theme. This translated into persistent gains in Comex investor positioning, which reached a fresh all-time high in May. Yet as reflation trades were unwound, so did the interest in silver, and Comex positioning has since given back about 81% from the highs. It would therefore be interesting to see Q2 and Q3 data on Loco London silver holdings, to find out whether OTC positions followed a similar trend. Loco London silver holdings could potentially be relatively more robust than what Comex speculative positions imply. Silver ETF holdings have generally been resilient over the past few years, despite heavy liquidations in gold ETFs, which could mean that silver OTC positions could also show a similar sense of stability.

More data, more insights

The provision of information on gold and silver vault holdings brings more transparency to the London precious metals market. It marks the first step and will soon be augmented by trade reporting, which will further enhance the ability of market participants as well as regulators to track and assess market activity. Eventually having access to data on gross turnover for the Loco London market will enable better comparisons with trading activities in other key centres such as New York and Shanghai, and allow for a broader and more holistic understanding of the market.

For a keen observer of the precious metals market, these are all very positive developments. Common questions that get asked by clients and other market participants every so often revolve around the level of holdings, the availability of metal or the comparison of physical versus paper trading activities. Up until now, the market has had to rely on third-party estimates of above-ground gold holdings, such as those provided by Thomson Reuters GFMS, the World Gold Council or Metals Focus. While the LBMA has been publishing monthly clearing statistics for many years, this is not the same as trading turnover and the market has had to come up with educated estimates from the data that's available, including the one-off survey that was done to get a sense of trading volumes in the past. The publication of London vault holdings and the provision of Loco London trade data later on will now enable us to provide more informed responses to these questions.

More broadly, the availability of these statistics should allow for much better insight and analysis of the precious metals markets, which in turn should ultimately contribute to more informed investment decisions.



Neil Harby is the LBMA's Chief Technical Officer. He acts as the Executive's main contact for the Good Delivery system and as such

is responsible for managing the LBMA Good Delivery accreditation system, applications, Pro-Active Monitoring, Proficiency Testing and other GD related projects. The role also involves overseeing the work of the GDL Officer in the administration of the Good Delivery system as well as managing the implementation by Gold Good Delivery refiners of the LBMA's Responsible Gold Guidance and ensuring the efficiency and effectiveness of the Good Delivery work carried out by the LBMA.

Prior to joining the LBMA Neil spent most of his career at the Rand Refinery in South Africa where he was Head of Evaluation. He also represented the Rand Refinery as one of the five LBMA Referees, whose primary responsibility is to oversee the maintenance of the LBMA's Good Delivery List.



Joni Teves is the Precious Metals Strategist within the Global Macro Strategy team at UBS Investment Bank in London. She

covers gold, silver, platinum and palladium and is responsible for fundamental analysis, forecasting, and writing research pieces on these markets. Joni holds a Bachelor of Science in Business Economics from the University of the Philippines. She joined the Bangko Sentral ng Pilipinas shortly after earning her degree in 2006, and worked in the central bank's Treasury Department as a Gold Trader within the FX and Open Market Operations Group. After a brief stint with the CRU Steel Team, Joni joined UBS FX and Precious Metals Strategy in 2011.

Dr Christopher Merrett – A 17th Century Man of Science

By Dr Michele Blagg, Research Consultant and Visiting Research Associate at the ICBH, King's College London



Christopher Merrett. © Royal College of Physicians

Fire broke out on 2 September 1666, spreading quickly through the timber buildings across the City. Lasting for five days, it raged across 273 acres, 400 streets, 13,200 private houses, 88 churches and St Paul's Cathedral. On the fourth day, the fire had spread in the area of Amen Corner. Merrett barely escaped with his life, having picked out the most important books, approximately 148 altogether, and removed them to safety.⁵ The majority of the College artefacts, together with Merrett's living quarters and his own substantial collection of books, were destroyed.

“He gave a dramatic picture of his father walking down Warwick Lane, which was on fire on both sides, with arms full of books.”

Recently, in the picturesque Cotswolds, an English Heritage Blue Plaque¹ was unveiled in the town of Winchcombe, marking the birthplace of one of its sons – Christopher Merrett (1614-1695). I was alerted to the endeavours of Dr Merrett by Winchcombe resident and historian, Jean Bray. It was Jean who headed the blue plaque campaign, which was unveiled in May, 2017.

A scientist, physician, naturalist and metallurgist, he was educated at Gloucester Hall, Oxford, and later at Oriel College, he took his BA degree in 1635 and MD in 1643. After settling in London, he became a Fellow of the Royal College of Physicians in 1651 and Goulstonian lecturer in 1654. One of the first members of the Royal Society,² through the influence of his friend Dr William Harvey, he was appointed the first Harveian Librarian and Keeper of the College. Following the relocation to Amen Corner, gifted by Dr Baldwin Hamsey (1600-1676) to better house the growing collection, Merrett's custodianship was formalised. He was given, in addition to free lodging, a remittance in taxes and a salary. His tenure was 'part catastrophic and part heroic'.³ He proved a successful librarian – in addition to him

greatly increasing the size of the collection, many gifts and generous donations were made to the College. Merrett also built up a strong physician's practice at Amen Corner. During the Great Plague in 1665, while many of the other physicians had deserted the Faculty, Dr Merrett remained behind, only leaving London when he and his family were forced to flee to the countryside for their own safety. Before leaving, Merrett collected some of the College treasures and together with one thousand pounds in cash, secured them in an iron treasure chest. Shortly after his departure, thieves broke into the College, forced the lock of the chest and stole the contents. Once the risk to their health passed, the Merrett household returned to London only to be forced to leave their home once more by the Great Fire of London.⁴

With the collection gone, the Royal College of Physicians gave up the site at Amen Corner and, as it had no further need for a Librarian, Merrett lost his home and his job. He protested about his removal, claiming that he was entitled to his office for life. He launched a long and bitter lawsuit against the College in the King's Bench.



Photo © Roger Davies (cc-by-sa / 2.0)

1 London's famous blue plaques link the people of the past with the buildings of the present. Now run by English Heritage, the London blue plaques scheme was started in 1866 and is thought to be the oldest of its kind in the world.

2 A learned society for science, the Royal Society for Improving Natural Knowledge was founded in 1660, receiving a royal charter from King Charles II in 1662. There remains debate around the earlier history of the society in the way it came into being and the effect other groups had on its beginnings (for a detailed history see,

Lyons, Henry., *The Royal Society 1660-1940, A History of its Administration under its Charters* (Cambridge University Press, 1944)).

3 [Accessed 29.06.2017: www.rcplondon.ac.uk], webpages of the Royal College of Physicians.]

4 Proceedings of the Royal Society of Medicine, President The Right Hon. Lord Webb-Johnson, 'Section of the History of Medicine', Vol.47, 1053 (May 5, 1954). [Accessed 25.6.2017: www.collections.royalsociety.org]

5 [accessed 25.6.2017 www.britishbirds.co.uk]. Sir Hugh Gladstone, 'Christopher Merrett and his Pinax Rerum Naturalium Britannicarum'.

6 'Section of the History of Medicine', Vol.47, 1053. In some British universities a bedel is an official with largely ceremonial duties.

7 The National Archives, PROB 11/429/195, 'Will of Dr Christopher Merrett, Doctor in Physic, Doctor of Medicine of Saint Andrew Holborn' (16 Sep 1695).



The Alchemist, by David Teniers the Younger c.1650. Reproduced with the kind permission of Mauritshuis, The Hague.

During the course of the action, his son gave a detailed account of the terrible night when the College caught fire. He said: "The College was burnt down between 3 and 4 o'clock on Tuesday 4th", and that the day before, his father had sorted out the books and put the best ones in the College yard in readiness to remove them. The son reported that "his father had been the last person in the college" and he gave a dramatic picture of his father walking down Warwick Lane, which was on fire on both sides, with arms full of books followed by the bedel.⁶ Merrett's claim failed. In 1681, he was expelled from his Fellowship and also expelled from the Royal Society, nominally for non-attendance but more likely as a consequence of the action. Subsequently, he resided in his house in Hatton Garden, where he died on the 19 August 1695, and was buried "14 feet deep in the church of St Andrew's, Holborn".⁷

Besides his best-known work produced in 1666, *Pinax Rerum Naturalium Britannicarum* in which he attempted over its 233 pages to make a list of the vegetables, animals and minerals of Great Britain, Merrett wrote numerous other works on a variety of interests, which he presented at meetings of the Royal Society. In 1662, he produced an account of wine-making. At this time, vineyards were present in Holborn. He was the first to document the process of secondary fermentation. He wrote: "Our wine coopers of recent times use vast quantities of sugar and molasses to all sorts of wines to make them drink brisk and sparkling and to give them spirit."⁸ This putting of bubbles into wine came 30 years

before the more famous champagne discovery of Dom Perignon! In addition, Merrett wrote on the 'Art of glass production', provided 'An account of tin mines in Cornwall', gave his 'Observations of Lincolnshire life', to name but a few! In 1664, Merrett was appointed chairman of a committee for collecting histories of trade, creating a catalogue.⁹

“ Both these 17th century accounts of refining and coin production provide much detail of work at the Mint and the early methods and processes engaged in by the London Refinery. ”

In 1661/62, Merrett received a request by the Royal Society to produce a history of refining. His subsequent paper described four ways to separate all other bodies from gold and silver: by Parting, by the Test, by the Almond Furnace or the Sweep, and by Mercury. This 17th century account proves fascinating today. An extract taken from his report on the Almond Furnace or Sweep method is shown below:

"Here are separated all sorts of Metals from Cinders, parts of Melt-ing Pots, Tests, Brick and all other harder bodies; which must be first work. Those which stick but superficially to their silver, they wash off thus; they have

a wooden round instrument two foot wide, somewhat hollow in the middle, with a handle on each side. On this they put the Materials, hold them in a tub of water below the surface, and so waving it to and fro, all the lighter and looser matter is separated from the Metal.

The furnace is six feet high, four feet wide, and two feet thick. Made of Brick; having a hole in the midst of the top eight inches over, growing narrower towards the bottom of it, where on the fore part, it ends in a small hole, environed with a semicircle of Iron to keep the molten Metal. About the middle of the back, there is another hole to receive the nose of a great pair of bellows requiring continually the strength of two lusty men. The night before they begin, charcoal is kindled in the Furnace to Anneal it and when it is hot, they throw two or three shovels of coal, to one of the forementioned stuff and so proceed during the whole work, making stratum super stratum of one and the other. After eight or ten hours the Metal begins to run; and when the Receiver below is pretty full they lade it out with an Iron Ladle, and cast it into sows in Cavities or forms made with ashes.

They frequently stop the passage hole with Cinders to keep in the heat; and [when] they think a quantity of metal is melted, they unstop the hole to pass it off.

If the stuff be hard to flux, they throw in some slag (which is the recrement of Iron) to give it fusion. Their iron melt away apace, wherewith they proak out the cinders from the hole.

A stinking blue smoak proceeds from the Furnace, and all by-standers put on the colour of dead men. The workmen must be well lined with Oyl, Sack, Strong Beer, and good victuals: for the Work continues three days and nights without intermission using no other variety, than above said."¹⁰

It is remarkable to remember that this process took place three centuries ago just as the Civil Wars were ending and as the Restoration of the Monarchy took place in 1660! Sadly, where and how Merrett collected the necessary information for his detailed account, thus far escapes us. However, there is a direct link to the Mint through an official, Henry Slingsby (elected an original Fellow of the Royal Society in 1663, deputy Master of the Mint from 1662-1667 and sole Master from 1667-1680), who was also asked by the Royal Society to provide a discourse on metallurgy and the work of the Mint.¹¹ At that point in time, much excitement centred on the Mint due to the internal working struggle between the traditional moneyers and the introduction of new machinery enabling mass production of coinage.¹²

⁸ [Accessed 25.6.2017 www.bbc.co.uk] 'Did the English invent bubbly before Dom Perignon?', 20 May 2017.

⁹ Lyons, Henry, *The Royal Society, 1660-1940, A history of its Administration under its Charters* (Cambridge University Press, 1944), p. 30.

¹⁰ Merrit, Christopher., 'The Art of Refining. Communicated by Dr Christopher Merrit' (*Philosophical Transactions* (1665-1678), Vol. 12 (1677-1678), pp.1046-1052. [accessed 28.6.2017 www.jstor.org/stable/101824]. (Various spellings appear for the name Merrett, including Merrit, Merritt, Merritt, Merret.)

¹¹ Lyons, Henry, *The Royal Society*, p.30.

¹² Craig, John, *The Mint, the London Mint 1, 287 to 1,948* (Cambridge University Press, 1953), records that "all charges for seigniorage and costs for minting coin were abolished 20.12.1666 to tempt custom to the Mint and increase the national stock of money to relieve the King of the deficits to which his generous increase of salaries had reduced the seigniorage account", p. 168.



The Tower of London.

Both these 17th century accounts of refining and coin production provide much detail of work at the Mint and the early methods and processes engaged in by the London Refinery. They also mark the technical changes experienced during the second half of the century as hand production gave way to mechanisation. Possibly thanks to the Royal Society and the cauldron of creativity it nurtured, Merrett became a genuine polymath at a time when it was possible to become an expert in many different areas, recording many of the important advances and progress of science in the period.



Dr Michele Blagg
(BA, MA, PhD) is an
historical consultant,

researcher and writer who works independently offering client services, specialising in financial and business history. She holds a PhD in History from King's College London, which was funded by The Rothschild Archive in collaboration with the Arts and Humanities Research Council. Her doctoral research focused on the Royal Mint Refinery operated by N M Rothschild & Sons between 1852 and 1968 studying how it adapted to change within the London gold market. She worked for many years in the financial services industry before pursuing her studies in Political, Economic and Social history. She received a First-class BA (Hons) from the Open University and subsequently, an MA in Contemporary British History from the Institute of Historical Research. She recently qualified in Global Risk Analysis and Crisis Management at Vesalius College, Brussels, gaining an in-depth knowledge, together with a wide range of practical tools, in identifying and analysing global security risks to advance effective responses to humanitarian, military and political 'complex crises'.

Engaged by the LBMA in 2014 she managed the oral history project 'Voices of the London Bullion Market'. Sitting as an Executive of the Business Archives Council, she promotes the preservation of business records, encouraging interest in the history of Britain. michele.blagg@kcl.ac.uk

“His subsequent paper described four ways to separate all other bodies from gold and silver: by Parting, by the Test, by the Almond Furnace or the Sweep, and by Mercury.”

Slingsby appears in several entries in the diary of Samuel Pepys, of whom Merrett was also an acquaintance. Slingsby being a great friend of Pierre Blondeau, a French

moneyer and engineer, whose appointment to the London Mint was as controversial as the methods he engaged, moved away from the traditional manufacturing process. Blondeau was responsible for the reintroduction of milled coinage to England and pioneered the process of stamping lettering onto the edge of coin.¹³ Pepys was a frequent visitor to the Tower of London, where the Mint was housed, and in February 1661, passed comment upon the poor quality of the new hammered coinage, writing in his diary:

*“We met with Mr Slingsby, that was formerly a great friend of Monseieur Blondeau’s – who showed me the stamps of the King’s new coyne; which strange to see how good they are in the stamp and bad in the mony, for lack of skill to make them. But he says Blondeau will shortly come over and then we shall have it better, and the best in the world. The Controller and I to the Commissioners of Parliament, and after some talk, away again – and to drink a cup of ale.”*¹⁴

Later, he witnessed a method of making money from the beginning to the end, which he included in his diary entry on Tuesday, 19 May 1663. Describing the process as “so pretty”, he made notes on every part of the process. Afterwards, he noted that he had been made “thoroughly to understand the business of the fineness and coarseness of metals”. According to Professor Roberts-Austen, “Pepys’s account of the operations of coining, and especially of assaying gold and silver, is very interesting and singularly accurate considering that he could not have had technical knowledge of the subject.”¹⁵



Samuel Pepys (1633 to 1703)

¹³ Challis, C.E., *A New History of the Royal Mint* (Cambridge University Press, 1992), p.350.

¹⁴ [accessed via www.pepysdiary.com/diary/1661/02/19].

¹⁵ [accessed via www.pepysdiary.com/diary/1663/05/19] Professor W C Roberts-Austen, C.B., F.R.S., chemist to the Royal Mint made reference to the account provided by Pepys in his Cantor Lectures on 'Alloys used for Coinage', printed in the *Journal of the Society of Arts*, vol. xxxii.

50 Years of The Gold Survey – And a Party to Celebrate

By Rhona O'Connell, Thomson Reuters, GFMS



In late June, under the splendidly generous hospitality of Ross Norman and Sharps Pixley, there was a truly memorable gathering of key members of the gold market, past and present, to celebrate the 50th anniversary of the 'Gold Survey'.

The first Survey was produced in 1967, when David Lloyd-Jacob, a visionary manager at Consolidated Gold Fields (then the world's second-largest gold producer after Anglo American), saw that the official sector (or more accurately, the Fed) could not forever keep

on throwing gold at the voraciously hungry investing populace. He set out to talk to market stakeholders, intending to try and identify the relative strengths of the true underlying forces in the market and thus when the US authorities were going to have to capitulate and take the dollar off the gold standard, where it had been since 1934. Gold Fields, of course, needed this work for its planning, given that the lead time from a significant discovery to First Pour is frequently as much as ten years, and a price and market structure forecast was essential.

Thus was born the Gold Survey. It was not long until, under the stewardship of David and his successors, and the tireless continuity of Tim Green, that the Survey became a highly sought-after document in the gold market. Tim had already done some work on gold



David Longhurst, Hans-Gunther Ritter and Robert Stein look at some of the Sharps products.

“He set out to talk to market stakeholders, intending to try and identify the relative strengths of the true underlying forces in the market”

His conclusion was that it would probably be during mid-1972 that the stresses would be too much for the system (in fact, it was 1971). The conclusions were leaked to the outside world and quite a furore ensued, but David obviously had the last laugh.



Ruth and Robert Guy, former LGM and LBMA Chairman.



George Milling-Stanley and Philip Klapwijk – so it is true that spending too long on the Survey drives you mad!

smuggling and soon joined forces with David. From there through to the mid-1990s, Tim was the cornerstone of the Survey as he kept open the doors of, for example, central banks to new members of the Survey team by virtue of his established relationships with these important contacts, thus allowing new incumbents to build their own levels of trust. Tim was unable to join the party this year, but a small number of us lunched with him the following day and splendidly reminiscent it was.

With the other notable exception of long-time stalwart Paul Walker, who was unable to make the journey from South Africa, all the key Editors of the Survey from 1979 onwards were there. Ross had organised a slideshow of the covers of all the Surveys and it really was most endearing to hear some of these most august individuals proclaiming “that’s mine” and “that’s one of mine!” with gusto. Naturally, not all those

on the guest list could make it, whether from the UK or overseas, but it was very touching to see how many people could and did come from far and wide. Robert Guy, Chairman of the London Gold market for many years dating from the 1980s, was there along with a number of key heavyweights and can be seen in the photograph on p10 talking with Ruth, who effectively is in a similar role now as Chief Executive of the LBMA. Other market members, especially from the refining side, were there from New York State, Switzerland, Germany, Turkey and Japan – a truly cosmopolitan gathering.

“It was very touching to see how many people could and did come from far and wide.”

The gold market is in many ways very different today from 50 years ago, but in other ways, it has remained remarkably consistent (see the Survey itself for a series of pieces on the market’s evolution). If the Gold Survey gathering was anything to go by, one thing that unites gold market members is a long and sustained love affair with this remarkable metal.



Rhona O'Connell has over 35 years' experience as a commodities analyst, and is a recognised authority in the precious metals sector. She has worked as a metals market analyst in many aspects of the industry, including the mining sector, LME brokers Rudolf Wolff, and the equity markets; at Shearson Lehman Brothers in the late 1980s and early 1990s she was the group precious metals analyst, which involved a combination of the above as well as advising the trading desks and the investment banking division on the outlook for the precious metals markets. The breadth of her experience means that she has an understanding of the whole range of aspects of these markets.

She has held Extel ranking (2nd place) in the gold sector, has been the Association of Mining Analysts Commodities Analyst of the year and has a wide range of publications to her name as well as numerous public speaking and broadcast media engagements.

She is now the Head of Metals Research and Forecasting for the GFMS division of Thomson Reuters, responsible for a team of over 15 analysts.

She holds an honours degree in Law from the University of Cambridge.

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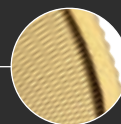
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Gold Remains The Haven In The Turmoil of Political Times

By Daniel Marburger, Director Coininvest



As the political race in the UK climaxed with the surprise result of a hung Parliament, politicians across the country took a deep breath knowing that the political uncertainty of the leadership isn't over yet.

For financial analysts globally, and particularly in the UK, this means the turmoil continues. In a month where we have seen gold climbing to a six-week high, we also heard of disappointing monthly growth gains in the US, suggesting that the labour market is losing momentum. And while the UK employment market looks like it is faring slightly better with a 0.1% increase in Feb-April 2017 figures in the number of employed aged between 16 and 64 years, the unemployed figure remains at around 4.6% of the population (source: Office of National Statistics).

In the UK, we have seen the impact of the US Election and the resulting new administration ripple the waves of the UK economy. This combined with the political turmoil of Brexit and the General Election means that the options for those looking for long-term investment are shaky and for security elusive.

Bricks and mortar are no longer a solid investment

For years, the go-to robust investment vehicle was property. Having a second home or a buy-to-let was a sure indicator of doing well for yourself. House prices might dip, but investment in bricks and mortar was a long-term sure bet. Then came the crash of 2009.

Since then, house prices have regained their value and, nationally, the property market has risen in value and confidence. However, the beginning of this property bubble seems to be bursting, with housing experts Nationwide reporting in May of this year that house prices showed a third consecutive monthly decline for the first time since 2009 and annual house price growth dipped to 2.1%, providing further evidence that the housing market is losing momentum (see table 1 overleaf).

“In the UK, we have seen the impact of the US Election and the resulting new administration ripple the waves of the UK economy.”

Corporate retirement funds

So how do we plan for our future? If property is no longer an option, can we sit back and wait for our final salary scheme to pay out (which many of us have been paying into and relying on) to see us right in the golden days of our lives? Pension fund managers have

been warning senior financial managers for a few years now about the huge shortfall in retirement funds, and big corporates such as BT and British Airways have been strategising how they will cope with the massive deficits stacked against them. Although there is good news that the pension deficits at the UK's largest companies appear to be falling, the collective deficit of final salary pension schemes amongst FTSE 350 organisations still stands at around £134 billion. So those who have spent a lifetime paying into the corporate pot might end up realising that the opportunities to give their children and grandchildren the step up they need for the future might not be provided.

Stocks and shares

Those lucky enough to be in a position of having savings or money to invest might have heaved a sigh of relief as the doom and gloom predicted around a stock market crash has failed to materialise. With the FTSE 100 Index rising from 5,929 in January 2016 to 7,337 in January 2017, many who kept their nerve found their investments worth more than they could have imagined 12 months ago. However, new warnings continue, with investment managers such as Adrian Lowcock at Architas pointing out earlier in the year that the FTSE 100 had three prolonged major corrections since 1999, falling by an average of 40.1%¹. He further advises investors to insulate investments from a market shock by taking money out of the stock market or moving money into assets perceived to be lower risk. Possibly such as gold?

The unpredictability around the markets seems to reflect the insecurity of the world we are living in, with politicians seen as outsiders winning elections and referendums changing the shape of our futures. What seems abundantly clear is not which investment is more of a sure bet than another, but how fragile the markets are and that we have entered an era where the sure bets are no longer a certainty.

A glimmer of hope on the horizon

Yet, there is a glimmer of hope on the horizon in the midst of all this volatility. The price of gold continues to steadily rise. With the Federal Reserve unlikely to increase borrowing costs, leaving real rates in negative territory, the price of gold has increased significantly in the last decade, peaking at 1,896.5 USD/oz (source: www.lbma.org.uk/pricing-and-statistics).

¹ <http://www.thisismoney.co.uk/money/investing/article-4125492/Could-FTSE-100-fall-40-look-previous-peaks.html>

One of the few investments that are adversely affected by the political crises in the UK and the uncertainty around what it will really mean for the UK to leave the EU, gold, which is traded in US dollars, remains strong. Investors who bought gold 16 years ago would have seen a 400% return on investment, which is 10 times the return from a FTSE 100 investment during that period. In addition, British gold investment coins such as the Gold Sovereign and the Gold Britannia have legal tender status and therefore are exempt from VAT and Capital Gains Tax.

There's more good news. The golden halo continues to look likely to shine, with the next 16 years looking strong. Gold is a finite investment, meaning that there is a maximum amount that can be sold, so if demand continues as it is, the price will rise as demand out performs supply.

Is history repeating itself?

Although no longer a commodity used in daily transactions, gold remains important for the global economy. You only need to look at the reserve balance sheets of financial organisations and central banks, which presently hold around 20% of the world's supply of mined gold, for confirmation that

gold has a long-term value. Investors of all levels are attracted to gold because of its unique properties as an asset class. The precious metal is a solid, tangible and long-term store of value that historically has moved independently of other assets. Indeed, custodians of the world's largest investment portfolios use gold to mitigate portfolio risk and have been net buyers of the precious metal since 2010.

Gold is a highly effective vehicle of diversification and risk management because it is independent from other asset classes. Gold enhances portfolio performance while reducing losses in times of economic turmoil. For example, during periods of financial uncertainty, when equity indices tend to fall sharply and volatility increases, gold's volatility typically remains much lower than that of equities. In general, therefore, it consistently exhibits low to negative correlation with mainstream assets as well as alternative asset classes. Economic growth boosts demand for gold in the form of jewellery, while recessions promote buying the precious metal as a share of value. It is this balance that drives gold's lack of correlation to other assets and enhances its appeal as part of an investment portfolio.



“The unpredictability around the markets seems to reflect the insecurity of the world we are living in, with politicians seen as outsiders winning elections and referendums changing the shape of our futures.”

This validation that gold preserves wealth in fluctuating economic markets is even more relevant when investors are faced with a declining US dollar and rising inflation, circumstances in which gold typically inflates in price. Historically used as a hedge against both these scenarios, investors traditionally will turn to a hard asset to maintain the value of their portfolios.

Maybe we shouldn't be so surprised. If we look back in history to Germany in 1923 and 1945, and more recently to North Korea in 2009-2011, when paper money became worthless at a time of huge political chaos, it was solid investments such as gold that stayed the course and kept their value. Likewise, if we revert to times of collapsing empires and consequential collapse of currencies, it was those who could protect their wealth in a hard asset, such as gold, that maintained it.

Once the privilege of the uber rich, gold is now entering the portfolios of the mainstream, with those looking for solid investments considering gold coins. As gold is easy to buy, requires little paperwork and offers secure delivery, investors can touch and feel their investment and see the long-term future flourish before their eyes.

Table 1: Nationwide House Price Index May 2017 - Monthly UK House Price Statistics

	Monthly % Change Seasonally Adjusted	3 Month on 3 Month % Change	Annual % Change	Average Price (£)
May-15	0.3	0.9	4.6	195,166
Jun-15	- 0.1	1.3	3.3	195,055
Jul-15	0.4	1.2	3.5	195,621
Aug-15	0.2	0.9	3.2	195,279
Sep-15	0.5	0.8	3.8	195,585
Oct-15	0.6	1.0	3.9	196,807
Nov-15	0.2	1.3	3.7	196,305
Dec-15	0.6	1.4	4.5	196,999
Jan-16	0.4	1.4	4.4	196,829
Feb-16	0.3	1.4	4.8	196,930
Mar-16	0.7	1.3	5.7	200,251
Apr-16	0.5	1.4	4.9	202,436
May-16	0.2	1.4	4.7	204,368
Jun-16	0.3	1.3	5.1	204,968
Jul-16	0.4	1.1	5.2	205,715
Aug-16	0.6	1.1	5.6	206,145
Sep-16	0.3	1.2	5.3	206,015
Oct-16	0.0	1.2	4.6	205,904
Nov-16	0.0	0.8	4.4	204,947
Dec-16	0.7	0.6	4.5	205,898
Jan-17	0.1	0.6	4.3	205,240
Feb-17	0.6	1.0	4.5	205,846
Mar-17	- 0.3	0.9	3.5	207,308
Apr-17	- 0.4	0.6	2.6	207,699
May-17	- 0.2	- 0.2	2.1	208,711

Source: http://www.nationwide.co.uk/~media/MainSite/documents/about/house-price-index/2017/May_2017.pdf

Table 2: coininvest.com gold sales by country

Country	% of overall Coininvest gold sales
United Kingdom	23%
Germany	20%
Spain	11%
France	7%
Italy	5%
Greece	5%

Table 3: coininvest.com increase in customers by region

Country	Increase of sales 2015 - 2017
United Kingdom	78.34%
Germany	24.06%
Spain	234.00%
France	30.07%
Italy	209.94%

Table 4: coininvest.com new customers by region 2015-17

Country	New customers 2015 - 2017
United Kingdom	30.55%
Germany	2.80%
Spain	60.40%
France	11.18%
Italy	158.69%

“ Maybe we shouldn’t be so surprised. If we look back in history to Germany in 1923 and 1945, and more recently to North Korea in 2009-2011, when paper money became worthless at a time of huge political chaos, it was solid investments such as gold that stayed the course and kept their value. ”

From our own experience, we have seen the UK market leading the way, with it now accounting for 23% of our sales, overshadowing Germany, which has remained steady in its consumption of gold coins (see table 2).

If we drill down into these statistics over a two-year period, from 2015-2017, we see a massive increase in the percentage of gold coins purchased, with the UK up over 78% and staggering increases of 234% for Spain and nearly 210% for Italy (see table 3).

Our statistics indicate that it is not just those established and possibly more secure in their investment choices who invest in gold: 35-44 year olds account for the highest level of purchasers

with 25-34 year olds and 45-54 year olds accounting for just over 20% of our overall sales.

So, while the political situation continues to be unsettled, with markets volatile and property predicted to stabilise if not dip, gold seems likely to continue to remain steady amongst the choppy waters of the future.



Daniel Marburger is a Director of www.coininvest.com, a German based online retailer of precious metals including gold and silver coins.

LBMA Events in 2017 – Save The Date



14th India International Gold Convention 11 - 13 August, 2017 Grand Hyatt, Goa, India

The LBMA will be speaking at the Convention. Organised by Foretell Business Solutions, the three day event provides an apt platform for the entire Indian bullion industry to deliberate on various challenges facing the industry, articulate the possible solutions and set an agenda for the development of the industry.

LPPM/LBMA Cocktail Reception 14 September, 2017 New York

In association with the LPPM, the LBMA is co-hosting a cocktail reception for Members only during NY Platinum Week at the Lotte New York Palace hotel. If you would like to attend, please email: admin@lppm.com

LBMA/LPPM Precious Metals Conference 15 – 17 October, 2017 Hotel Arts, Barcelona

The LBMA/LPPM 2017 Precious Metals Conference will take place at the Hotel Arts in Barcelona. Open to Members and non-Members. Registration for the Conference is open, so keep an eye on the LBMA website for further details, including the speaker programme which will be launched shortly.



LBMA Executive Outreach 24 - 27 September 2017

The LBMA Executive will be attending and speaking at the Denver Gold Forum. See www.denvergoldforum.org/dgf17/ for further details relating to the Forum.



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LBMA News

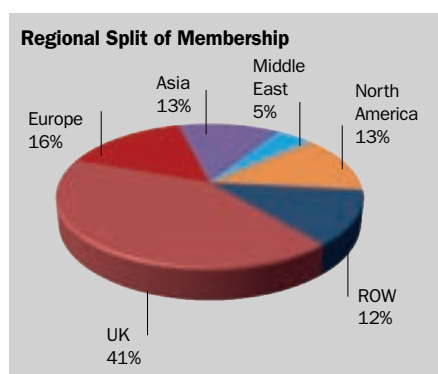
By Ruth Crowell, LBMA Chief Executive

Membership

On 5 May 2017, Jane Street Global Trading was admitted as a Full Member. On 12 May 2017, ABC Bullion (NSW) Pty Ltd was admitted as a Full Member and CJSC 'Sberbank' CIB was reclassified from Associate to a Full Member, as was National Australia Bank Limited on 22 June 2017.

These changes brought the total membership to 147 companies, comprising 13 Market Makers, 61 Full Members, 10 Affiliates and 63 Associates.

In accordance with Article 3 of the Articles of Association, the LBMA Board has recently introduced a new Membership class of "Exchange Affiliate" that will be directly linked to the existing class of Affiliate Member.



Good Delivery List

Currently, there are seven active applications for silver, one of which is in the initial review stage, three are in Stage 1 and three are in Stage 2. There is also one active gold application in the initial review stage.

There are presently 70 refiners on the Gold Good Delivery List and 79 on the Silver Good Delivery List.

LBMA Board

The Board continues to focus on a range of strategic issues and projects, including trade reporting, Responsible Sourcing and the lobbying exercise in respect of the Net Stable Funding Ratio (NSFR). The Board has also been closely involved in the recent decision to appoint ICE Benchmark Administration as the new administrator for the LBMA Silver Price. It is expected that the new platform will be implemented in Autumn 2017. In the meantime, to ensure the continuity and integrity of the LBMA Silver Price during this transition, CME Group and Thomson Reuters have committed to continue to administer the auction.

The Committee noted the departure of Steven Lowe following nine years on the Board, six of those as Vice Chairman. The Board and the Executive formally recorded their thanks for his service to the Association and the Market.

Subcommittees

Regulatory Affairs Committee

The Committee continues to provide guidance to the LBMA in respect of a wide range of regulatory developments as well as continuing to provide support and advice to the wider LBMA membership. Other issues which the Committee continues to be involved with include the LBMA-i Trade Reporting initiative, NSFR, the Market Abuse Regulation regime, Margin Requirements for Non-Cleared Derivatives, as well as the EU Conflict Minerals legislation. For further details, as well as other regulatory information, please refer to the Regulatory Update on page 20.

Physical Committee

Erwin Diethelm has retired from UBS AG and accordingly has stepped down from the Committee. The LBMA would like to thank him for his contribution to the work of both the Committee and the Association.

The Committee has been very busy over the past few months, particularly with new applications, Proactive Monitoring and recent activity relating to the Good Delivery Lists. Recent incidents and initiatives emphasise the need to ensure that market disruption is kept to minimum.

The LBMA will in future endeavour to ensure that any Former List movements due to the tangible failings will take place at the end of the calendar year to minimise disruption and confusion. This, however, may not be possible in a case that requires swift action.

The LBMA will continue to welcome refiners who do meet the strict criteria for listing. There has been a large number of Good Delivery applications in recent months and the Executive is expecting the next 12 months to be a busy period for applications, with five or six potential applications already anticipated.

The first round of Proactive Monitoring is underway, based on the revised schedule and the new requirement for refiners to demonstrate the ability to cast London Good Delivery bars.

A significant step towards greater transparency has already occurred with the recent publication of the physical gold and silver holdings of the vaults operating within the loco London market. Please see the article by Neil Harby and Joni Teves on page 3 for further details.

Membership Committee

Angus Whiteman of G4Si joined the Committee following the departure of Michael Ludwig (formerly of Malca-Amit). The Committee thanked Michael for his support of the Committee and the Association.

The Committee continues to focus its attention on the development and implementation of the Due Diligence Policy, which will be executed on a staggered basis for all members.

The Committee has worked on the development of a new category of membership, Exchange Affiliates, which was recently introduced, as well as processing a number of new applications for Full Member, Associate and Affiliate status. The Committee continues to progress the review of the sponsorship process.

Any companies including refiners, producers or central banks that may be interested in applying for membership are invited to contact the LBMA Executive at: mail@lbma.org.uk.

Public Affairs Committee

Rupen Raithatha from Johnson Matthey has joined the Committee following the resignation of John Cullen of Johnson Matthey. The Committee would like to thank John for his support of the Committee and the Association.

The Committee is focused on preparations for the annual Conference in Barcelona and is now close to finalising the Conference programme. The keynote speakers have been confirmed. Megan Greene, Managing Director & Chief Economist at MAM, will be delivering the international macroeconomic perspective and will weave into her presentation relevance to the precious metals market. Megan is a former director of European Economics, a graduate of both Oxford and Princeton universities, and comes highly recommended. In addition, Pedro Schwartz, of the Catedrático Fundación del Pino en la UCJC and Visiting Professor, University of Buckingham, will be delivering the other keynote address. He will focus on the flows of gold and silver from South America to Spain during the XVII and XVIII centuries, and compare and contrast these flows against those which are currently taking place, particularly those moving from the west to the Far East. Other highlights in the programme include a Monetary Policy session to be moderated by the LBMA Chairman, Paul Fisher, as well as dedicated sessions on investment, refiners, regulation, and a session focussed on developments in the platinum and palladium markets. The programme has been launched, see the LBMA website for details.

The Committee is also considering ways to deliver improved networking opportunities for delegates, for example, by introducing new technologies, as well as looking ahead to next year and deciding the location and venue for the 2018 Conference. The final decision will be announced at the forthcoming Conference in Barcelona, so if you haven't already registered, please do so at: www.lbma.org.uk.

Finance Committee

Simon Ward of Baird joined the Committee following the departure of Jane Lloyd of Scotiabank. The Committee thanked Jane for her support of the Committee and the Association.

The Committee has been focused on the budget and forecast out to 2019. The Committee is also monitoring the financial management of the major events throughout the year as well as the integration of the LBMA's new customer relationship management (CRM) project, which will be launched shortly. Look out for further member communications for updates on the CRM project.

Annual General Meeting

The LBMA's 29th Annual General Meeting took place at Glaziers Hall on 6 July. This year, it was the turn of the Market Maker representatives on the Board to stand down, although they were eligible to stand again for election for a further two-year period.



Given that the number of candidates was greater than the number of places available, an election was required to decide which representatives would be re-elected or elected.

Peter Drabwell, HSBC Bank plc, Raj Kumar, ICBC Standard Bank, and Sid Tipples, JP Morgan Chase Bank N.A., were duly elected as members of the Board. Grant Angwin was also elected as the Vice-Chairman of the LBMA. The other Board members are Dr Paul Fisher, Chairman, Andrew Quinn, Non-Executive Director, Medhi Barkhordar, MKS PAMP, Hitoshi Kosai, Tanaka, as well as LBMA Executive members Ruth Crowell and Sakhila Mirza.

In his report at the AGM, LBMA Chairman, Dr Paul Fisher, commented on the number of initiatives that the LBMA had introduced over the past year as well those it will be involved with in the future. An abridged version of Paul's speech is reproduced in the Editorial on page 22.

DIARY OF EVENTS FOR 2017

2017

AUG

04 - 06

Bullion Federation Global Convention
Hyatt Regency, New Delhi, India
<http://bullionfederation.com/>

07 - 09

Diggers and Dealers Mining Forum 2017
Kalgoorlie, Australia
<http://diggersnddealers.com.au/>

11 - 13

14th India International Gold Convention
Grand Hyatt, Goa, India
<http://www.goldconvention.in/>

SEP

07

World Platinum Investment Council
Quarterly Demand Supply Report
<https://www.platinuminvestment.com/reporting-calendar>

14

LPPM/LBMA Cocktail Reception
– Members only event
Lotte New York Palace Hotel, New York
admin@lppm.com

18 - 20

2017 Precious Metals Summit Beaver Creek
Park Hyatt Beaver Creek, Colorado, USA
<http://www.precioussummit.com/event/2017-summit-colorado/>

24 - 27

Denver Gold Forum
The Broadmoor Hotel, Colorado Springs, Colorado, USA
<http://www.denvergoldforum.org/dgf17/>

29 - 30

Coinex 2017
The Ballroom, Millennium Hotel, London, UK
<http://www.bnta.net/index.cfm?do=coinex>

OCT

15 - 17

LBMA/LPPM Precious Metals Conference
Hotel Arts
Barcelona, Spain
www.lbma.org.uk

26 - 27

Silver Institute Industrial Conference 2017
Embassy Suites Hotel Convention Center,
Washington DC, USA
<http://www.silverinstitute.org/site/>

30/10 - 3/11

LME Week
London, UK
<https://www.lme.com/news-and-events/events/metals-seminar/>

NOV

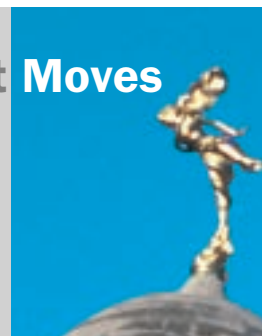
07 - 08

2017 Precious Metals Summit Zurich
Park Hyatt Zurich, Switzerland
<http://www.precioussummit.com/event/2017-summit-zurich/>

09 - 10

2017 Precious Metals Summit London
Hyatt Regency – The Churchill, London
<http://www.precioussummit.com/event/2017-summit-london/>

Market Moves



Sumitomo Corporation Global Commodities; retirement of Lance Brown and arrival of Arzhang Kaynama

Following ten valued years' service to the company, Sumitomo Corporation Global Commodities announce the departure of Lance Brown. His career in the London bullion market spanned more than 35 years and included spells with JMB, Mase Westpac, Republic National Bank and HSBC. His many friends in the precious metals community will wish him and Lucy a long and happy retirement. He has been replaced at SCGC by Arzhang Kaynama, formerly of AIG, Credit Suisse and Bank of America, Merrill Lynch.



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Regulation Update

By Sakhila Mirza, LBMA General Counsel

Responsible Sourcing

It has been five years since the LBMA launched its Responsible Gold Guidance (RGG). Both the refiners and auditors have worked hard during this time to understand the demands and expectations of the market and to ensure its successful implementation.

The LBMA RGG extends the OECD Gold Supplement for Refiners and builds on existing Anti-Money Laundering (AML) and Know Your Customer (KYC) management systems and auditing practices. It also makes what is a voluntary system (the OECD Guidance) mandatory for all LBMA Good Delivery gold refiners wishing to be accredited for the London Bullion Market. As stated in the RGG, all refiners have three months from the end of their financial year to submit an independent audit report to the LBMA. This year has seen the LBMA Executive take a more aggressive stance with refiners and auditors alike to reflect the maturity of the programme and the need to demonstrate the strict governance and control framework that the LBMA and the wider industry have worked hard to implement.

The LBMA has also been part of an industry-wide effort to encourage the EU to formally recognise industry schemes in lieu of introducing regulatory changes. This has led to the pilot OECD Alignment Assessment. It is intended that the Assessment will help to establish how responsible sourcing programmes compare with the OECD Due Diligence Guidance in terms of their standards and implementation. This will be used as a mechanism for recognising industry schemes under the new EU Conflict Minerals Legislation, which is due to come into effect from January 2021.

The LBMA continues to act as a Vice Chair for the OECD meeting on Responsible Mineral Supply Chains, the latest of which took place in Paris in May of this year.

Finally, the LBMA, in coordination with the Silver Institute, is working on launching the Responsible Silver Guidance later in 2017, a move which has been positively received by the industry.

Net Stable Funding Ratio (NSFR)

One of the most significant areas of work that the LBMA has been involved in is lobbying efforts in response to Basel III's proposed provisions on the Net Stable Funding Ratio (NSFR) requirements. The key impact of this regulation on the precious metals market will be:

- the potential fall in liquidity, as banks look to exit the market because of the high cost imposed by NSFR; or
- the increase in cost of doing business, as the banks look to potentially pass the cost on.

The LBMA has instructed Norton Rose Fulbright LLP (NRFLP) to lead the LBMA lobbying effort in Europe. Together, the LBMA and NRFLP have met with a number of LBMA members, and have drafted a position paper to send to key stakeholders, which summarises the impact that NSFR would have on the market and also includes several proposals to address the issues. NSFR provisions are expected to become applicable two years after adoption, which is expected to be in Q3 2020.

In summary, the position paper outlines that the proposed higher haircut would have a severely detrimental impact on the wholesale precious metals market both in terms of the higher cost and the equally strong probability of reduced liquidity in the market as a result. The main thrust of the proposal from the Committee is that the authorities consider carving out short-term lending in the wholesale precious metals markets as well as adopting the LPMCL model, in order to help mitigate the potential unintended consequences regarding the reduced liquidity and potential market dislocation that may occur under the regulation.

Global Precious Metals Code

The LBMA launched the Global Precious Metals Code, a set of Principles to promote the integrity and effective functioning of the global market, in May 2017.

This followed an extensive consultation period with LBMA members and the wider market. A precious metals working group was set up to help process the comments and feedback from the consultation exercise and proposed amendments to reflect best practice within the wholesale precious metals market. The precious metals market attracts a diverse range of market participants and therefore a proportional approach has been adopted in terms of implementing the requirements under the Code.

LBMA members have until June 2018 in which to implement the Code and will be able to use a standard template (the Statement of Commitment) to attest adherence to its principles.

The conference by the industry for the industry

The LBMA/LPPM Precious Metals Conference 2017

Hotel Arts
Barcelona
15-17 October, 2017

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See the LBMA website for more details.

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Editorial - One Year On. Looking Back, Looking Forward

By Dr Paul Fisher, Chairman of the LBMA

Since I became Chairman a year ago as the first independent chair of the new LBMA Board, the new Board structure seems to have bedded in well, and extensive changes have also been made to improve governance throughout the organisation, including the creation of an Executive Committee, with formal terms of reference.

The Executive Committee, comprising the senior LBMA staff and chaired by the Chief Executive, has responsibility to conduct and review the day-to-day running of the LBMA, leaving the Board to focus on the big strategic issues. I strongly believe that such improvements to governance have been essential for the LBMA to continue to promote its core values of trust, integrity and leadership on behalf of the market.

Over the past year, the spotlight has focused closely on regulatory-related issues and transparency. Most importantly, perhaps, the first ever new Precious Metals Code was issued in May this year. It is deliberately modelled closely on the FX Code produced by the G20 central banks, but considerable work had to be done to match it to the precious metals market. LBMA members will have until June 2018 to implement and attest adherence to the Code. There will be further chances to develop it over time, so we would welcome your continuing feedback.

Additionally, and also in line with the recommendations of the Fair & Effective Markets Review, the LBMA has been focused on enhancing transparency of the market. The Loco London physical holdings information for gold and silver has now been published and the data, along with a detailed commentary, can be found on page 3. Our thanks are extended to the Bank of England and all the commercial vaults for their support. Transparency in this area is something I have been interested in personally for many years and I hope it will help to counter at least some of the more outrageous conspiracy theories.

The next step is to introduce trade reporting for all four metals, through a hub called the LBMA-i. Market Makers are expected to start reporting in the coming months, followed by other members later in 2017. After a period of quality checking, it is expected that the first data will be published in early 2018. I would like to thank all members who have been engaging with that project. The Board is unanimous that trade reporting should be a condition of LBMA membership.

One of the most significant areas of work that the Association has been involved in has been lobbying efforts in response to Basel III's proposed provisions on the Net Stable Funding

Ratio (NSFR) requirements. In December 2015, the European Banking Authority (EBA) published its final report on NSFR, which included a specific section in relation to gold, highlighting concerns about the impact of a higher Required Stable Funding (RSF) for gold. The EBA recommended the introduction of the NSFR in the EU to ensure an appropriate stable funding structure in relation to the degree of asset illiquidity. The LBMA has instructed Norton Rose Fulbright LLP (NRFLLP) to lead the LBMA lobbying effort in Europe. Together, the LBMA and NRFLLP have met with a number of the LBMA members, drafted a position paper to send to key stakeholders, which summarises the impact that NSFR would have on the market and also makes several proposals to address the issues. NSFR provisions are expected to become applicable two years after adoption, which is expected to be in Q3 2020.

The position paper outlined how the proposed higher haircut would have a substantial detrimental impact on the wholesale precious metals market both in terms of the higher cost and resulting reduced liquidity in the market. The main thrust of the proposal from the Board is that the authorities consider carving out short-term lending in the wholesale precious metals markets as well as adopting the LPMCL model, to help mitigate the potential for these unintended consequences.

The last 12 months have been significant in terms of financial regulatory developments, with industry participants compelled to invest more time and resources to navigate the ever-changing regulatory landscape. Lawyers at Reed Smith have been invaluable in providing up-to-date information and guidance on the new regulation. This includes EMIR, MiFID II, Benchmark Regulations and REACH. This list is non-exhaustive, but certainly demonstrates the challenges and in-depth discussions faced at the Committee meetings.

It has been five years since the Association launched its Responsible Gold Guidance (RGG). Both the refiners and auditors have worked hard during this time to understand the demands and expectations of the market and to ensure its successful implementation. As stated in the RGG, all refiners have three months from the end of their financial year to submit an independent audit report to the Association. This year has seen the Association team take a more active stance with refiners and auditors alike to reflect the maturity of the programme and the need to demonstrate the strict governance and control framework that the Association and industry has worked hard to implement. Along with more stringent controls, the Association requires all LBMA GDL refiners to complete

a LBMA audit. A consultation on responsible silver has been completed, with the guidance due to be finalised for implementation in 2018.

The LBMA has also been part of an industry effort to get the EU to formally recognise industry schemes in lieu of introducing regulatory changes. This led to the pilot Alignment Assessment, which was conducted by the OECD in Q1 2017. It is intended that the Assessment will help to establish how responsible sourcing programmes compare with the OECD Due Diligence Guidance in terms of their standards and implementation. This will be used as a mechanism for recognising industry schemes under the new EU Conflict Minerals Legislation, due to come into effect from January 2021. The LBMA is now working on further enhancements based on the recommendations provided in the Assessment.

We have also recently announced that ICE IBA has been chosen to manage the auction for the LBMA Silver Price. It is important that the new platform is seamlessly transitioned with minimal disruption to the market. I am confident that this will be achieved, given IBA's track record of successfully managing the LBMA gold price auction and other important benchmarks. However, the issue of price discovery and reference rates is unlikely to disappear from our agenda. I am sure that the Board will continue to monitor and take advice on future developments in this area.

I have thoroughly enjoyed my first year as LBMA chair. There is a lot more for us all to do, and I hope we can get to a position where the precious metals market is no longer on the defensive, but can stand as an exemplar of best practice for fair and efficient markets. The workload has been both considerable and challenging, and the LBMA Executive, supported by the Board and the other Committees, has shown great leadership and commitment to making our association the global voice for precious metals. So although it is good to review past achievements, we cannot rest on our laurels and must continue to look forward to what we need to deliver in the future.



Dr Paul Fisher, Chairman of the LBMA and formerly of the Bank of England where he spent 26 years in a variety of senior roles most notably as a member of the MPC, the interim Financial Committee and the PRA Board and as Head of Foreign Exchange.

facing facts

By Dante Aranda, Senior Analyst,
Mine Economics, Thomson Reuters,
GFMS

Global hedge book contracts for a third consecutive quarter: Aussies remain on the sidelines.

The global producer hedge book contracted by 0.72 Moz (23t) on a delta-adjusted basis during the first quarter of 2017, representing a 9% decrease on the hedge book total at the end of 2016. As a result, the hedge book stood at a total of 7.14Moz (222t) at the end of March. Over the first quarter, Australian-based operators accounted for 36% of the gross de-hedging, with the majority of the net de-hedging coming from Newcrest (5.2t, 0.2Moz), followed by Evolution Mining (1.9t, 0.1Moz). The largest hedge was entered by Petropavlovsk, which covered 0.5Moz (17t) of production for delivery over the next two years using forward sale contracts.

Following modest hedging in the first half of 2016 led by Australian producers, the first quarter of 2017 marked the third consecutive quarter of net de-hedging in the global hedge book. What was first noted in Q2 2016 as a disconnect between the quarter-on-quarter changes in the size of the forward and option book spoke clearly to a jump in intra-year hedging activity favoured by gold producers who sought cash flow stability during the ramp-up period of their operations. With the weighted time to maturity of vanilla options trending lower since the end of 2014, further gains were capped as the broader trend of a run-down in the option book resumed despite favourable risk reversals. Altogether, the cooling-off period

that took shape over the second half of 2016 has effectively extended into Q1 2017 without much resistance as noted by the 5% to 10% drop in the hedge ratio of Australian producers.

Overall, 39 companies saw net decreases in their hedge position, while 16 companies increased the size of their hedge book. Of the net de-hedgers, PJSC Polyus effected the largest hedge book reduction as the company exercised 0.34Moz (11t) of barrier options, followed by Newcrest Mining and Fresnillo plc.

Australian-based companies accounted for 36% of the first quarter's gross de-hedging, with a total of 14 companies delivering into forward sales or collar structures, while six others were net hedgers. OZ Minerals and Millennium Minerals were amongst the largest net hedgers in the Aussie space.

Activity during the first three months of 2017 was dominated by Petropavlovsk, which over February and March added to its existing forward sales contracts due in 2017 and simultaneously hedged a portion of its 2018 and 2019 production. Petropavlovsk has been an active key player in the hedging space since early 2013 when its board decided to hedge up to 50% of budgeted production to provide cash flow stability as the company continued with its capital investment programme. The latest hedge, announced in late April, is the largest single hedge since 2013, spanning beyond the usual 12 to 18-month period it is accustomed to allowing to cover production.

Last year, the group delivered 0.1 Moz (4t) of production into its forward contracts for a net loss of \$8.5m after realising an average selling price \$21/oz below the market due to its hedging

arrangements. This year's hedge places a cap on 0.5 Moz (17t) of future production to be sold at an average of \$1,252/oz over the next 24 months. We estimate that over 2017, gold prices will average \$1,259/oz before jumping to \$1,425/oz in 2018 and \$1,500/oz in 2019. As result, we expect Petropavlovsk's footprint in the global hedge book to gradually contract on a delta-adjusted basis as the group sees it appropriate to use a combination of forwards and less costly put option contracts to replace positions at higher gold prices.

At the end of March, the global delivery schedule for Q2 2017 amounted to 1.2 Moz (36t). Prior to the end of the second quarter, few reports of new hedging had surfaced to counter this scheduled de-hedging activity. In April, St. Barbara Limited announced that it had entered into a hedging arrangement covering nearly two tonnes of production using forward sale contracts, followed by a second announcement in early June. Elsewhere, Silver Lake Resources entered into forward sales covering one tonne of production, followed by Shanta Gold, Millennium Minerals and Citigold. The latter announced in June that it had entered into a purchase agreement for the sale of three tonnes of gold in situ to be delivered within a five-year period. Citigold seeks to accelerate its projected gold sales revenue to recommission the company's Charters Towers Gold Project into the targeted seven tonnes per year.

Recent announcements and management commentary suggest that gold producers are developing a more open attitude towards hedging; however, it should be noted that most of the activity announced to date remains

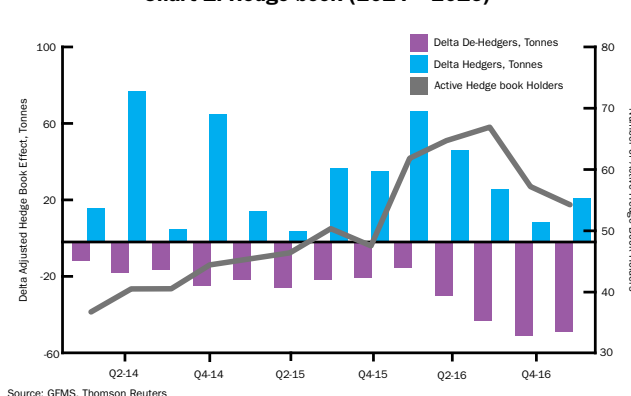
modest by historical standards. Furthermore, with an apparent trend to hedge over shortening tenors (this is in part due to central bank attitudes towards risk as well as the views of the mining companies) and with prices expected to post gains over the medium term, hedge volumes are becoming increasingly established as intra-year activity, which will limit the growth of the hedge book. As a result, GFMS forecasts that a modest 33 tonnes of de-hedging will emerge in 2017.



Dante Aranda,
Senior Analyst,
Thomson
Reuters, GFMS

Dante began his career in the commodities market in 2010 when he joined Thomson Reuters in Toronto as a commodities specialist, working with a broad range of natural resources companies. Now based in London as a precious and base metals mining analyst, he is heavily involved in the team's modelling of mine production and industry costs using Matlab and VBA and is also a leading contributor to the GFMS team's technical analysis. Prior to Thomson Reuters, he worked at Banco de Credito del Peru as a Junior Trader on the FX structured products desk. He holds a BSc (Honours) in Financial Economics & Applied Statistics from the University of Toronto, and is a CFA Level III Candidate.

Chart 1: Hedge book (2014 – 2016)



The Alchemist is published quarterly by the LBMA. If you would like to contribute an article to the Alchemist or if you require further information please contact Aelred Connelly, London Bullion Market Association, 1-2 Royal Exchange Buildings, Royal Exchange, London EC3V 3LF
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