GOLD AS A STRATEGIC PORTFOLIO DIVERSIFIER

Investments in gold

GOLD – THE TIMELESS PRECIOUS METAL. WITH A HISTORY AS OLD AS THE EARTH ITSELF, GOLD OFFERS INVESTORS A UNIQUE OPPORTUNITY FOR VALUE PRESERVATION AND LONG-TERM VALUE CREATION. AS A SAFE HAVEN IN TURBULENT TIMES, GOLD IS AN ESSENTIAL COMPONENT OF A DIVERSIFIED PORTFOLIO. FROM THE GEOLOGICAL WONDERS OF ITS FORMATION TO THE TECHNOLOGICAL INNOVATIONS OF MINING, GOLD OFFERS ABUNDANT OPPORTUNITIES FOR INVESTORS. LEARN HOW PROVEN EXPLORATION TECHNIQUES AND EFFICIENT MINING METHODS FURTHER ENHANCE THE POTENTIAL OF GOLD INVESTMENTS. TAKE ADVANTAGE OF THE SECURITY AND STABILITY THAT GOLD CAN OFFER YOUR PORTFOLIO AND EXPLORE THE POTENTIAL OF THIS VALUABLE INVESTMENT.

INVESTING IN GOLD – WHAT INVESTORS NEED TO KNOW

GOLD AS A CAPITAL INVESTMENT

Opportunities:

1. **Safe haven:** protection against geopolitical risks and loss of confidence in governments and their paper currencies.
2. **Long-term:** gold is a valuable investment that retains its value over long periods. In contrast to FIAT money, gold always has an intrinsic value in addition to its exchange value.
3. **Broader diversification:** reduction of the overall risk of a portfolio.

Risks:

1. **Risk of price losses:** the price of gold can fluctuate widely, so there is a risk of market-related price losses.
2. **Confiscation risk:** gold is at risk of being confiscated by the state (prohibited investment).
3. **Storage risk:** anyone who owns physical gold is exposed to the risk of loss in the event of theft. Safe storage is therefore even more important.

GOLD: DIVERSIFICATION IN THE PORTFOLIO

Gold has the longest surviving secondary market and is one of the oldest precious metals that has been valued by people as an investment for thousands of years. Gold as an investment is the subject of much controversy among investors. For some, there is no way around gold, while others would never include gold in an asset allocation. Diversification, as described in the Babylonian Talmud in the 4th century, divides a portfolio of assets into three parts: 1. business (working capital); 2. liquid assets (gold), and 3. land. Over time, the ancient investment strategies were modified but portfolio diversification remained one of the primary foundations as did the importance of gold in the investment portfolio.

From today's perspective, gold still offers investors similar advantages as in ancient times:

- Gold protects against loss of purchasing power (compared to FIAT),
- Gold reduces risks in the event of market stress (no counterparty risk),
- Gold diversifies a portfolio,
- Gold is a real asset, and
- Gold is one of the most liquid investments.

Even if gold does not yield interest, its performance is positive over a long period. In 2020 at the latest, even gold purchases made between 2010 and 2012 became profitable. Figure 1 shows the annual change in the gold price trend in tabular form.

> ***GOLD IS A CURRENCY. IT IS STILL, BY ALL EVIDENCE, A PREMIUM CURRENCY, WHERE NO FIAT CURRENCY, INCLUDING THE DOLLAR, CAN MATCH IT.***
>
> Alan Greenspan, former Chairman of the US Federal Reserve

GOLD TRIANGLE

Buy at the end of the year

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
2003	5%	23%	52%	100%	109%	161%	238%	268%	298%	189%	190%	155%	175%	210%	207%	264%	353%	334%	336%	399%
2004		18%	45%	91%	100%	150%	223%	251%	281%	177%	177%	143%	163%	196%	194%	248%	333%	315%	316%	377%
2005			23%	63%	70%	112%	174%	198%	223%	135%	135%	107%	123%	152%	149%	195%	268%	252%	254%	305%
2006				32%	38%	72%	122%	142%	162%	91%	91%	68%	81%	104%	102%	140%	199%	186%	187%	229%
2007					4%	30%	69%	84%	99%	44%	45%	27%	37%	55%	53%	82%	126%	117%	118%	149%
2008						25%	62%	76%	91%	38%	39%	22%	32%	48%	47%	74%	117%	108%	109%	139%
2009							29%	41%	52%	11%	11%	-3%	5%	19%	18%	39%	74%	66%	67%	91%
2010								9%	18%	-14%	-14%	-25%	-18%	-8%	-9%	8%	34%	28%	29%	48%
2011									8%	-21%	-21%	-31%	-25%	-16%	-16%	-1%	23%	18%	18%	36%
2012										-27%	-27%	-36%	-31%	-22%	-23%	-9%	14%	9%	9%	25%
2013											0%	-12%	-5%	7%	6%	26%	57%	50%	51%	73%
2014												-12%	-5%	7%	6%	26%	57%	50%	50%	72%
2015													8%	22%	21%	43%	78%	70%	71%	96%
2016														13%	12%	32%	65%	58%	58%	81%
2017															-1%	17%	46%	40%	40%	61%
2018																18%	48%	41%	41%	63%
2019																	25%	19%	20%	37%
2020																		-4%	-4%	10%
2021																			0%	15%
2022																				15%

Sale at the end of the year

Figure 1: Gold Triangle – gold price performance on an annual basis, source: Serafin Asset Management AG, Bloomberg, note: historical returns are not a reliable indicator of future performance.

GOLD REDUCES LOSSES IN TIMES OF MARKET STRESS

Especially in times of crisis, gold has historically been considered a safe investment. As soon as equities have experienced significant corrections or a bear market, gold has often generated strong returns (outside of liquidity events/market stress). During the inflationary 1970s in the US and the period from 2000 to 2010 ("the lost decade"), gold prices rose significantly when the US dollar fell sharply against other currencies. The reasons for this were large budget and trade deficits on the one hand and an

increased money supply on the other. Gold becomes a "crisis commodity" and investors flock to gold, especially in phases of depreciation. As a result, demand for gold as a hedge against losses in value in other asset classes is rising, and with it the price of gold.

THE CORRELATION OF GOLD TO OTHER ASSET CLASSES

In times of strongly rising equity markets, gold traditionally shows a positive correlation but does not perform as strongly. However, gold offers protection against major stock market corrections with a negative correlation. Commodities, on the other hand, correlate very strongly with equities and offer no risk reduction during equity market corrections. In comparison, Treasury bonds only correlate negatively in markets without market stress.

Accordingly, gold reduces investor risk and smoothes volatility in an asset allocation. Overall, gold offers a good complement to many asset classes. In addition to the risk aspect, the very high market liquidity is another important factor in an asset allocation that speaks in favor of investing in gold. Only trading in the S&P 500 offers greater liquidity.

REDUCTION OF THE RISK OF LOSS: GOLD AS THE PERFECT COMPLEMENT TO AN EQUITY ALLOCATION

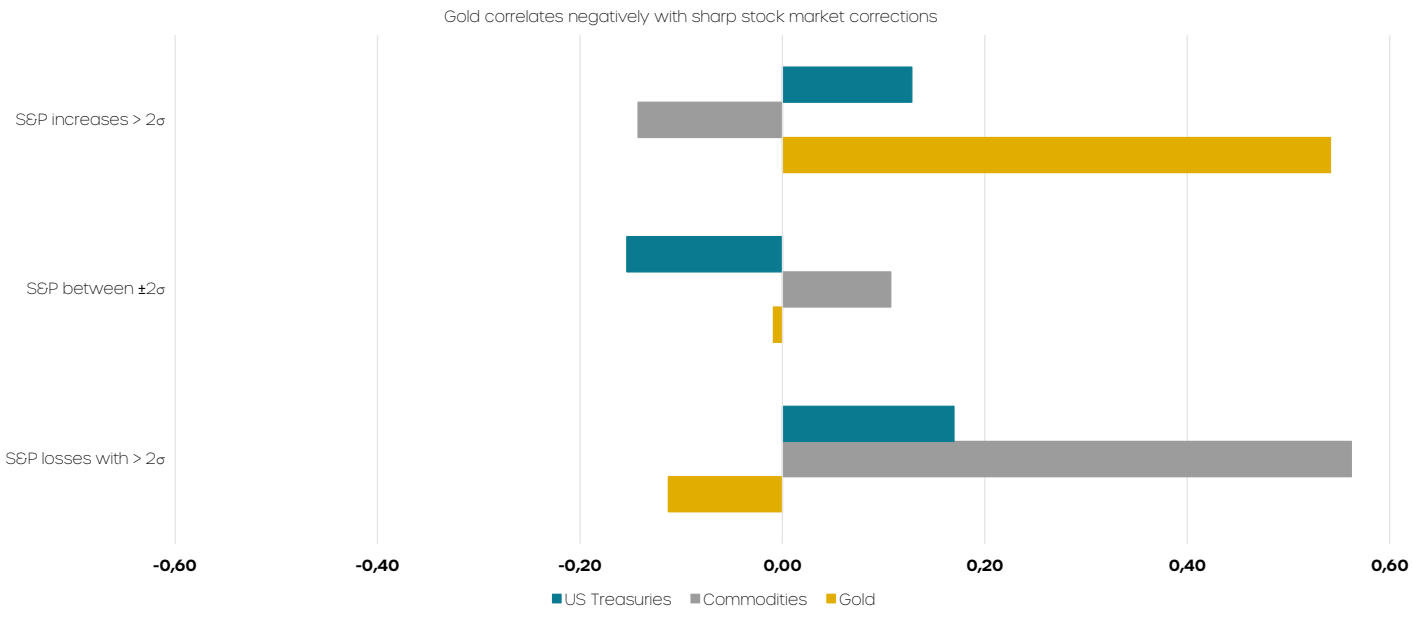

Figure 2: correlation of gold, US Treasury bonds, and commodities with the S&P 500 in various market environments 1993–2023 (weekly data), source: Serafin Asset Management AG, Bloomberg

WHAT ARE THE DRIVERS OF THE GOLD PRICE?

The watch and jewelry industry currently accounts for around 40% of the demand for gold. This demand varies due to global economic growth and the price of gold itself (when the price of gold rises, the demand volume decreases, when the price of gold falls, it increases). Over a longer time, however, this demand is quite stable. Much more important for the gold price, however, is the appetite of financial investors who buy or sell gold as an investment.

The 2023 edition of the "In Gold We Trust report" is entitled "Shutdown". The negative interest rate policy of the last decade and the geopolitical tensions between the West and East have had a major impact on the gold price. We see "monetary" climate change as the biggest change.

As a result of the Ukraine/ Russia conflict, the toughest sanctions in the Western world have been implemented against Russia. This sanctions policy has woken up many countries. The policy of their own (foreign exchange) reserves is therefore being reconsidered and redefined. More than half of global foreign exchange reserves (around USD 6000 billion) are currently still allocated in USD (US Treasury bonds). Some countries deduce from this that a loss of these reserves is possible due to potential sanctions. One option and the logical consequence is the exchange of US Treasury bonds for gold, especially by countries that are not friendly towards the USA and its allied Western states. Since the sanctions against Russia in 2022, gold purchases by central banks have risen sharply.

Figure 3 shows that central banks held more than two-thirds of their reserves in gold at the end of the 1970s. The percentage share has fallen to just over 10% due to the continuous purchases of foreign currencies and gold sales in the 1990s. We believe that the increase over the last 10 years will continue to accelerate. We also assume that there will be no return to 74%. But even a percentage share of 20% would trigger enormous purchases of physical gold.

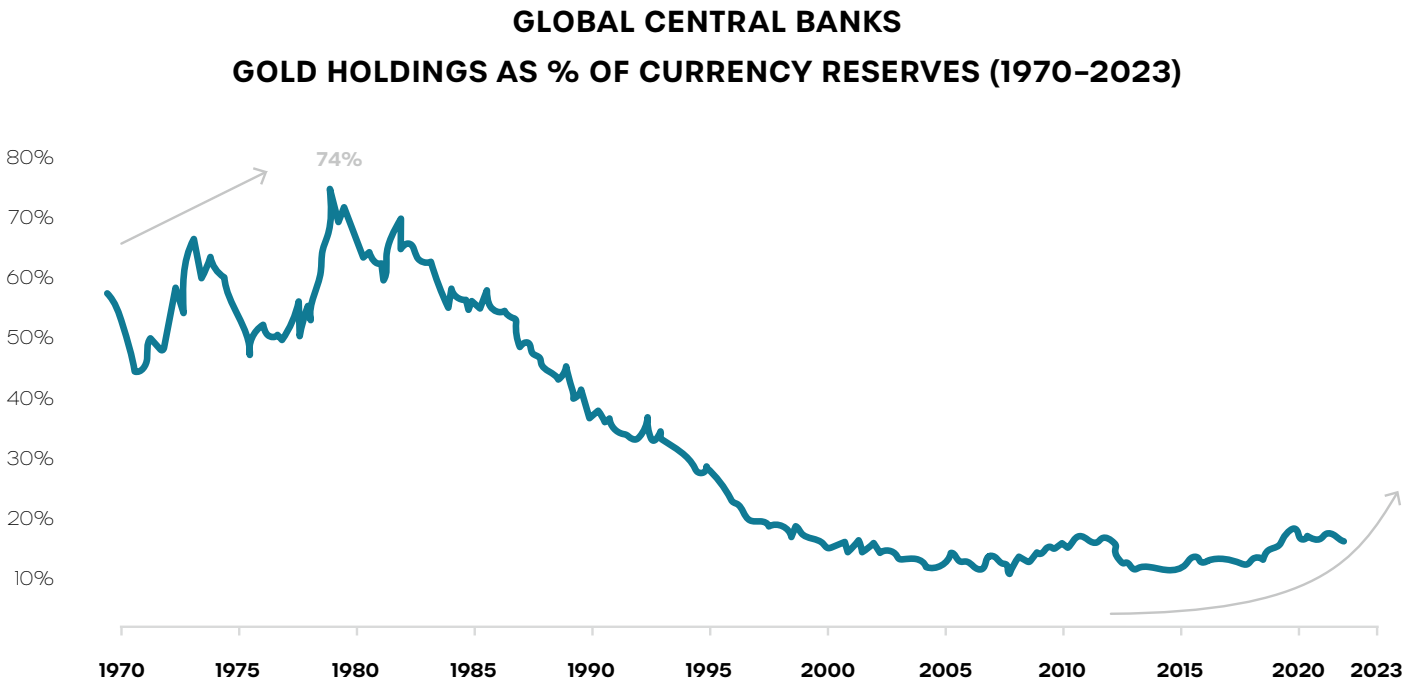

Figure 3: gold share of central bank reserves (1970–2023), source: Serafin Asset Management AG, Bloomberg

In addition to central banks, it is banks and institutional as well as private investors who move the price of gold with their purchases and sales. Global debt, especially the sovereign debt of individual countries, will have an impact on investor behavior in the foreseeable future. Gold will benefit from this. If government debt is rolled over further into the future, this can only work as long as economic growth can keep pace with debt growth. If this is not the case, a problem arises.

The current scenario shows that debt is already growing faster than the economy. Many investors assume that this trend can continue for decades to come. This is a bold assumption, as debt is growing exponentially in some Western countries. For example, US public debt has been growing much faster than US gross domestic product (GDP) since the financial crisis in 2008. The rising debt growth is a dilution (devaluation) of the FIAT currency, which benefits gold (see Figure 4).

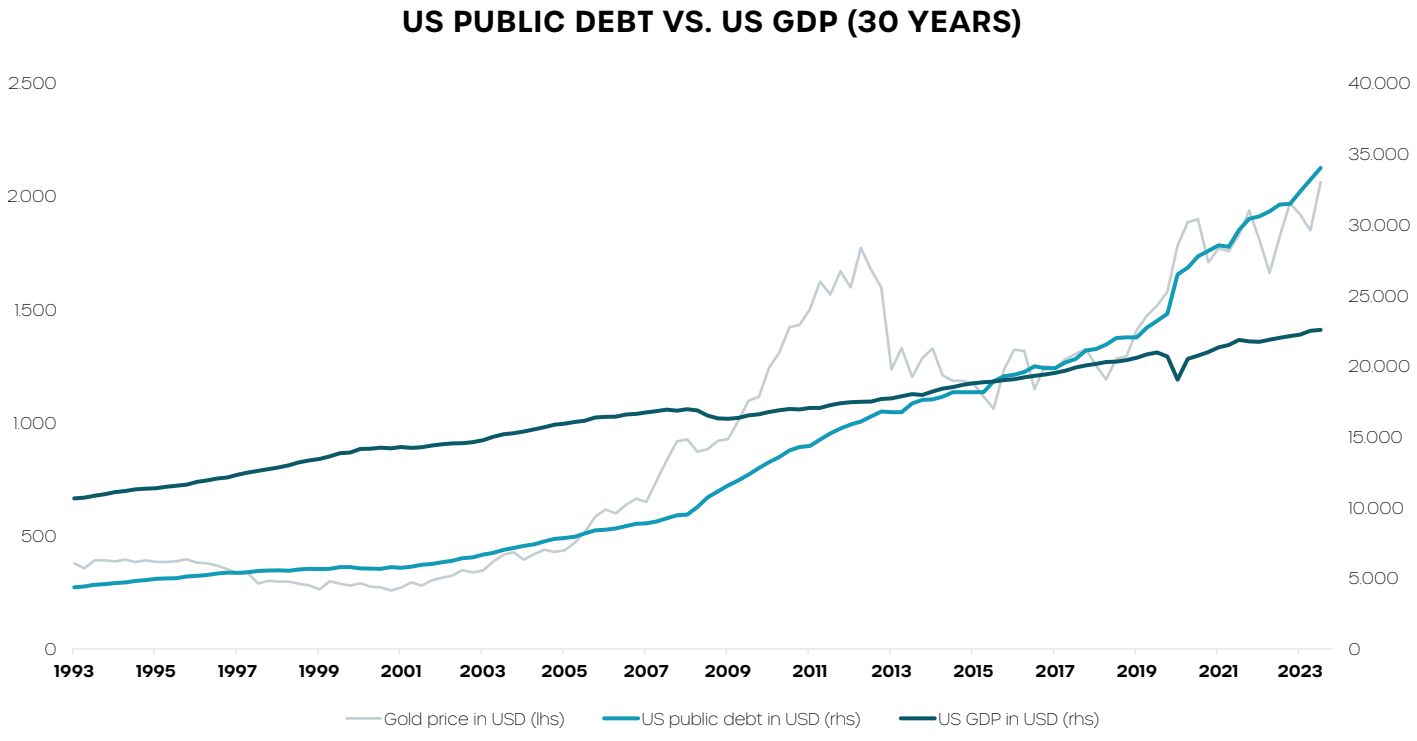

Figure 4: US public debt, GDP (absolute) with gold price over the last 30 years, source: Serafin Asset Management AG

We do not see the problem in absolute numbers per se but rather in the growing loss of confidence in the government and the associated collapse of the paper currency. If gold were regarded as a stable asset, all paper currencies would suffer considerable losses (see Figure 5).

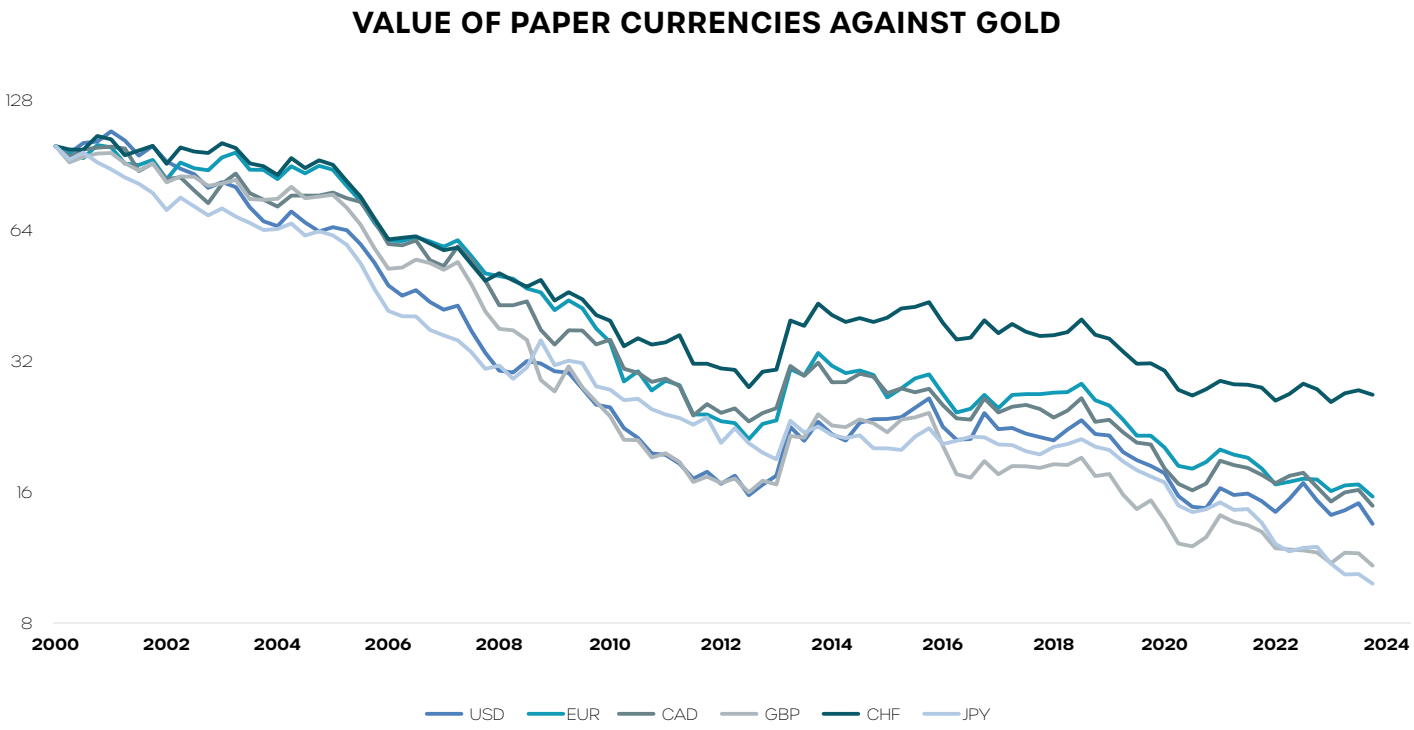

Figure 5: performance of paper currencies against gold (2000–2023), source: Serafin Asset Management AG

Due to its low correlation with other asset classes and the strength of its demand-supply power, gold will continue to play an important role as a portfolio diversifier and crisis hedge. The diversification of foreign exchange reserves in many countries will generate additional demand that could potentially lift the gold price to levels that many investors consider impossible. The role of gold as an asset stabilizer will become increasingly important for investors as governments' debt expands.

GOLD IS AND WILL REMAIN A STRONG TRUMP CARD AMONG EXISTING "REAL" ASSETS.

Investment in gold mines

IN TERMS OF INVESTMENTS, GOLD MINES ARE THE DERIVATIVE OF GOLD. INVESTORS HAVE THE CHOICE BETWEEN PHYSICAL GOLD AND GOLD MINES. GOLD MINES REPRESENT THE GOLD IN THE GROUND ("BELOW GROUND"). THE VALUE OF A GOLD MINE IS MADE UP OF THE GOLD RESERVES FOUND IN THE GROUND AND THE PROFITABILITY OF PRODUCTION. THE RISK ASSESSMENT CONCERNING THE SECURITY OF A REGION INFLUENCES THE VALUATION OF A GOLD MINE (LOW RISK = PREMIUM, HIGH RISK = DISCOUNT). GOLD MINING STOCKS CAN PLAY AN IMPORTANT ROLE IN AN INVESTOR'S PORTFOLIO AS THEY OFFER AN ALTERNATIVE WAY TO INVEST IN GOLD.

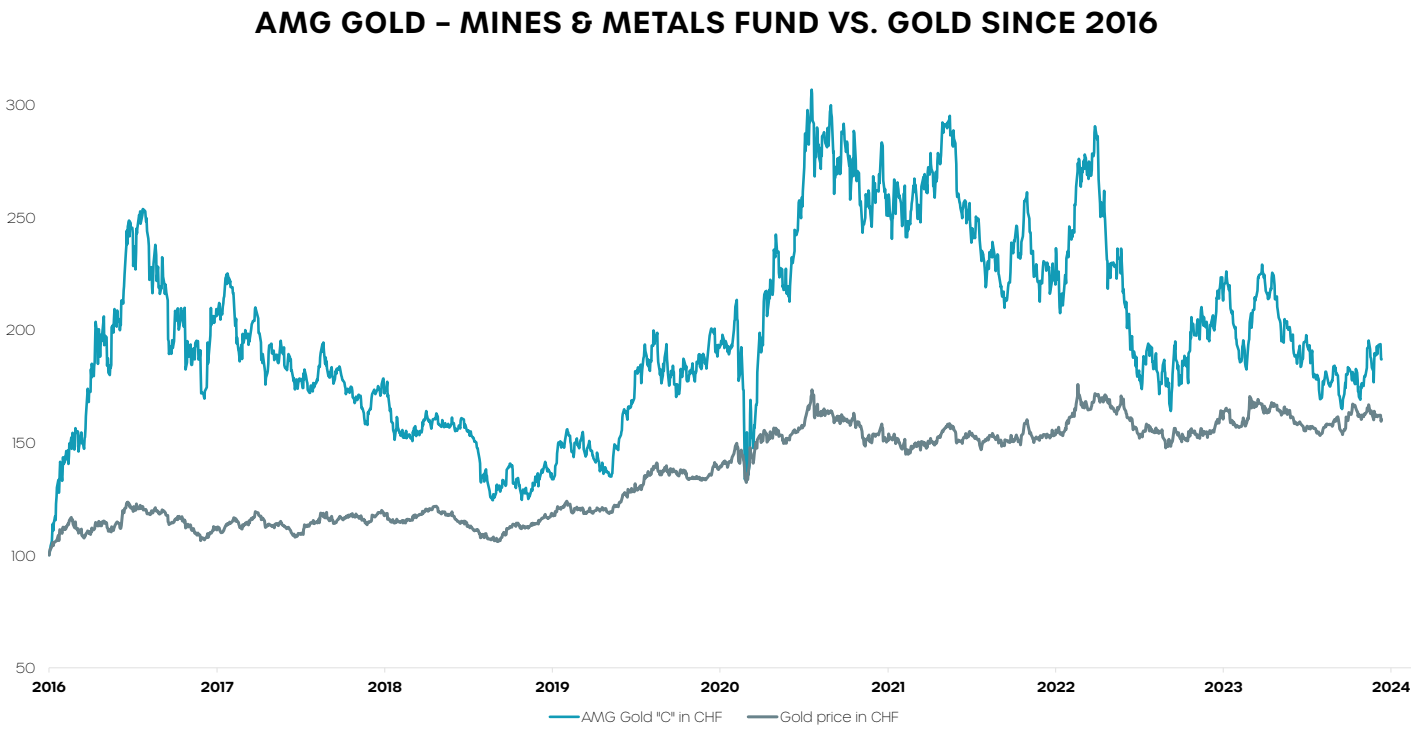

Figure 6: performance of gold mining stocks versus gold indexed in CHF (2016–2023), source: Serafin Asset Management AG, note: historical returns are not a reliable indicator of future performance. Yields may rise or fall because of currency fluctuations.

> ***GOLD MINES CREATE PROSPERITY FOR THE PEOPLE IN THIS REGION. JOBS, INFRASTRUCTURE, TAXES, AND ROYALTIES ENABLE THE PEOPLE AROUND A GOLD MINE TO LIVE A BETTER LIFE.***
>
> Bernhard Graf, Co-Portfolio Manager of the AMG Gold – Mines & Metals Fund

GOLD MINING EQUITIES: LEVERAGE EFFECT ON THE GOLD PRICE

Since the sharp gold price correction in 2012 until 2015, gold mines have outperformed gold.

Share prices of gold mines move in line with the net margin that can be generated through production. The net margin results from the average selling price of gold minus the production costs for an ounce or kilogram of gold. **The most important cost factor is represented by the gold content in the rock, called "grades".**

Since the share price of a mining company moves in line with the net margin, gold mines have a leverage effect on the gold price. **Positive or negative sentiment has an additional influence on the mining sector and thus on share valuations.**

high gold content = costs low
gold content low = costs high

COST BLOCKS

Cash costs = operating costs to produce one ounce of gold

AISC = cash costs plus investments to maintain ongoing production

AIC = AISC plus investments in new projects plus taxes and duties

Net margin = average selling price of gold less AIC

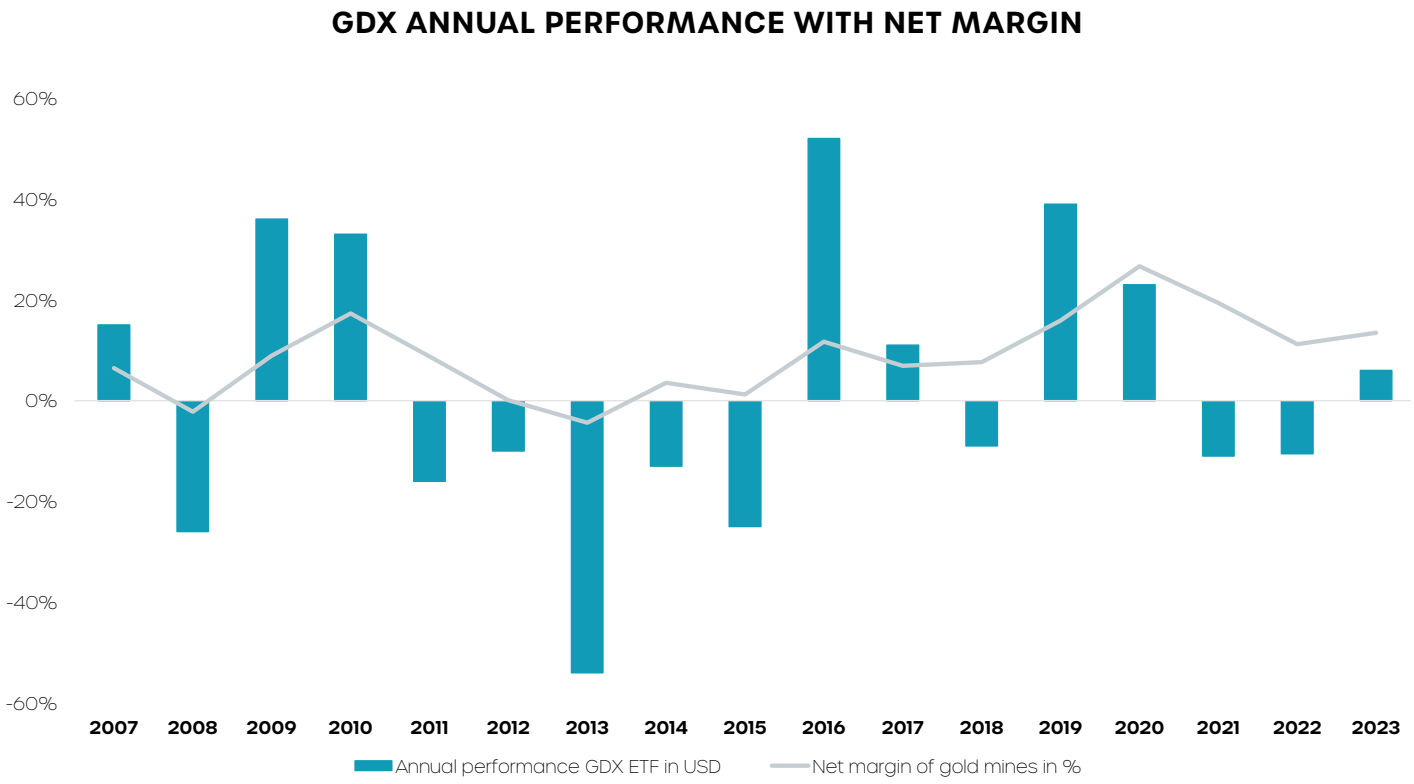

Figure 7: VanEck Vectors Gold Miners ETF (GDX) performance in USD per year with corresponding net margin (2007–2023), source: Serafin Asset Management AG, Bloomberg, note: historical returns are not a reliable indicator of future performance. Yields may rise or fall because of currency fluctuations.

An outlook: the future of gold

OUR GOLD TRENDS IN FOCUS

Sustainability through tokenization

ESG (Environmental, Social & Corporate Governance) has also been a major topic in the gold industry for over a decade. The daily trading of gold is to be simplified and made more efficient. Until now, every bar in physical gold trading has been transported from A to B. This involves major costs such as transportation and insurance. There is a likelihood that the World Gold Council (WGC), together with the gold mines, will revolutionize this process through tokenization.

There would still be various central storage facilities but the transportation of gold in daily trade would no longer be necessary. Buyers and sellers could then trade gold tokens for physical stocks. Another advantage would be that, in addition to cost savings, the origin of the gold could be assigned. Every mine of listed companies has an "ESG classification". In the future, the end investor would be able to determine exactly where his gold bars come from.

Artisanal and Small-Scale Mining

In many developing and emerging countries, minerals are extracted using small-scale mining in addition to industrial mining. Artisanal small-scale mining (ASM) still stands out from the crowd and is sold to many investors as so-called "green gold". There are very few productions that are recognized as "green gold", with the buyer guaranteeing the small-scale miner a higher sales price. Small-scale mining is associated with various social and environmental risks and is considered very problematic. Between 400–450 tons of ASM gold are produced every year. The illegal mining of raw materials often takes place under precarious working conditions with serious consequences for the environment. ASM gold largely does not meet any "ESG criteria" – on the contrary, the biggest abuses in the mining industry that are highlighted in public come from the ASM sector. The regulations are opaque, as the technology for modern and common ESG mining is often lacking. The established refineries (Switzerland, Canada, USA, and Australia) do not process gold from this sector. Most of the ASM gold is processed in the Middle East and finds its way into the Indian jewelry industry.

Gold: strategic asset without counterparty risk

Central banks that buy gold are reconsidering their future storage locations for gold reserves. In recent decades, a lot of gold has been withdrawn from the dominant storage locations of London and New York.

Where gold is stored for central banks but also for private investors, is of vital importance. It is up to each individual to decide where gold reserves should be stored – there is no right or wrong. The fact is that large gold reserves are heading east (Shanghai Gold Exchange, Hong Kong). With the emergence of new trading venues, gold is becoming more decentralized and is (re)gaining importance as an asset without counterparty risk for central banks and governments.

Conclusion: Gold is a stabilizer and diversifier in any portfolio. Next to the negative correlation to equities in the event of major share price losses, it is the compensation for the devaluation of paper currencies that is offset by gold as a real value. Gold mines offer investors cyclical investment opportunities with great potential but are less suitable as a long-term investment. The background to this is that the cycles in this sector are very pronounced. The change in the share price of a gold producer corresponds almost exactly to the change in the profit margin as a percentage. Financial investors are the most important drivers of the gold price. However, central banks have also been increasingly focusing on gold again for over a decade and are buying large quantities of gold. The steady rise in global sovereign debt is leading to a loss of confidence in governments and their paper currencies, while the gold price is compensating for this loss.

Geologie: On the traces of gold

GOLD CAN BE FOUND IN SMALL QUANTITIES ALL OVER THE GLOBE IN THE EARTH'S 16-KILOMETER-THICK CRUST. ALTHOUGH GOLD WAS NOT FORMED ON EARTH, IT IS AT LEAST AS OLD AS OUR PLANET. SCIENTISTS ASSUME THAT GOLD WAS CREATED IN THE UNIVERSE BY A COLLISION OF NEUTRON STARS AND THUS ENTERED THE EARTH'S MOLTEN CORE. IT FINALLY REACHED THE EARTH THROUGH METEORITES. THE GOLD DEPOSITS THAT WERE NOT CARRIED DIRECTLY TO THE EARTH'S CRUST BY METEORITES ORIGINATE FROM THE EARTH'S INTERIOR. THERE IT WAS FOUND IN LIQUID ROCK – SO-CALLED MAGMA – WHICH REACHES TEMPERATURES OF 700 TO 1250 DEGREES CELSIUS.

IT IS ONLY THROUGH TECTONIC MOVEMENTS AND VOLCANIC ERUPTIONS THAT IT IS REPEATEDLY TRANSPORTED FROM THE EARTH'S CORE TO THE SURFACE, WHERE IT IS RELEASED, SO TO SPEAK. DURING THE COOLING PROCESS, THE MINERAL CONTENT OF THE LAVA CONCENTRATES AND OFTEN FORMS ORE DEPOSITS – ZONES OF THE EARTH'S CRUST IN WHICH THE QUANTITY AND QUALITY OF THE MINERALS ARE SUFFICIENT FOR ECONOMIC EXTRACTION. THE ORE DEPOSITS CAN THUS FORM AS A RESULT OF MAGMATIC PROCESSES.

THE VARIOUS TYPES OF GOLD DEPOSITS

The world's gold deposits can be found in various geological structures and environments. Depending on how the gold was formed, the deposits are divided into different types. The fundamental difference between gold-bearing soil areas is that they are divided into primary deposits and secondary deposits. Primary deposits are soils with gold deposits in which the stored gold is usually enclosed in quartz veins. When primary gold deposits are eroded over millions of years by weathering and erosion, they are referred to as secondary deposits. The gold is then washed out of its rock mantle and is deposited in combination with other heavy minerals in the lowlands of streams and rivers, forming fine gold dust or small particles called "nuggets". So-called "gold soap" has formed.

Placer gold deposits are based on pre-existing gold deposits that were formed mainly by surface erosion and the depositional processes of rivers. Near rivers, gold is relatively inert and can form deposits where water flow is reduced. These deposits can sometimes be irregular and intermittent, making economic extraction particularly difficult.

Orogenic (mesothermal) gold deposits lie at depths of 1200 to 4500 meters and were formed during mountain building, releasing metamorphic fluids that inject quartz, gold, and a small number of sulfides into rock fissures. As a rule, the gold content of orogenic gold deposits is very high, often reaching concentrations of 10 grams/ton. Some of the world's largest gold-producing regions fall under this type. The gold deposits occur in shear zones, are structurally controlled, and are dominated by quartz veins.

Epithermal deposits are vein-shaped and form at a depth of one to two kilometers under geothermal systems or geysers. These deposits mainly form in areas with active volcanism near the continental margins. As epithermal deposits are located close to the surface, they are generally suitable for low-cost open-cast mining. The majority of deposits are located in land areas surrounding the Pacific Ocean, including the western part of the United States, Chile, Indonesia, and Japan.

Carlin-type deposits contain very fine-grained gold that cannot be seen with the naked eye. This gold is identified by chemical analysis. The deposits are mostly found near the surface and can be mined by open pit mining. The gold deposit predominantly has a lower grade and a higher tonnage. Deposits of this type have also been found in China and Peru, but large quantities of gold have only been found in the western part of the United States, particularly in the Great Basin of Nevada. The high-volume Carlin-type deposits have made Nevada one of the world's largest gold producers. Examples of such deposits are the Goldstrike, Pipeline/Cortez, and Twin Creeks deposits operated by Nevada Gold Mines.

GOLD EXPLORATION: IN SEARCH OF GOLD

Many smaller companies specialize in exploration, the search for gold. However, it is not only the small companies that carry out exploration but also producers who report further gold discoveries, particularly in the vicinity of existing mines. Finding gold near an existing production facility is particularly attractive, as the costs of building a new mine can be saved.

If these companies are successful with their search, the result is divided into two categories:

1. Mineral resources
2. Mineral reserves

Mineral resources are always an estimate of the gold deposit. The gold content in the rock "grades" is always decisive. Mineral reserves, on the other hand, are the economically mineable portion of a measured or indicated mineral resource as demonstrated by a Preliminary Economic Assessment (PEA). This study must contain sufficient information on mining, processing, metallurgical, and other relevant factors to demonstrate that economic extraction is warranted at the time of reporting. A mineral reserve inventory also includes stretching materials and calculations for losses that may occur if the material is mined. Today's global exploration is replacing the shrinking of reserves with annual production. Today, as 20 years ago, reserves amount to around 50 000 tons. The gold content in the rock has fallen continuously over the last few decades, which is steadily increasing the cost of mining gold.

THE GOLD CONTENT IN THE ROCK SINCE 1990 AS AN AVERAGE VALUE – AS OF 2023 AT 1,03 G/T

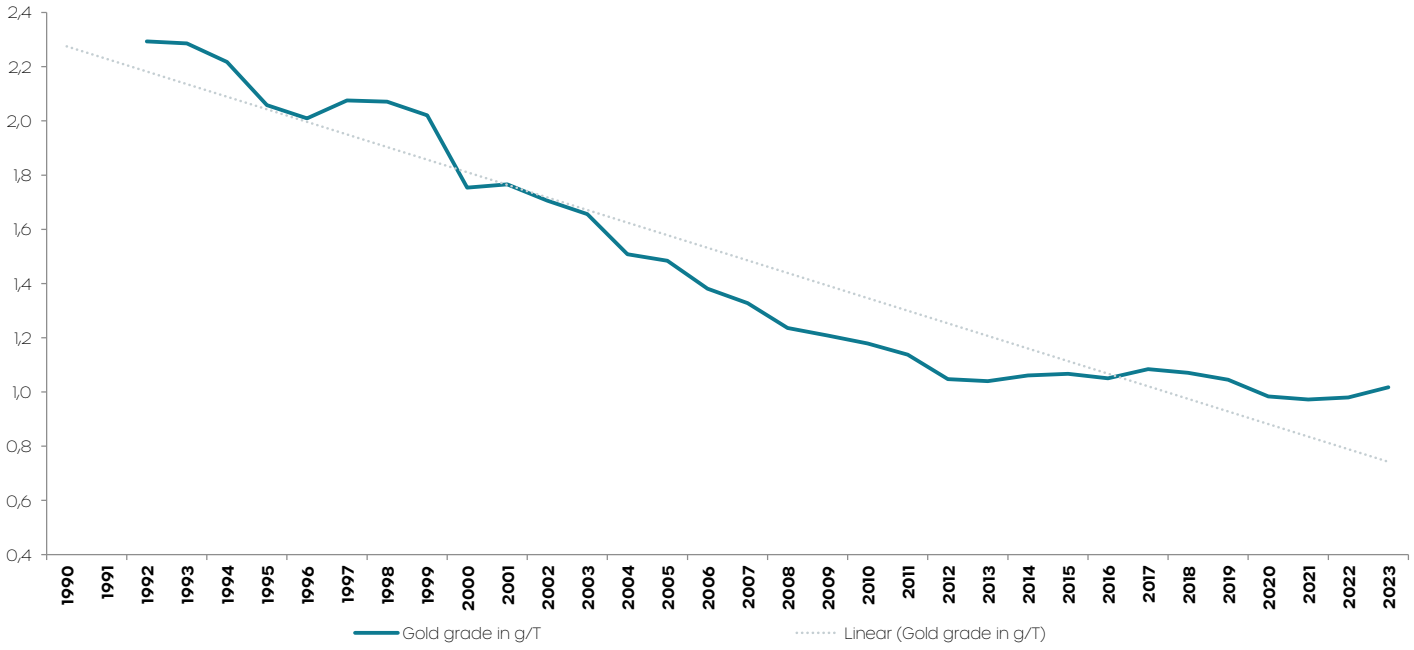

Figure 8: development of the gold content in the rock (1990–2023), source: Serafin Asset Management AG, BMO Research

Thanks to the latest technology, experts now use satellites to search for sufficiently large gold deposits before even drilling for gold. For companies that mine gold, the development of new gold deposits is of great importance so that companies can extract the coveted precious metal at low cost.

GOLD MINING

The process of mining gold is a major organizational and logistical challenge. Millions of tons of rock must be moved, and processed, and gold separated from rock. The preparations for gold production take decades and cost a lot of money. Every activity in connection with gold production requires a permit.

Approval process:

1. Exploration
2. Preliminary economic assessment
3. Feasibility Study
4. Construction
5. Production

The approval process is very long. In general, many criteria must be met before a mine can be built. It is impossible to mine gold without a valid mining license.

Mining methods:

1. Open-pit mining
2. Underground mining

Open-pit gold mining is relatively simple, as it takes place on the surface. The only criteria are the size of the pit and the strip ratio, i.e. the mass of earth that must be moved without gold content to economically extract gold-bearing material. The strip ratio must be calculated precisely in the cost calculation.

Things become much more complex underground. The nature of the soil and the shape of the ore body determine how underground mining is carried out.

It can be said that much larger and more efficient machines can be used in open-pit mining than in underground mining. For this reason, even deeper grades can be mined with an attractive profit in open-pit mining. On the other hand, the gold content underground almost necessarily must be higher than on the surface. It is a logistical calculation to profitably move a rock with a certain gold content from A to B and process it.

EXTRACTION OF GOLD

Gold extraction is a process that combines technology, human labor, and chemical engineering. Extracting gold-bearing rock from the ground is only the first step in the process. Mining companies use complex extraction methods to isolate pure gold. At first, large chunks of rock must be crushed. The raw material is crushed with great force by large machines known as crushers to reduce it to a finer size. In the next step, the size of the crushed rock is further reduced in the grinding process. Using rotating drums filled with steel balls, the gravel-like material is ground into powder and separated from the dust using wet chemical separation. To release some of the gold from its host materials, it is sometimes sufficient to crush and grind the rock. However, this often only results in a portion of the total gold contained in the ore. The remaining gold must then be extracted by cyanide leaching. Gold-bearing minerals are usually separated from those that do not contain gold using the **flotation process.** This is a physicochemical concentration process that is one of the most common methods for processing gold concentrators. It is often used to process gold-bearing sulfide minerals with high floatability. The gold concentrate is ultimately

obtained through flotation and the fine-grained residues in the form of sludge "tailings" can be disposed of directly. The costs for mineral processing are low. In this respect, it is an economical and efficient process.

The techniques and methods used to extract gold vary depending on the characteristics of the deposit and the technology available. The **Merrill-Crowe process** is a separation technique used to remove gold and silver from a cyanide solution. After the gold is dissolved in the cyanide solution, techniques such as zinc precipitation and activated carbon adsorption are used to separate the precious metal from the solution. These techniques work as follows:

1. **Zinc precipitation:** Zinc powder is added to the cyanide solution. Gold and silver form a metal-cyanide complex in the solution. When zinc is added, it displaces the gold and silver in the complex and falls out of the solution in the form of fine particles. This process is called precipitation. The zinc-gold or zinc-silver precipitate is then collected and further processed to extract the precious metals.

2. **Activated carbon adsorption:** Activated carbon is often used to adsorb gold and silver from cyanide solutions. The solution passes through a layer of activated carbon particles. Carbon has a high affinity for gold and silver and adsorbs the metal-cyanide complex from the solution. The precious metals in the loaded activated carbon are then released by desorption, usually using a hot alkaline cyanide solution. This liquid, which contains dissolved gold and silver, is then further processed to recover the metals.

Both methods are frequently used in the mining industry to extract gold and silver from cyanide blue solutions. These are effective techniques for separating precious metals from other components in the solution and allow efficient recovery of gold and silver from ores.

In the final step of gold production – refining (smelting) – impurities that remain after the smelting process are removed. Refineries receive industrial gold and scrap gold and liquefy the metal in furnaces. Borax and sodium carbonate are added to the molten metal to separate pure gold from other precious and less precious metals. A sample is then taken to a laboratory to measure the gold content. In most cases, the gold is 99,9% pure. Finally, the gold obtained from the refining process is cast into bars.

GOLD PRODUCTION BY REGION OVER 175 YEARS

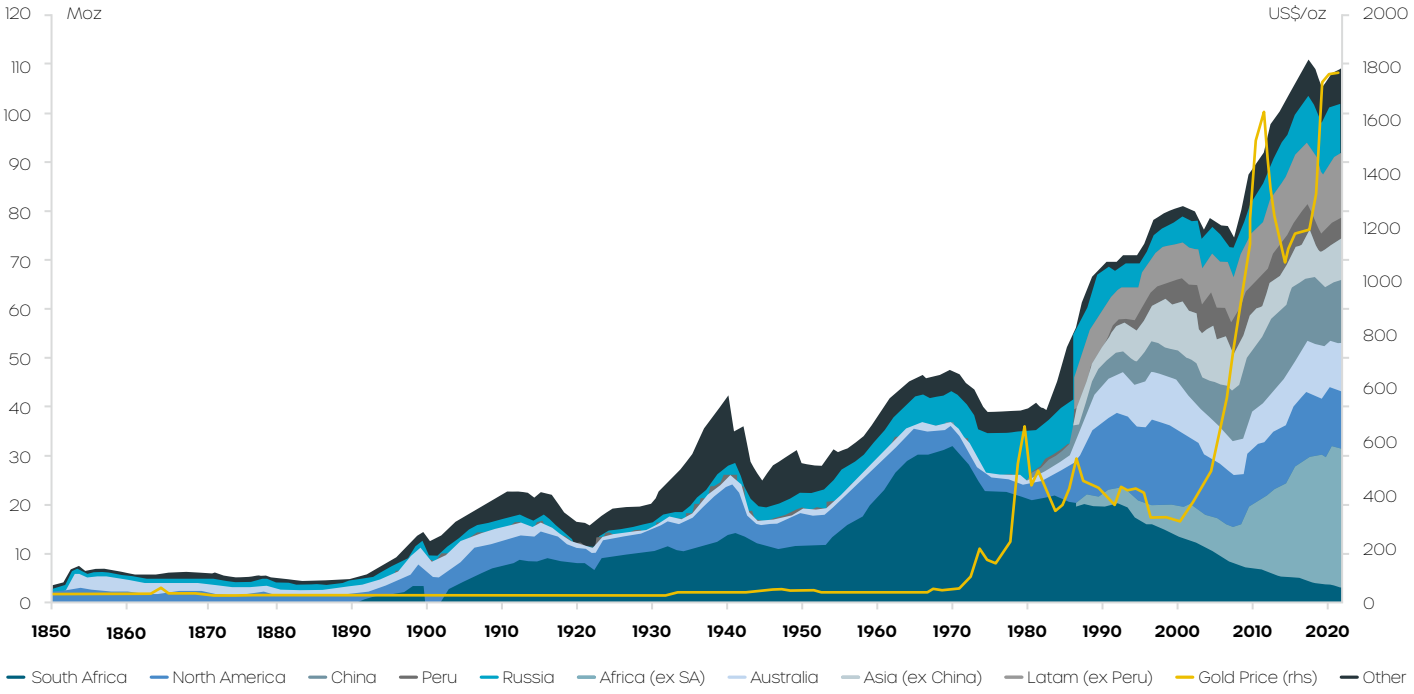

Figure 9: gold production by region over 175 years, source: Serafin Asset Management AG, BMO Research

RECYCLING OF GOLD

The recycling of gold is of great importance to the international gold market. Gold can be recycled and reused without any loss of quality, for example from old coins or pieces of jewelry that are melted down. It is also possible to recycle gold from electronic plugs or chips. Although gold has been mined for thousands of years, it is still available today. Recycling gold ensures that this valuable resource does not run out. Around 1000 tons are recycled every year. This is only part of the total supply that satisfies the demand for gold.

The history of gold

THE HISTORY OF GOLD GOES BACK THOUSANDS OF YEARS. EVEN IN ANCIENT CIVILIZATIONS, GOLD WAS USED FOR JEWELRY AND RITUAL OBJECTS AS WELL AS A CURRENCY. THERE IS NOTHING LIKE IT IN THE WORLD – THIS METAL IS UNIQUE. ITS TEXTURE AND DURABILITY GIVE THE YELLOW METAL ITS SACRED CHARACTER.

Since the dawn of civilization, gold has been a part of humanity and helped to build the modern world. Gold has changed and transformed entire societies. The world's population was shaped by gold until modern times. The gold rush gave rise to great cities such as San Francisco, Johannesburg, and many more. For example, the population of Kibali City in the Democratic Republic of Congo has prospered greatly since the start of production at the Kibali gold mine and is now ten times larger than before.

GOLD IS THE EPITOME OF INTRINSIC VALUE AND DURABILITY.

Gold in brief: facts and figures

FACTS

The chemical element of gold
Au, atomic number 79

Density of gold
19,32 grams per cubic centimeter (g/cm³)

Melting point
1064 °C

1 ounce of gold
31,1034768 grams

1 kilogram
32,15074657 ounces

Average gold production over the last 5 years
3500 tons per year

Gold mining to date
approx. 200 000 tons (proportionate use: 46% jewelry industry, 22% bars and coins, 17% central banks, and 15% other)

Gold mining reserves
52 000 tons

CHARACTERISTICS

Gold has remarkable physical and chemical properties that make it interesting for use in industry, medicine, electronics, and aerospace. Due to its **rarity,** gold is more difficult to find than other types of metal. It is precisely this rarity and **durability** that give it an economic value as an investment, art, jewelry, or commodity. Another special characteristic is that gold **cannot be replicated at will.** These are reasons why gold is considered **particularly valuable**. From a chemical point of view, a precious metal is a **naturally occurring metal** that can only be found in the periodic table of elements. Gold is valued worldwide for its physicality and will always have its character as a store of value and a "safe currency".

GOLD IN THE CONTEXT OF MONETARY POLICY

1871–1914: classical gold standard with the convertibility of national currencies into gold.
1914–1944: many countries were no longer able to meet the gold standard during and between the war years due to the debt incurred to finance the war.
1944–1973: Bretton Woods system with gold-dollar standard (agreement on a common monetary architecture through gold settlement).
1973: collapse of the Bretton Woods system. The USA is no longer prepared to exchange gold for USD.
From 1973: "Floating" gold. Floating was accompanied by the possibility of an autonomous monetary policy for the first time.

About the author

BERNHARD GRAF
CO-PORTFOLIO MANAGER
AMG GOLD – MINES & METALS FUND

Bernhard Graf (1966) is Co-Portfolio Manager of the AMG Gold – Mines & Metals Fund at Serafin Asset Management AG.

He has many years of experience in equity investments. He gained this experience in equity trading at an international bank and various Swiss banks in London, Frankfurt, and Zurich. Before joining Serafin Asset Management AG, Bernhard Graf had already gained experience in fund management and the entrepreneurial field.

When Bernhard Graf was a share trader in London during the stock market boom of the 1990s, he always bought a few gold coins. At that time, these tended to fall in price. He was ridiculed by his colleagues, who preferred to invest in "dotcom shares". But the tide turned when the "dotcom bubble" burst. Then as today, he is fascinated by the aesthetics of a gold coin.

Over the past 13 years, he has acquired a great deal of knowledge about the gold mining industry and his enthusiasm for gold has continued to grow. He is therefore aware of the difficulty of the business – mining gold, but also investing in the right companies. He particularly likes the fact that every ounce of gold extracted from the mines brings great prosperity to the people in the region.

IMPORTANT INFORMATION

This document is a marketing communication prepared for information purposes only. The information has not been prepared by legislation promoting the independence of investment research and is not subject to any prohibition on dealing before or after the dissemination of investment research. The content does not constitute an offer or a recommendation to buy or sell investment funds. This advertising communication is also not investment advice and cannot replace such advice. Serafin Asset Management GmbH may receive remuneration from the fund manager for the distribution of the aforementioned security.

Investing involves capital risks. The price of a fund unit can go down as well as up. It is possible that investors may not get back the amount originally invested. Forecasts and historical performance are no guarantee of actual performance in the future. If the performance data or the fund currencies are not denominated in euros, the return may rise or fall as a result of currency fluctuations. The performance is calculated without taking into account a front-end load or a redemption fee. For an investment amount of EUR 1000 over an investment period of five years and a front-end load of 5 percent, the investment result in the first year would be reduced by the front-end load of EUR 50 and additional individual custody account costs. In subsequent years, the investment result may also be reduced by individually incurred transaction and custody account costs. Trading in financial instruments is associated with risks.

The information, analyses, opinions, and forecasts contained herein are based on the state of knowledge and market assessment at the time of preparation and are subject to change and amendment. Some of this information is based on data that we have obtained from external sources and believe to be reliable. However, Serafin Asset Management does not guarantee the accuracy or completeness of this information and the company and its affiliates and their respective directors, officers, and employees accept no responsibility or liability for any errors or misrepresentations made by any third party in the data. Serafin Asset Management assumes no liability for the accuracy, timeliness, and completeness of the content and the occurrence of forecasts.

The Fund referred to in this document may only be offered for sale or sold in jurisdictions or to persons in which or to whom such an offer or sale is permitted. The fund may only be advertised if such advertising complies with the applicable legal provisions and regulations. The fund is authorized in Germany and Switzerland for distribution to private clients within the meaning of Section 67 (3) WpHG and Art. 4 (2) FIDLEG. For further country authorizations, please contact Serafin Asset Management GmbH in Frankfurt am Main/Germany or Serafin Asset Management AG in Zug/Switzerland or visit www.serafin-am.com.

For investors in Switzerland, the legal fund documents (prospectus, key investor information document (PRIIP-KID), annual and semi-annual reports) are available free of charge from Serafin Asset Management AG, Bahnhofstrasse 29, CH-6300 Zug and at www.serafin-am.com or from the fund management company and the representative LLB Swiss Investment AG, Claridenstrasse 20, CH-8002 Zurich. For German investors, the relevant documents are available from Serafin Asset Management GmbH, Börsenstrasse 13–15, D-60313 Frankfurt am Main and at www.serafin-am.com as well as from the respective information office in Germany for the following funds: ODDO BHF Aktiengesellschaft, Bockenheimer Landstrasse 10, D-60323 Frankfurt am Main in the case of the AMG Gold – Minen & Metalle Fonds, the AMG Europa Fonds, the AMG Substanzwerte Schweiz Fonds and the Alpora Innovation Europa Fonds. In the case of the AMG Swiss Pearls Fund at DONNER & REUSCHEL Aktiengesellschaft, Ballindamm 27, D-20095 Hamburg. In the case of the Innovation World Large Caps by AMG Fund at HSBC Trinkhaus & Burkhardt AG, Königsallee 21/23, D-40212 Düsseldorf. In addition, all relevant documents are also available electronically at www.fundinfo.com.

Subscriptions for fund units can only be accepted based on the relevant fund documents. The fund documents contain detailed risk information. Please read the relevant fund documents before making a final investment decision.

Units of this investment fund may not be offered, sold, or delivered in the USA or to US persons (according to Regulation S of the US Securities Act of 1933 and/or Rule 4.7 of the US Commodity Futures Trading Commission, as amended).

Serafin Asset Management AG, Zug/Switzerland, is prudentially regulated and supervised as a "manager of collective assets" by the Swiss Financial Market Supervisory Authority FINMA.

Serafin Asset Management GmbH, Frankfurt am Main/Germany, is a "securities trading firm" regulated by the German Federal Financial Supervisory Authority (BaFin) and is subject to its supervision.

This marketing information was prepared by Serafin Asset Management AG, Switzerland, and was published by this company in Switzerland. The publication of this marketing information in Germany is carried out by Serafin Asset Management GmbH, Germany.

SERAFIN

ASSET MANAGEMENT

Bahnhofstrasse 29
6300 Zug
Switzerland

Börsenstraße 13-15
60313 Frankfurt am Main
Germany

info@serafin-am.com
www.serafin-am.com