ACF EQUITY RESEARCH

THEMATIC

$2,200/oz

52 wk Hi/Lo

$1,986 / $1,631

Thursday, 23 March 2023

Precious Metal Prices	(23/03/2023)
Gold (USD/oz)	1,978.30
Silver (USD/oz)	23.00
Platinum (USD/oz)	996.80
Palladium (USD/oz)	1,475.00
Rhodium (USD/oz)	8,400.00

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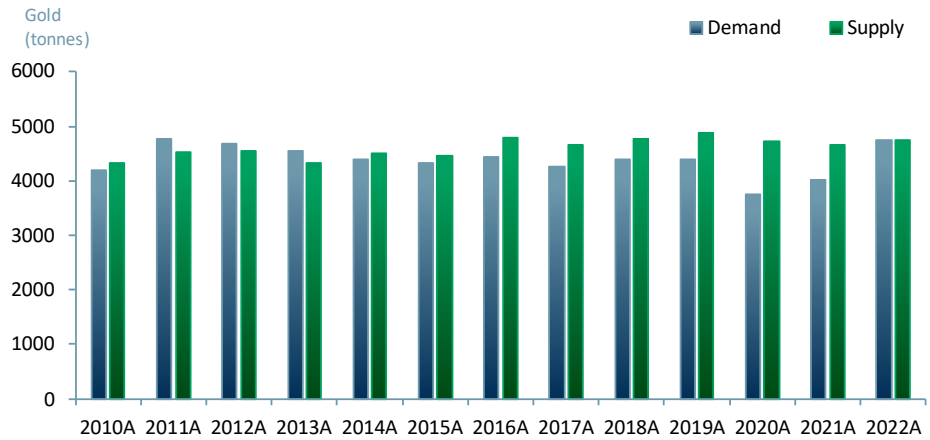
Gold (Au) Market

Gold Poised to Shine in 2023 – Target $2,200/t oz

We expect the gold price to increase in 2023 driven by rising recession expectations coupled with prospects of a weak dollar and higher inflation. Geopolitical tensions have led to risk-off sentiment supporting gold demand (safe-haven asset). In contrast, higher rates are negative for gold. Peak central bank rates expected in mid-2023 (US 4.9%, UK 4.5%, EU 3.75%), could be a key trigger for gold prices. We expect central bank interest rates to fall in 2023 post peak. This will make government bonds less attractive and help drive investor demand for gold and add to upward price pressure. Central banks are set to continue buying more gold, providing a floor for the price. The shorter term gold price outlook hinges on monetary policy trajectories.

- Expected interest rate peak will support gold price in 2023;
- Geopolitical tensions make gold a valuable asset;
- Gold supply driven by increased mine production & recycling;
- Gold demand driven by central bank buying & ↑ consumer demand.



Sources: ACF Equity Research Graphics; World Gold Council.

Investment Case

Gold prices jumped 9% in in 4Q22A and are heading for >10% in 1Q23E.

The LBMA Gold Price jumped 9.1% in 4Q22, ending the month of December 2022 at US $1,812.35/oz, Jan23 at US$ 1,905.20 and Feb23 at US$ 1,810.20. The price rise has been supported by investor changes to risk appetite generated by geopolitical tensions, rising recession expectations and elevated inflationary pressure. Some investors are also of the view that inflation has peaked and that central bank rates may be close to their peaks.

We expect Fed rates to peak before YE23 and then begin to come back this year.

A weakened US$ means more $s are required to buy a troy ounce of gold.

US Federal interest rate - Current US Federal interest rate target range as of Mar 2023 is 4.75-5%. The Fed forecasts that the interest rate will peak at 5-5.5% by the end of 2023. This implies more hikes throughout 2023, albeit fewer and lower moves than seen during 2022. This could result in bond yields peaking and even moving down, which should be positive for gold which does not provide a coupon and so does not provide a reliable regular income yield.

However, the US$ may not weaken on reduced interest rates if the US economy proves to be the most resilient global economy this year after Chinese reduced growth rate expectations.

Inflation - As inflation recedes, which should be positive for the gold price, we also expect the dollar to weaken after strengthening for nearly two years straight. The US dollar index (DXY) has described a sharp drop during 4Q22 (exhibit 11). Falling inflation and a weaker global growth outlook will continue to weigh on the dollar in 2023.

Central Bank gold buying in 2023 may be less intense than activity in 2022, but we expect the renewed interest in CB gold buying to continue through 2023.

Central Bank buying - Another key driver for the gold price is central bank gold purchases, which continue to outpace expectations. Globally, central banks added 1,135.7t in 2022, versus 450.1t in 2021 (up 152% y/y), the highest on record since 1950 (World Gold Council). According to the WGC, central bank buying in 2023 is likely to be less than 2022 possibly because of asset allocation constraints driven by increasing CB preferences for FX and other assets.

In 2023 monetary policy is the key gold driver – any signs or signals of rate cutting could trigger a significant rally in the gold price.

In our view, much of the gold price outlook hinges on the trajectory of global monetary policy. Any signs of rate cuts could trigger a significant rally in the gold price. In contrast, a soft landing for the economy that avoids a recession could be a negative for the gold price and may cause investor appetite for risk to rise leading them to reallocate assets towards equities and corporate bonds.

Catalysts

Positives: Mild recession; Dovish Central Bank Policy; Weakening US Dollar.
Negatives: Low inflation; Increased consumer spending; Market speculation.

Gold (Au) Market

Ductile, malleable, corrosion resistant, imperishable and lustrous.

Chemical introduction - Gold is a chemical element with the symbol Au and the atomic number 79. Gold has several qualities that have made it valuable and attractive throughout history. It is highly malleable, ductile, corrosion resistant and found in nature in a relatively pure form. It is not only rare, but also visually pleasing because of its yellow lustre. It is imperishable and is therefore largely used for jewellery or in coin or bar form as a store of value.

Store of value, medium of exchange, reserve asset.

Store of value introduction - Gold's unique qualities have made it universally accepted as an exchange for goods and services. Gold also played a key role in the monetary system. The Gold Standard was the basis for the international monetary system from the 1870s to the early 1920s where the value of a currency was pegged to gold. Within the Bretton Woods System the US dollar was established as the dominant currency with the dollar converting to gold at a fixed price of $35/oz.

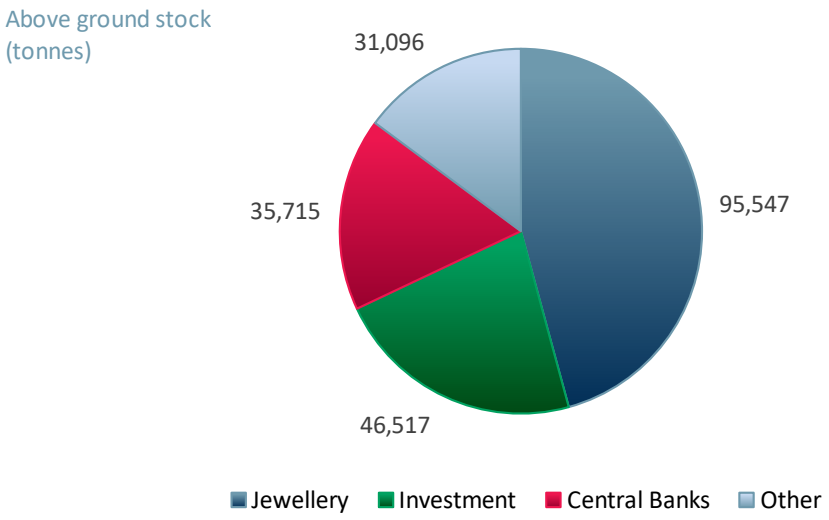
In this system, the value of currency was pegged to gold. The gold standard was in prevalence until it was stopped by President Nixon in 1971. Although gold's official role in the international monetary system had come to an end by the 1970s, the metal remains an important reserve asset. ~45% of all the world's gold is held by governments and central banks for this purpose.

Crustal abundance and economic deposits in nature are rare.

20% of gold mined annually is a by-product of copper and nickel production.

Geological abundance introduction - Gold is very rare in nature, crustal abundance is estimated at ~0.001-0.006 ppm. Crustal abundance is a relative guide, what is important in practice from a mining perspective is economic concentration, this is also rare. Gold is primarily found as nuggets or grains in rocks, in veins and in alluvial deposits (silt, sand, clay and gravel). Up to 20% of the gold mined annually is extracted as a by-product primarily from copper and nickel. At FYE21 the total above ground stocks of gold were estimated at 205,238 tonnes (7.1 bn oz), (World Gold Council). The largest portion (94,464t or 46%) is estimated to be in the form of jewellery.

Exhibit 1: **Above ground gold stock 2022A**



Sources: ACF Equity Research Graphics; World Gold Council.

Deposit identification to gold production 10-20-year timeframe, much of which is legislation related (e.g., permitting process).

Gold mining is extremely capital intensive and time consuming. Before any gold can be extracted, significant exploration and development needs to take place. On average, it takes between 10-20 years before a mine is ready to produce material that can be refined.

When bringing mined gold to market, mining companies have two options:
1) sell newly mined gold now (at the current price); or
2) sell gold which has not yet been mined (i.e., still in the ground) now (i.e. as a hedge).

Gold hedging is key economic tool for mining companies.

Gold hedging is the process by which mining companies forward-sell future mine production at a contractually specified gold price. In this way the mining company is guaranteed to receive a predictable future price for its gold when it is produced, regardless of the prevailing gold price at that time.

There are many exchanges globally which allow trading of futures as well as forward contracts. The most important are:

- COMEX: the New York commodity futures exchange that was merged with the NY Mercantile Exchange NYMEX and is now operated by CME (Chicago Mercantile Group).
- SHFE: Shanghai Futures Market Exchange
- SGE: Shanghai Gold Exchange
- TOCOM: Tokyo Commodity Exchange
- MCX: Multi Commodity Exchange of India Ltd.
- DGCX: Dubai Gold & Commodities Exchange
- Borsa Istanbul

Exhibit 2: **Global exchanges trading gold futures contracts**

Exchange	Country	Currency	Unit	Minimum price tick (local currency)	Minimum price tick (US $/oz)
MCX	India	INR	Gram	1.00	0.38
TOCOM	Japan	JPY	Gram	1.00	0.22
COMEX	US	USD	Ounce	0.10	0.10
DGCX	U.A.E.	USD	Ounce	0.10	0.10
SHFE	China	CNY	Gram	0.02	0.09
Borsa Istanbul	Turkey	USD	Ounce	0.05	0.05
SGE	China	CNY	Gram	0.01	0.04

Sources: ACF Equity Research Graphics; exchange websites; mycurrencytransfer.com
Notes: Tick size to refers to the amount a price of a trading instrument can move up or down on an exchange.

Gold Supply

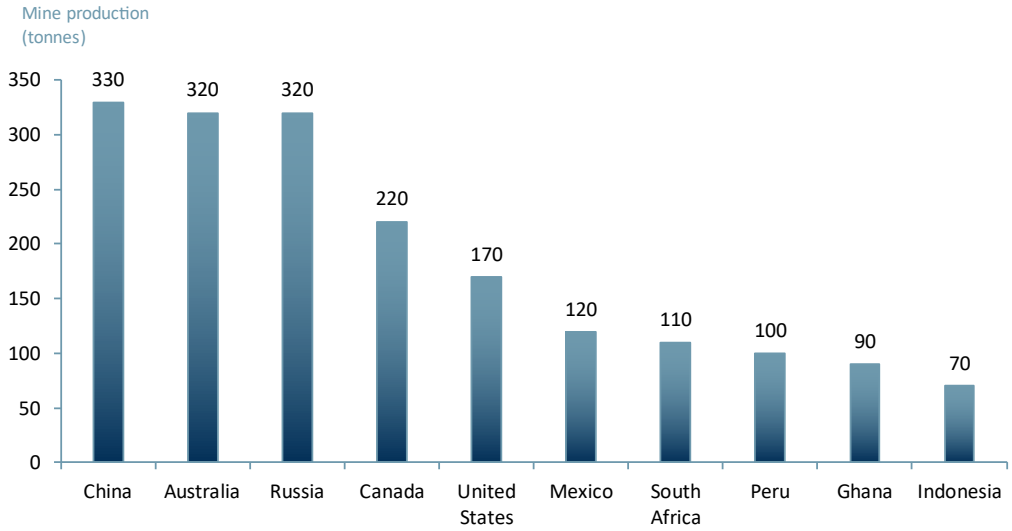
Recycled gold 25-30% of supply. Some sources (WGC, USGS) suggest that 25-30% of gold supply is from recycled gold rather than mined gold (70-70% of supply).

The key components of gold supply are mine production and scrap disposals (recycling). According to the World Gold Council, mine production globally (total supply) in 2Q22 rose by 911.70 tonnes (4% vs 2Q21). Recycled gold rose by 291.10 tonnes (5% vs 2Q21). Sources of recycled gold are dominated by jewellery, electronics and coins and bars.

Mine Production

Total gold mine production for 2022E was 3,100t, below the record high of 3,655t achieved in 2018A, and 0.3% higher than 2021A (USGS). The world's top three gold producing countries in 2022E were China at 330t, Australia at 320t, and Russia at 320t. Canada and the US come in 4th and 5th, respectively (exhibit 3), according to the preliminary data released by the US Geological Survey (USGS).

Exhibit 3: **Top ten gold producer countries 2022E**

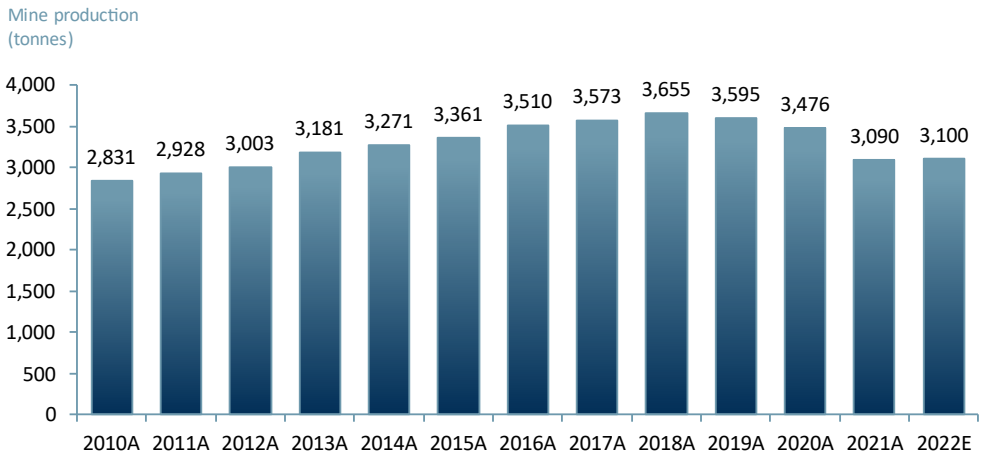


Sources: ACF Equity Research Graphics; US Geological Survey.

Supply growth.

According to data from the Australian Government Department of Industry, Science, Energy and Resources (DISER), world gold supply is forecasted to rise at an average annual rate of 1.1% between 2022 and 2023. Supply will be propelled by higher mine production, which is forecasted to increase by 3% in 2022 and 2% in 2023.

Exhibit 4: **Mine production 2010A-2022E**



Sources: ACF Equity Research Analysis; World Gold Council; USGS.

ESG (e.g., carbon neutral targets) is a driver for gold recycling vs. gold mining. Recycled gold <1/20th carbon footprint of mined gold.

Gold recycling contribution to gold supply distorted by COVID driven operational shutdowns.

We expect underlying recycling gold supply to continue to grow in 2023E.

Recycled Gold

For 12m 2022, recycled gold supply was up 1% y/y to 1,144.1t (vs. 1,136.2 in 2021), as a result of the Russia-Ukraine war pushing the price to above $2,000/oz (World Gold Council). (Year-on-year, 3Q21 vs 3Q22, gold recycling supply fell by 6% as a result of operations shutting down due to Covid restrictions.)

We expect recycled gold supply to continue to increase in FY2023E in light of a weakening global economy and the rising cost of living. A weaker US dollar will also be a factor in driving the gold price up, which in turn will drive demand for less-expensive-to-produce recycled gold.

Furthermore, recycled gold is also gaining traction because of climate change concerns – recycled gold is viewed as more ethical and sustainable than mined gold. The carbon footprint of 1 kilogram of gold (35.3 oz equivalent) is less than one-twentieth of that of traditional mining (Royal Society of Chemistry).

Gold Demand

Investment hedge.

ETFs.

Central bank buying on the rise.

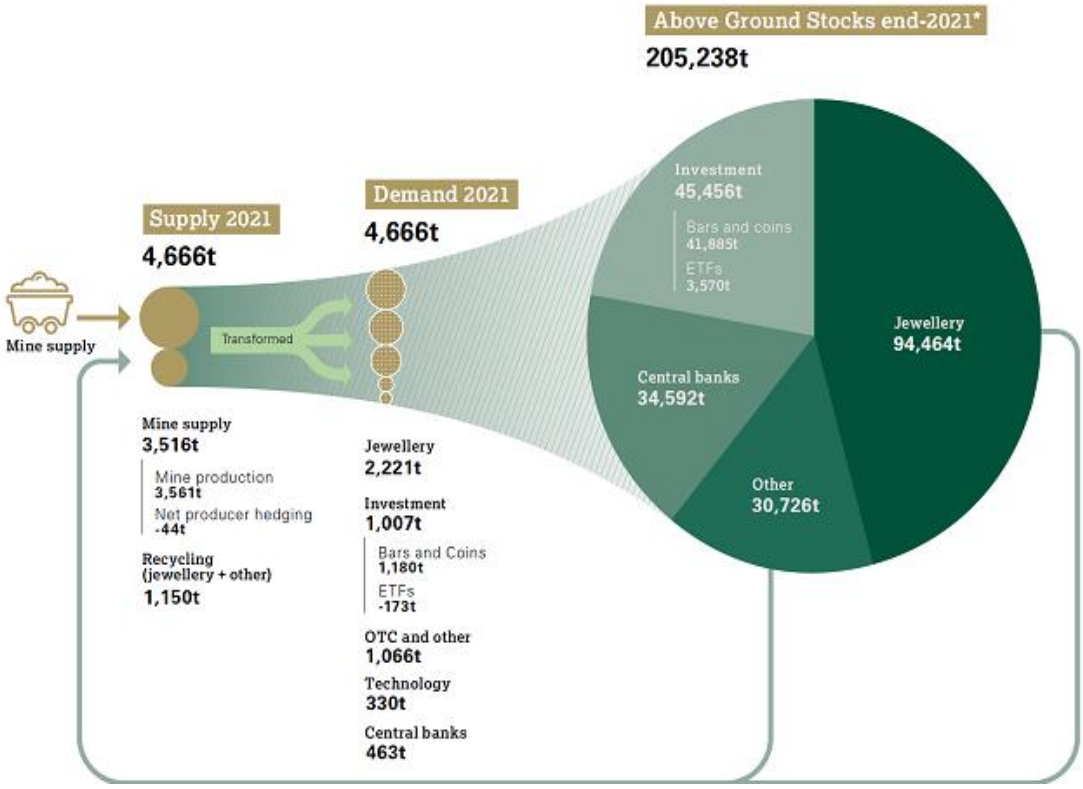
Jewellery and technological demand.

Gold and other precious metals act as an investment hedge during times of economic uncertainty. Rising recession expectations coupled with geopolitical tensions and elevated inflation are likely to lure investors to gold. This was evident from the last quarter of 2022 which delivered a solid gain in gold prices driven by demand growth.

The main factors driving the demand for this precious metal include central bank buying, jewellery, technology and investment ETFs (exhibit 5).

Exhibit 5: **Top drivers of gold demand 2021A**

We expect more of the same in 2023E.



Sources: ACF Equity Research Graphics; IMF.

Central bank buying

CB trend reverses.

Central banks (CBs) around the world have returned to increasing their gold stocks as markets and economic uncertainties persist. Note that the more recent trend previous to this year has been for CBs to decrease the proportion of gold in asset allocation.

CB buying hits record YE22A.

Buying by central banks hit an all-time annual record in 2022 reaching 1,135.7 metric tons. As at end Dec 2021/Jan 2022 there was a total of ~34,654 metric tons in central bank reserves, which we estimate to be between 17.7% and 20% of all the gold ever mined, depending on the source but generally considered to be ~195.5kMT as of 2021 (IMF, Mar22).

The top 10 largest gold holding countries make up ~68% of total global reserves (exhibit 6), led by the US at 23% of total reserves.

CB buying led by hyper developed markets. Developing/emerging markets are following.

The central bank buying trend has historically been led by developed markets, but developing markets are following suit. Turkey, for example, reported the largest buy in 2022 at 542t, followed by Egypt at 47t and Qatar at 34t.

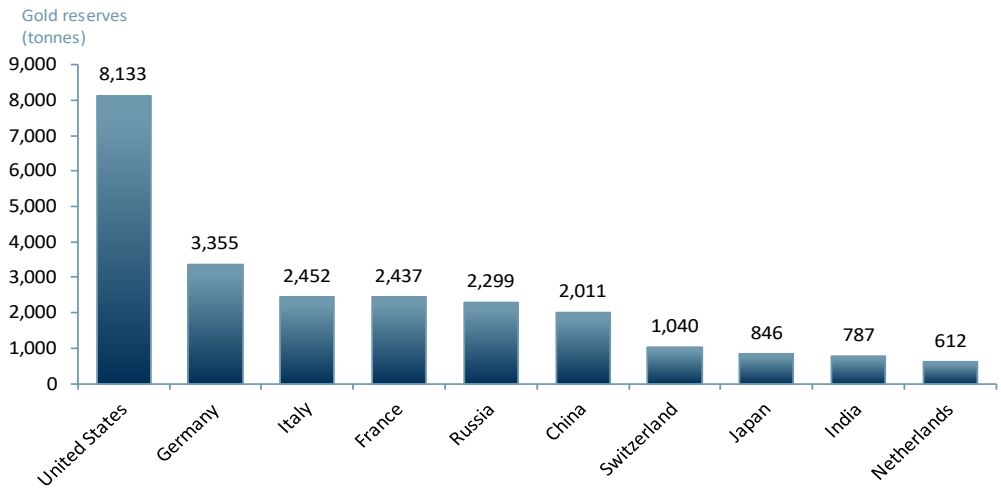
Rising geopolitical uncertainty is driving economic uncertainty make gold an attractive asset.

As economies remain uncertain and central banks need to diversity their reserve assets, gold remains an attractive alternative.

Natural inflation hedge.

Because gold is a finite physical commodity it is a natural hedge against inflation compared to cash, of which more can be created at the press of a button by central banks.

Exhibit 6: **Top 10 largest gold reserve holding countries 4Q22A**



Sources: ACF Equity Research Graphics; World Gold Council.

Jewellery demand softens for YE22A vs. YE21A as gold prices rise. We expect jewellery demand to soften further during YE23E.

Jewellery

The global demand for gold jewellery in 2022 softened compared to 2021 demand, which had recovered to pre-COVID levels. Jewellery demand decreased as a result of strong gold prices and China's lockdown. Primary consumers of gold saw a decline in 2022 - India was down 2% to 600.4t and China was down 15% to 570.9t. Overall, global gold jewellery demand reached 2,086.2, down 3% y/y.

Technological uses for gold are increasing. Therefore, underlying technological demand is set to increase. However, technology sector gold consumption YE22A fell 7% y/y due to weaker consumer spending on electronics.

Technology

The demand for gold from the technology sector, including electronics and industrial applications, fell by 7% y/y to 308.57t in 2022. The higher interest rate environment weighed on consumer electronics demand, which led to a lower utilization at semiconductor fabrication plants globally. The electronics sector, accounts for nearly ~80% of gold used in technology (World Gold Council).

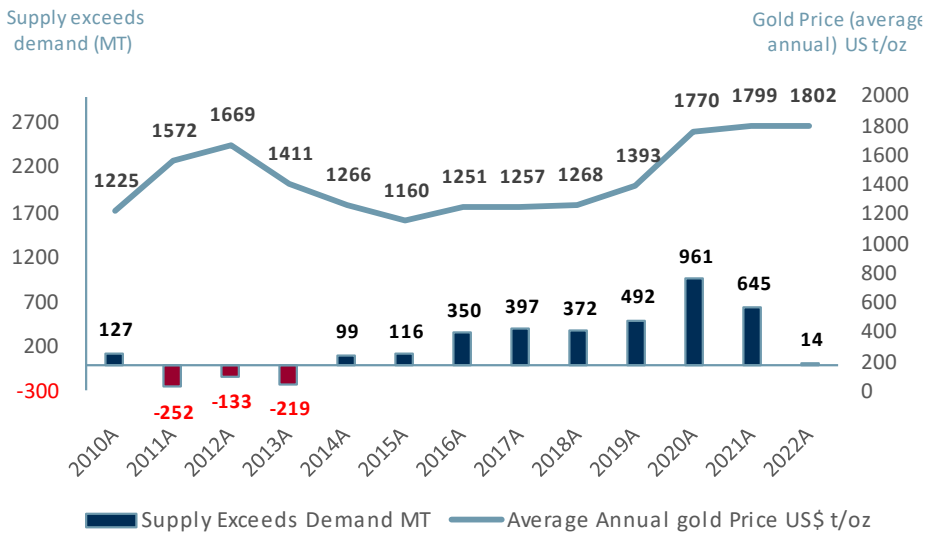
The chemical and physical properties of gold as an efficient electrical conductor promote its use in electronics (for example GPS, cell phones and calculators) and automotive applications, i.e., automotive computers.

Gold EFT outflows during YE22A.

Investment ETFs

Investment demand suffered as ETFs reduced their holdings as global interest rates rose. Global gold ETFs saw outflows of 110.4t (US $3bn) during 2022, bringing collective ETF gold holdings to 3,473t (US $203bn) by the end of 2022 (World Gold Council).

Exhibit 7: **Supply above or below demand vs. average gold price**



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Sources: ACF Equity Research Estimates.

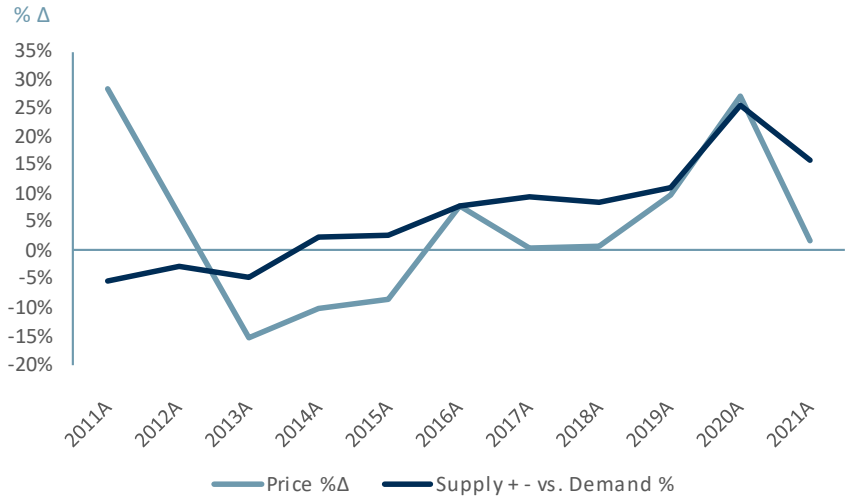
Gold Price Outlook

Our analysis suggests the gold price is not driven directly by supply deficits or over-supply. Our analysis suggests that the gold price is a forward indicator of supply expectations (see exhibit below).

This in turn suggests that the gold price is driven by the metal's other characteristics such as its use as a store of value, a risk hedge, a reserve asset an investment class, cost to extract, etc. Explorers and miners respond to the changing price of gold as would be expected in a typical commodity model such as the cobweb pricing model.

The chart indicates that the gold price is not explicitly driven by under or over supply. The underlying data suggests that the price of gold is a forward indicator of supply and reserves volumes, as would be expected and so is an indicator of forward capex (investment) demand.

Exhibit 8: **Gold price % Δ vs. % of over-or under supply**



Sources: ACF Equity Research Estimates.

Gold prices rose ~9% 4Q22A and are heading for >10% 1Q23E.

In our assessment gold could reach $2,200/t oz during 2023E.

The gold price outperformed in 4Q22A, rising nearly 9.1%. The LBMA gold price at end-Dec22 stood at US $1,812.35/oz. The key drivers for the higher gold price were rising recession expectations coupled with prospects of a weaker dollar and increased inflation. In our view, monetary policy and inflation will remain key drivers for the direction of gold prices in 2023.

While inflationary pressure is showing early signs of cooling, it remains elevated and well-above the targeted range of central banks. As a result, interest rates are still expected to increase, though we may be close to peak rates and the pace of monetary tightening may slow.

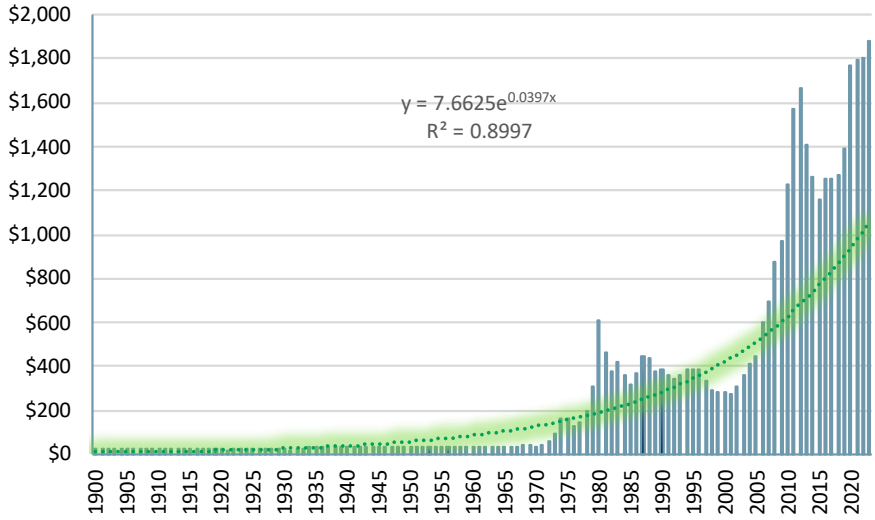
ACF's Outlook 2023 indicates that inflation has peaked and as a result interest rates will peak in 2023. This could result in bond yields peaking out and even moving down, a scenario positive for gold prices.

Gold does not have a dividend, yield, or coupon, and typically falls out of favour in a rising yield environment. Rising bond yields are traditionally negative for gold prices, raising the opportunity costs of holding the precious metal, which is a non-yielding asset.

In the longer run the price of gold appears to rise with expansion of global nominal GDP (which captures the effects of inflation and growth) and cost to extract.

In the shorter run global geopolitical and economic factors appear to drive the gold price.

Exhibit 9: **Average annual gold prices 1900-2023 YTD**



Sources: ACF Equity Research Graphics; London Gold Fixing; Macrotrends.

We expect market corrections and recoveries to be v-shaped, i.e.sharp checks followed by sharp rises.

Monetary tightening policies from central banks are likely to dampen global economic growth. We expect the US, Eurozone and the UK to enter or come close to shallow recessions in the early part of 2023, before beginning to revive end of 2Q23. If this happens we expect slower growth for the rest of the world too. Potentially slowing global growth along with elevated inflation will prompt the safe-haven demand for gold.

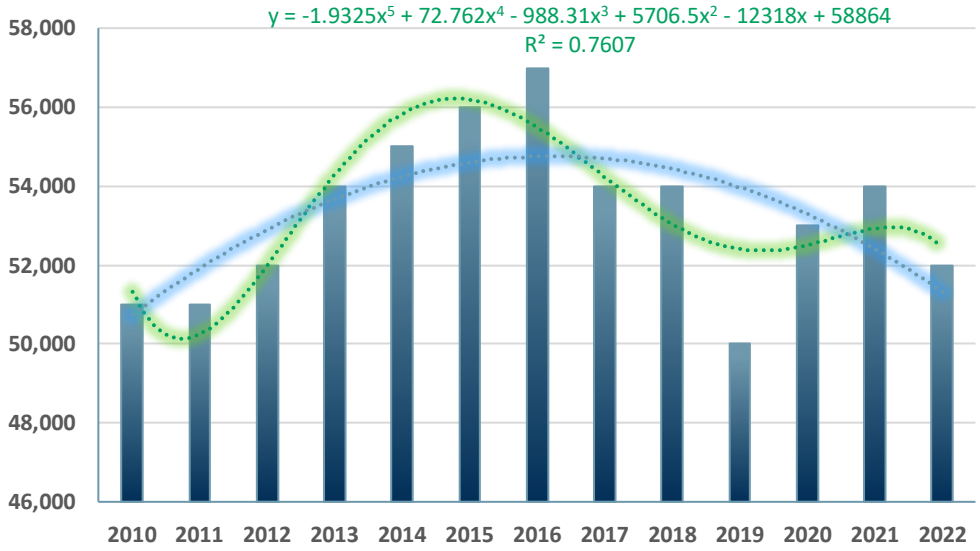
We expect falling interest rates in 2023, which will create downward pressure on the US$.

A strong US economic performance vs. China and other growth markets would act as an upward driver for the US$ and so downward pressure on gold prices.

In 2023, we see US dollar dominance weakening as inflation recedes, which should again be positive for the gold price. The USD has strengthened for nearly two years straight, then in 4Q22 the US dollar index (DXY) delivered a sharp drop to $103.52 by end Dec22 and has since recovered to $104.51 by 15Mar23 (exhibit 11). A weak dollar is typically positive for the gold price. The current geopolitical flare-ups could continue to lend support to gold as a valuable hedge along with commensurate increasing consumer demand for jewellery as portable wealth in times of political uncertainty.

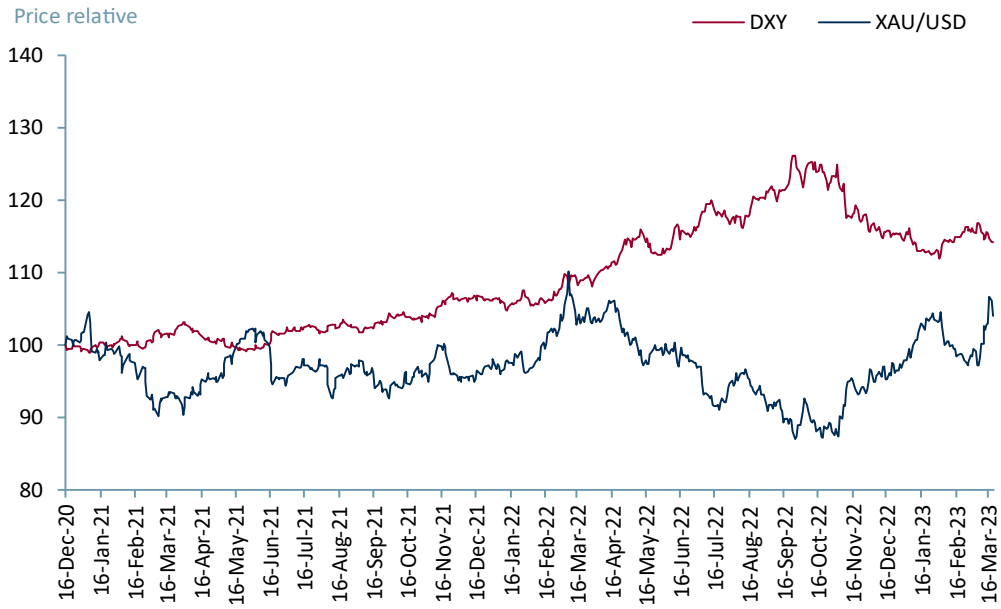
Exhibit 10: **Global gold mine reserves (MT) 2010-2022A**

Global goldmine reserves in metric tons (MT) between 2010 and 2022, both out trend lines suggest a declining reserves trend with an R^2 correlation of 0.7607 including a peak reserves period 2014-to 2016.



Sources: ACF Equity Research Graphics.

Exhibit 11: **USD index (DXY) vs gold spot (XAU/USD) Dec 20–Mar23**



Sources: ACF Equity Research Graphics; Investing.com.

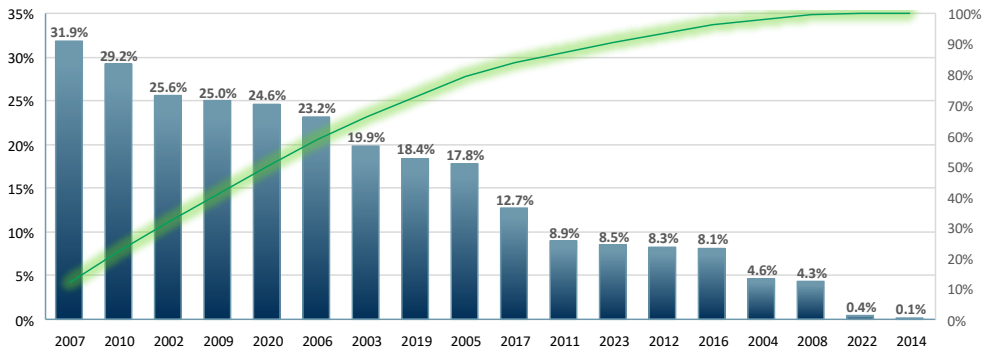
CME gold futures support our US$ 2,200/t oz gold price target.

Our positive outlook for gold is also reflected in the CME Gold Futures, which are pointing upwards and suggest gold prices could touch $2,200/t oz by December 2023 (versus spot price of $1,978.30/t oz currently). The gold spot price today continues to sit at the $1,900/oz support line.

On balance, we expect gold prices to increase in 2023. There are, nevertheless, downside risks to our position - a soft-landing for the global economy could shore-up the business confidence and consumer spending, which will benefit risk-assets and decrease demand for gold assets, which is likely to cause the gold price to decrease.

Exhibit 12: **Pareto investment returns for gold 2002-2022A**

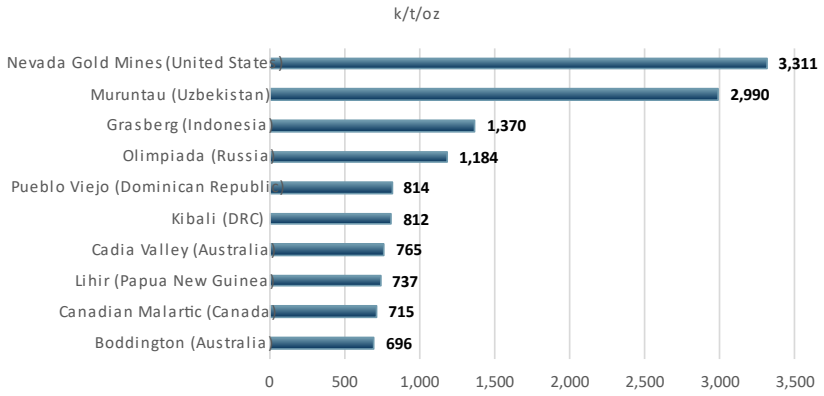
The Pareto chart suggests that significant 12-month gold rallies have occurred fairly regularly over the last 20 years and that poor returns years seem to be followed by outperformance years (broadly). 2022 was a low returns period, 2023 has started strongly but is still significantly below 9 of the highest returns years.



Sources: ACF Equity Research Estimates; Word Gold Council.

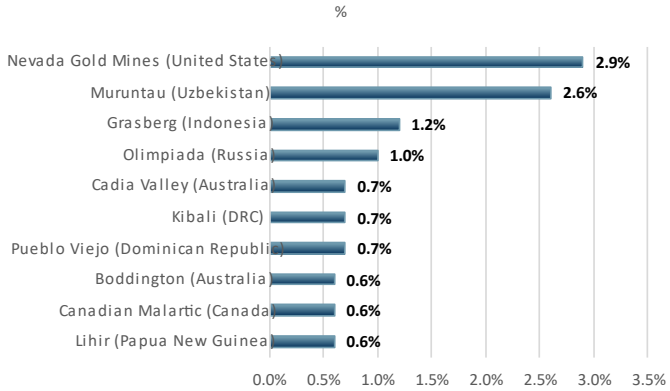
Top Gold Production Companies

Exhibit 13: **Top 10 producing mines in '000s troy ounces (t/oz) 2022A**



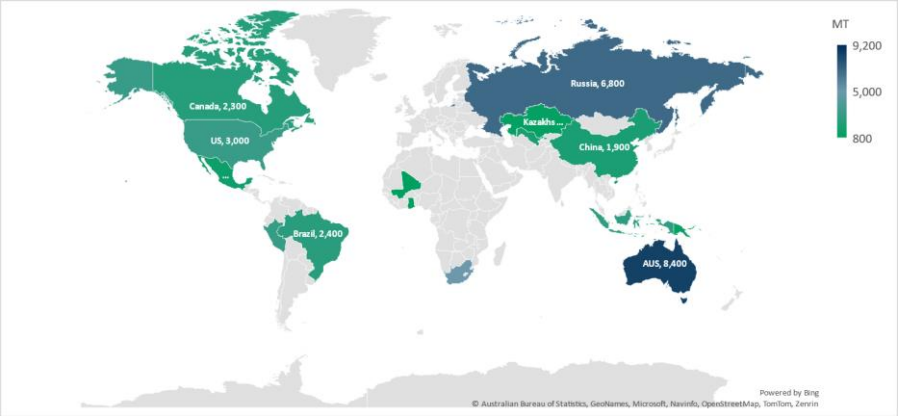
Sources: ACF Equity Research Graphics; World Gold Council; Mining.com.

Exhibit 14: **Global production % share of top 10 gold mines 2022A**



Sources: ACF Equity Research Graphics; World Gold Council; Visual Capitalist.

Exhibit 15: **Leading mine reserves (MT) by country 2022A**



Sources: ACF Equity Research Graphics; USGS.

Exhibit 16: Top 10 gold mine operators and owners 2021A

Tkrs	Largest gold mines worldwide as of 2021, by production volume (in ounces)	Operators	Owner 1	Owner 2	k/t/oz	% Global Prdctn
ABX	Nevada Gold Mines (United States)	Barrick	Barrick	Newmont	3,311	2.9%
ABX	Pueblo Viejo (Dominican Republic)	Barrick	Barrick	Newmont	814	0.7%
AU	Kibali (DRC)	Barrick	Barrick	AngloGold Ashanti	812	0.7%
NEM	Boddington (Australia)	Newmont	Newmont		696	0.6%
3	**Barrick + Newmont Sub-totals**				**5,633**	**4.9%**
Prvt	Muruntau (Uzbekistan)	Navoi Mining	Navoi Mining		2,990	2.6%
FCX	Grasberg (Indonesia)	PT Freeport Indonesia	Freeport-McMoRan		1,370	1.2%
Prvt	Olimpiada (Russia)	Polyus	Polyus		1,184	1.0%
NCM	Cadia Valley (Australia)	Newcrest Mining	Newcrest Mining		765	0.7%
NCM	Lihir (Papua New Guinea)	Newcrest Mining	Newcrest Mining		737	0.6%
AUY / AEM	Canadian Malartic (Canada)	Canadian Malartic	Yamana Gold	Agnico Eagle	715	0.6%
4	**Others Sub-totals**				**7,761**	**6.7%**
7	**Totals**				**13,394**	**11.6%**

Sources: ACF Equity Research Estimates; Visual Capitalist; Company reports.

Exhibit 17: 7 opportunities to invest via equity in the top 10 gold mines

TTM Metrics / Company Name	Market	Tkr	MCAP US$(m)	EV US$(m)	FCF US$(m)	Revs US$(m)	GM%	MCAP / REVS	EV / EBITDA	EV / FCF	FCF M%
Freeport-McMoran	XNYS	FCX	53,579	56,379	2,030	22,780	42.6%	2.35x	6.05x	27.77x	8.9%
Newmont	XNYS	NEM	37,993	40,483	1,380	11,910	38.0%	3.19x	10.17x	29.34x	11.6%
Barrick Gold	XNYS	GOLD	43,815	44,625	1,450	11,010	31.5%	3.98x	7.45x	30.78x	13.2%
Agnico Eagle	XTSE	AEM	23,179	22,698	227	4,200	54.0%	5.52x	12.56x	99.80x	5.4%
Newcrest Mining	XASX	NCM	15,400	16,896	121	4,610	29.3%	3.34x	7.97x	139.64x	2.6%
Yamana Gold	XLON	AUY	9,385	9,637	345	1,983	60.5%	4.73x	9.47x	27.90x	17.4%
Anglogold Ashanti	XNYS	AU	8,492	9,552	-330	4,500	25.6%	1.89x	6.87x	N/M	N/M
Average							39.82%	3.77x	9.08x	65.49x	10.04%
Median							34.78%	3.66x	8.72x	30.78x	11.59%

Exhibit 18: 5 opportunities to invest in explorer future producer assets

Note that in the peer group tables the stock highlighted in blue has been excluded from the average and media values to minimise distortion and encourage comparison between the highlighted stock and the peer group.

TTM Metrics / Company Name	Market	Tkr	MCAP US$(m)	EV $(m)	EV / REVS	M+I+I (Moz)	MCAP / M+I+I	EV / M+I+I
Perpetua Resources	XNAS	PPTA	314	285	N/M	7.93	39.58x	35.89x
Artemis Gold	XTSX	ARTG	584	536	N/M	13.91	42.02x	38.56x
Skeena Resources	XNYS	SKE	555	536	N/M	6.48	85.66x	82.67x
Integra Resources	XNYS	ITRG	57	46	N/A	4.93	11.65x	9.42x
Marathon Gold	XTSE	MOZ	233	115	N/A	5.06	46.10x	22.79x
Average							46.36x	38.36x
Median							46.36x	38.36x

Sources: ACF Equity Research Estimates; Refinitiv, Company reports.

Glossary

Alluvial Deposits	The soils deposited in riverbeds are known as alluvial deposits.
Au	Refers to the periodic symbol for Gold
Bretton Woods System	A system of established rules for commercial and financial relations among the US, Canada, Australia, Japan and Western European countries created after the Bretton Woods Agreement.
By-product	A secondary metal or mineral product recovered in the milling process.
CME	Chicago Mercantile Exchange Group – The largest global financial derivatives exchange.
COMEX	The Commodity Exchange Inc. - Primary futures and options markets for trading metals: gold, silver, copper and aluminium.
DGCX	Dubai Gold & Commodities Exchange – Financial and commodity derivatives exchange.
DISER	Department of Industry, Science, Energy and Resources – Australian government department responsible for efforts to drive economic growth, productivity and competitiveness.
ETF	Exchange Traded Funds - A type of investment fund traded on stock exchanges.
Forward Contract	The sale or purchase of a commodity for delivery at a specified future date.
Hedging	Taking a buy or sell position in a futures market opposite to a position held in the cash market to minimize the risk of financial loss from an adverse price change.
LBMA	London Bullion Market Association – An international trade association representing the global Over The Counter (OTC) bullion market and is a global authority on precious metal.
MCX	Multi Commodity Exchange of India Ltd. – India's largest commodity derivatives exchange.
Nugget	A small mass of precious metal, found free in nature.

NYMEX	New York Mercantile Exchange – Commodity futures exchange owned by CME.
SGE	Shanghai Gold Exchange – Non-profit self-regulatory organisation for the trading of gold, silver, platinum and other precious metals.
SHFE	Shanghai Futures Exchange – Metals, energy and chemical commodity products exchange.
TOCOM	Tokyo Commodity Exchange – Japan's largest commodity futures exchange.

Notes [Intentionally Blank]

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