Gold
**January 2022**

# The Role of Gold in Today's Global Multi-Asset Portfolio

## Important Risk Disclosure

- SPDR® Gold Trust (the "Trust") is an exchange traded fund designed to track the price of gold (net of Trust expenses).
- The value of the gold held by the Trust is determined using the LBMA Gold Price PM. For further information and risks regarding the LBMA Gold Price PM, please refer to the offering documents found on ssga.com*.
- Investment involves risks, in particular, investing in one single commodity asset class. Fluctuation in the price of gold may materially adversely affect the value of the Trust. Investors may lose part or all of their investment.
- The trading price of the SPDR Gold Shares may be different from the underlying NAV per share.
- The Trust may not be suitable for all investors. Investors should not invest based on this marketing material only. Investors should read the Trust's prospectus, including the risk factors, take into consideration of the product features, their own investment objectives, risk tolerance level, etc. and seek independent financial and professional advices as appropriate prior to making any investment.


## SPDR® Gold Strategy Team

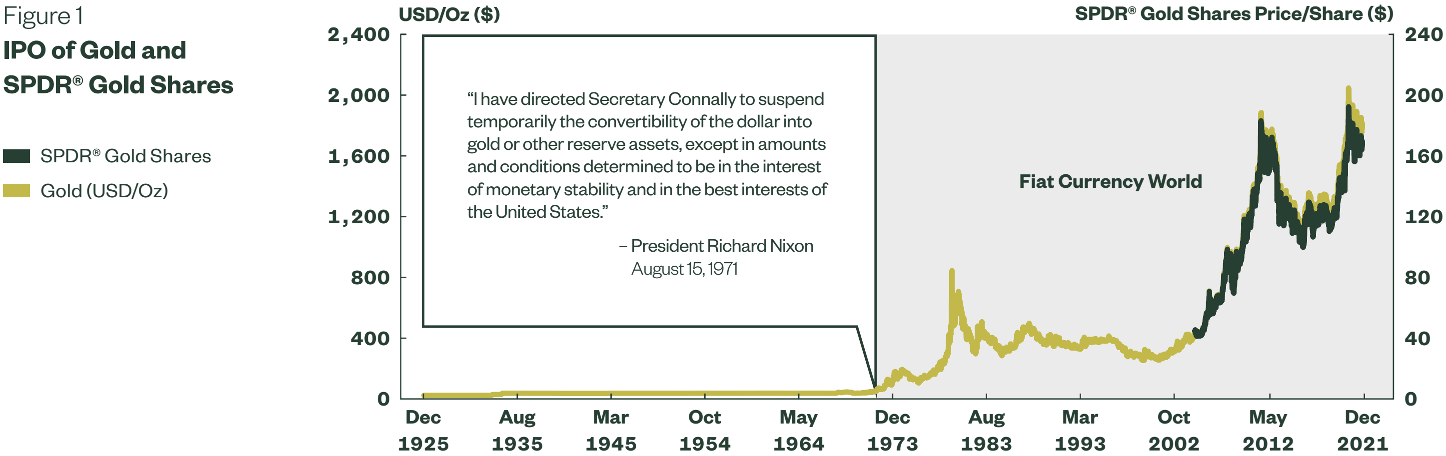

Investors have often used gold tactically in their portfolios, with an aim to help preserve wealth during market corrections, times of geopolitical stress or persistent dollar weakness. But given gold's historically low or negative correlation with most other asset classes (See Figures 2 and 3), we believe that in addition to gold's tactical benefits, its function as a core diversifying asset may demonstrate that gold can potentially play a more long-term strategic role in an investor's portfolio. In fact, research has shown that the modern multi-asset portfolio may be more efficient with a strategic allocation to gold playing a crucial role as a potential core diversifier.[1]

In this paper, we examine how including gold in a hypothetical multi-asset portfolio that also includes global stocks, various classes of fixed income, real estate, private equity, and commodities may improve its risk-return characteristics. We found that holding between 2% and 10% of SPDR® Gold Shares between January 1, 2005[2] and December 31, 2021 may have improved each hypothetical portfolio's cumulative return and Sharpe ratio and lowered its maximum drawdown, as compared to a portfolio without any gold-backed investments. See Figure 7 for asset weightings of hypothetical portfolios.

## Gold as an Investable Asset: From IPO to ETF

Since 1971, when President Nixon removed the US dollar from the gold standard, the price of gold has increased from US$43.28/oz to US$1,806/oz at the end of December 2021. Since that policy move, which we call "The Initial Public Offering of Gold," the price of gold (in USD) has increased at a compound annual growth rate (CAGR) of 7.71% per year.[3] The IPO of Gold unleashed gold's longstanding currency-like characteristics, giving it the potential to become a mainstream investment. And in November 2004, that potential became a bit more tangible with the launch of SPDR® Gold Shares, the first US gold-backed exchange traded fund. SPDR® Gold Shares' arrival made it convenient and cost effective for investors to hold gold in their multi-asset portfolios. The ETF gathered US$1 billion in assets under management in just three days, making it very tradable almost immediately and allowing exposure to gold to rival the ease and efficiency of owning stocks.

Figure 1
**IPO of Gold and SPDR® Gold Shares**




*See Endnote 4 for additional information. Past performance is not a reliable indicator of future performance.

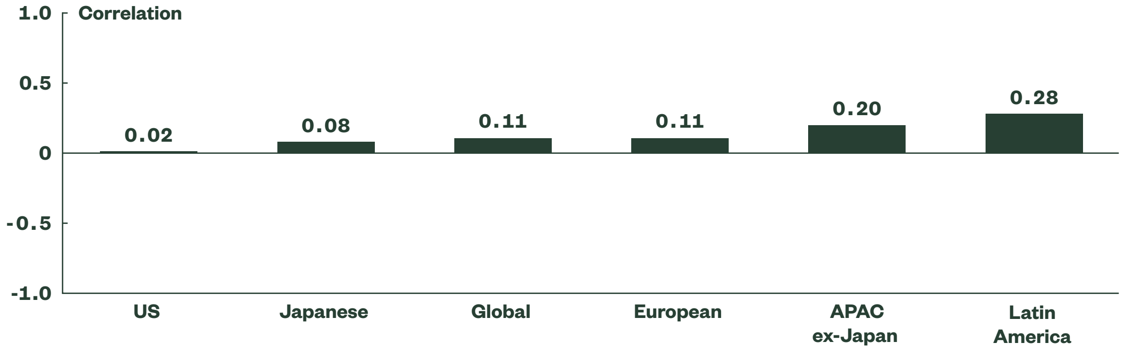
## Mining Gold's Potential Strategic Benefits

We see three potential strategic benefits as major reasons why multi-asset portfolio managers should consider including gold in their portfolios:

**Increase Portfolio Diversification —** When building a multi-asset portfolio, investors must consider not only the potential or forecasted risk-return characteristics of a particular asset class, but also how that asset class or market segment behaves relative to other investments and the impact on the portfolio as a whole. Although many investors tend to focus on constructing portfolios with asset classes offering high forecasted risk-adjusted returns, there are potential benefits to including asset classes that move differently relative to one another. A low correlation between the asset classes in a multi-asset portfolio can potentially help lower portfolio volatility and therefore, all else being equal, increase diversification and enhance the overall risk-adjusted return of the portfolio. Figures 2 and 3 depict gold's historical correlation to major equity and bond indices. These very low or negative correlations highlight the potential long-term diversification benefits of adding gold to a multi-asset portfolio.

Figure 2

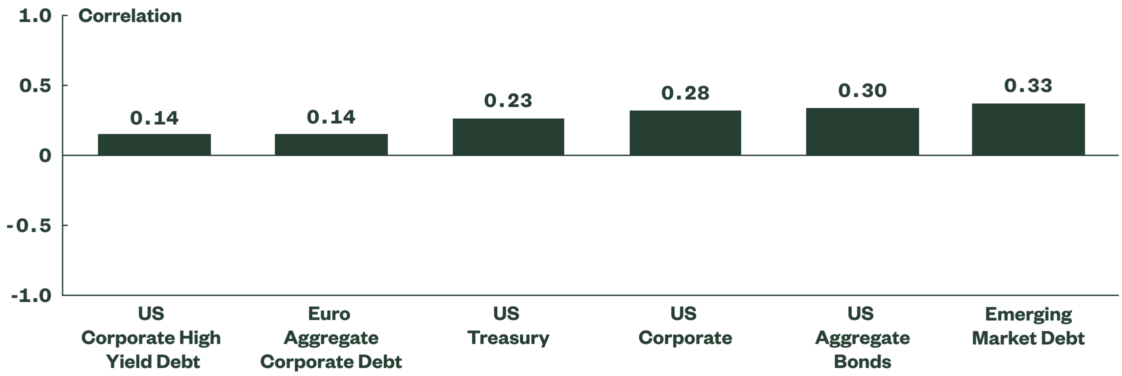
**Gold Has Had Low or Negative Correlation With Major Equity Indices Since 2000**




Source: Bloomberg Finance L.P., State Street Global Advisors, data from January 1, 2000 to December 31, 2021. Correlations are calculated from monthly returns in USD. Asset classes represented by the following indices — Japanese: MSCI Japan Index; Global: MSCI AC World Daily TR Index; US: S&P 500 Index; European: MSCI Europe Index; APAC ex Japan: MSCI ASIA PAC Ex Japan Index; Gold: LBMA Gold Price PM. Latin America: MSCI Emerging Markets Latin America Index.

Figure 3

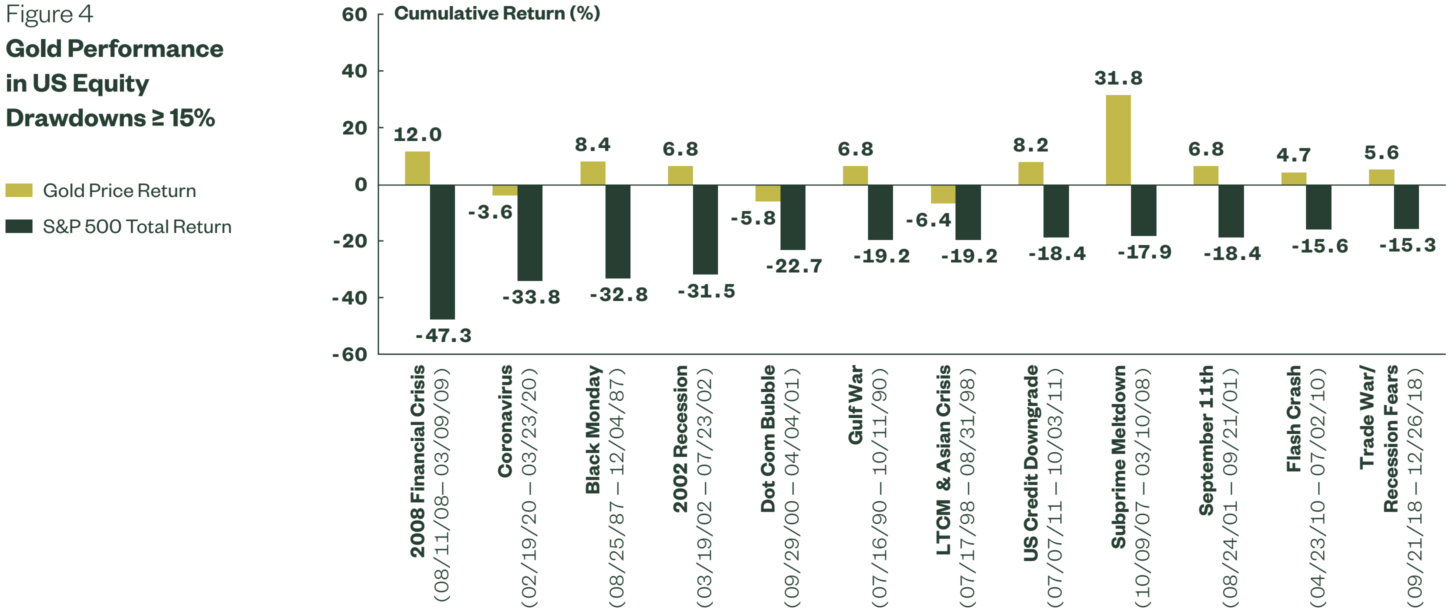
**Gold Has Had Low or Negative Correlation With Major Bond Indices**




Source: Bloomberg Finance L.P., State Street Global Advisors, data from January 1, 2000 to December 31, 2021. Correlations are calculated from monthly returns in US dollars. Asset classes represented by the following indices — US Aggregate Bonds: Bloomberg U.S. Aggregate Bond Index Total Return; US Corporate High Yield Debt: Bloomberg U.S. Corporate High Yield Bond Index Total Return; Euro Aggregate Corporate Debt: Bloomberg Europe Aggregate Corporate Bond Index Total Return; US Treasury: Bloomberg U.S. Treasury Bond Index Total Return; US Corporate Investment Grade Bonds: Bloomberg U.S. Corporate Bond Index; Emerging Market Debt: Bloomberg Emerging Markets USD Aggregate Bond Index Gold: LBMA Gold Price PM.

**Hedge Tail Risk —** Gold has historically been used to provide potential tail risk mitigation during times of market stress, as it has tended to rise during stock market pullbacks. Figure 4 shows that gold has delivered competitive returns and outperformed other asset classes during a number of past black swan events. This demonstrates that including gold in a multi-asset portfolio may provide investors with a means of moderating market volatility and reducing portfolio drawdown.

Figure 4
**Gold Performance in US Equity Drawdowns ≥ 15%**

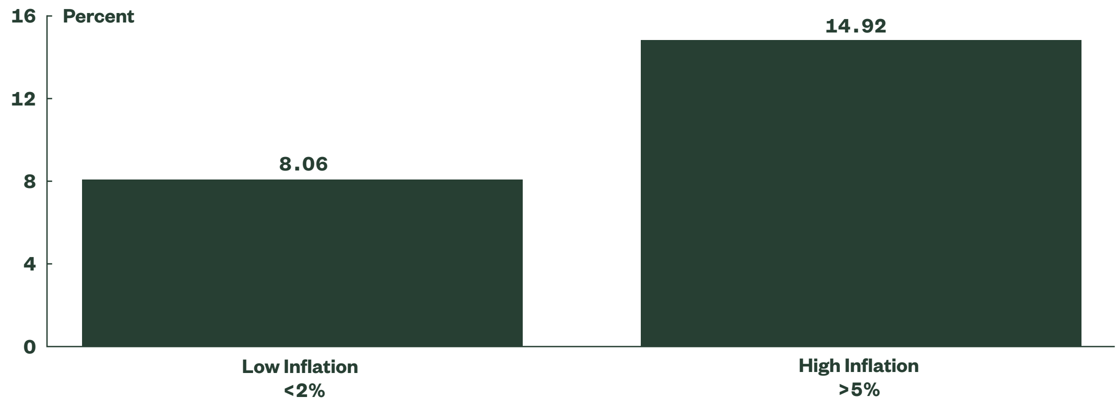



Source: Bloomberg Finance, L.P., State Street Global Advisors. US Equity represented by S&P 500 Total Return Index. Gold= gold spot price. Data from August 25, 1987 to December 31, 2021.
**Past performance is not a reliable indicator of future performance. Performance above does not reflect charges and expenses associated with the fund or brokerage commissions associated with buying and selling exchange traded funds. Performance above is not meant to represent the performance of any investment product. Index returns are unmanaged and do not reflect the deduction of any fees or expenses. Index returns reflect all items of income, gain and loss and the reinvestment of dividends and other income as applicable.**

**Manage Inflation —** Gold has historically fared well during various inflationary regimes, but it is often viewed as beneficial only during periods of heightened price inflation — like that experienced during the OPEC oil crisis in the 1970s. But gold may not just act as a potential hedge against price inflation. In fact, gold's long track record as a store of value may be driven by its ability to preserve wealth and purchasing power over time by hedging both price inflation and currency devaluation (monetary inflation).

Looking more closely at price inflation, gold has preserved purchasing power across multiple price inflation environments. Its ability to perform well through varied inflation scenarios is supported by the fact that several factors beyond inflation may influence the price of gold, including interest rates and multiple supply/demand forces. Analysing gold's price performance since the 1970s shows that during periods when the annual rate of inflation in the US has been below 2%, the gold price has risen at an average rate of 8.1% a year. But gold has shown its greatest effectiveness in preserving purchasing power when price inflation has been running above 5% a year. During such times, the gold price has increased by an average annual rate of 14.9%.

Figure 5
**Gold Returns in Different Inflation Scenarios**



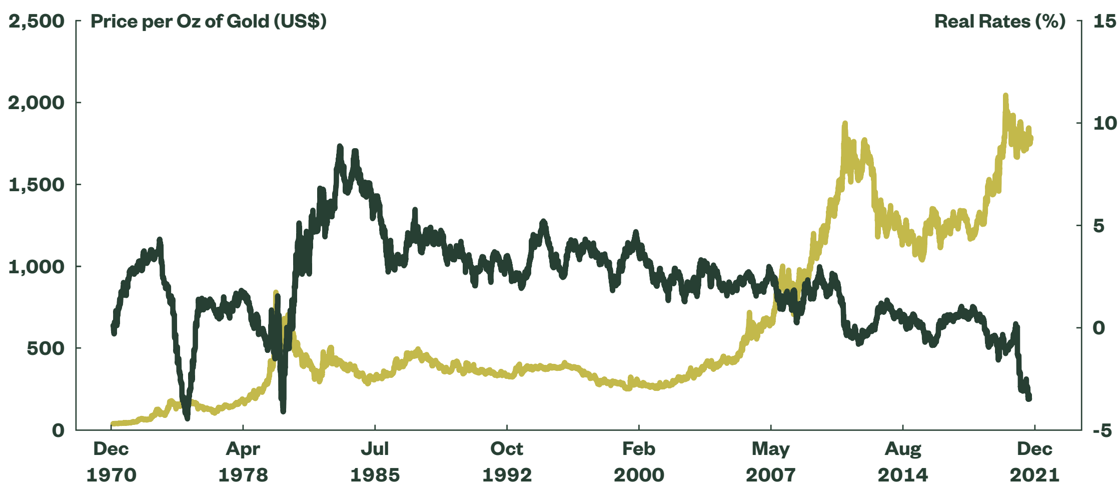

Source: Bloomberg Finance L.P., State Street Global Advisors, data from August 31, 1971 to December 31, 2021. Computed using average monthly gold returns and the most recent US CPI Figures available from August 31, 1971 to December 31, 2021.
**Past performance is not a reliable indicator of future performance. Performance above does not reflect charges and expenses associated with the fund or brokerage commissions associated with buying and selling exchange traded funds. Performance above is not meant to represent the performance of any investment product.**

**The Interest Rate Effect —** The price of gold is also influenced by real rates of return. One of the main reasons why the price of gold did not appreciate during the 1980s and 1990s was because interest rates were nominally higher than they are today and other asset classes were performing so well. Conversely, as Figure 6 illustrates, gold has generally appreciated at times when real returns on assets like bonds have been low.

In the 1980s, T-notes averaged a real rate of return of 4.50%; in the 1990s, it averaged 3.44%. Real returns continued to drop in the first decade of the new century, averaging 2.28%. Since 2010, real rates have averaged 0.24% — with a steady decline since the Global Financial Crisis and the advent of new central bank policies that followed, such as negative interest rates or quantitative easing. Notably, the last time real rates were this low was in the 1970s when they averaged 1.02%. These lower real rates were one of the major drivers supporting the price of gold appreciating from US$43 an ounce at the time of the "IPO of Gold" to US$850 early in 1980. The prevailing environment of low-to-negative real rates around the world has continued to support gold's price in recent years, as shown in Figure 6.

Figure 6
**Gold Returns vs. Real T-Note Rates Since 1970**

SPDR® Gold Shares
Real Rates




Source: Bloomberg Finance, L.P., State Street Global Advisors, as of November 30, 2021. Gold Price represented by LBMA Gold Price; Real Rates represented by 10-year Treasury note yield minus US core Consumer Price Index (excluding food and energy). **Past performance is not a guarantee of future results. Performance above does not reflect charges and expenses associated with the fund or brokerage commissions associated with buying and selling exchange traded funds. Performance above is not meant to represent the performance of any investment product.**

## Case Study

**Strategic Allocation to SPDR® Gold Shares in a Global Multi-Asset Portfolio —** "What is the Portfolio of Assets Held by the World," by State Street Global Advisors' Investment Solutions Group (ISG)[5] examined the global investable opportunity set and its implications for investors. They defined the Global Multi-Asset Market Portfolio (GMP) as the portfolio consisting of all investable capital assets, where the proportion invested in each asset corresponds to that asset's market value divided by the sum of the market value of all assets in the portfolio. It is the sum of all investors' holdings and a de facto proxy for the investable opportunity set available to all investors globally, or what is usually known as the "market portfolio." This may represent a good starting point for investors looking to build a globally diversified investment portfolio.

To examine the potential results of adding a 2%, 5% or 10% strategic allocation to SPDR® Gold Shares into a multi-asset portfolio, we constructed hypothetical global multi-asset portfolios based on the concept of the GMP developed by ISG by:

- Replicating the asset classes in the GMP with noninvestable market indices
- Slightly adjusting each asset weighting in the GMP to include commodities and assume no gold exposure at the start (Portfolio A)
- Subtracting the percentage to be allocated to gold equally from the equities and government bonds asset classes (the two asset classes with the highest weights) to add in SPDR® Gold Shares at 2% (Portfolio B), 5% (Portfolio C) and 10% (Portfolio D)

Figure 7 below identifies the asset class weightings in each of the hypothetical portfolios we've constructed. It's important to note that the impact of adding SPDR® Gold Shares to an investor's portfolio will vary based upon an investor's asset allocation decisions and market performance, among other things.

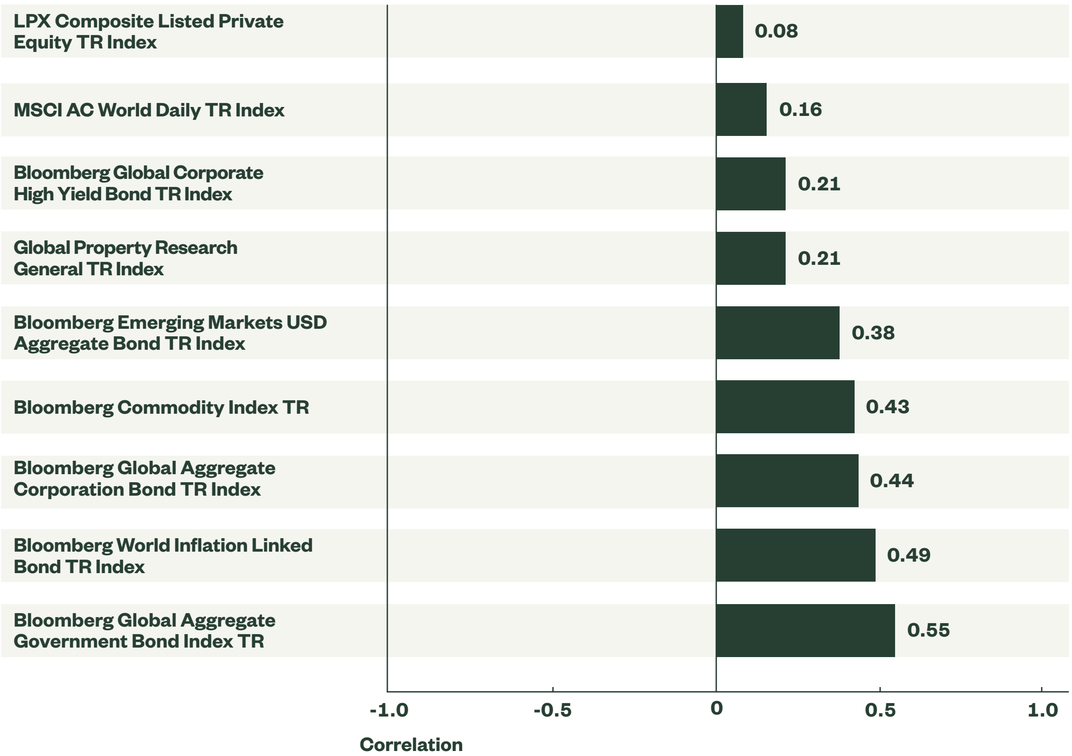
Figure 7
**Asset Class Weightings for Hypothetical Blended Portfolios A, B, C and D**

| Asset Class | Investable Market Indices & ETF | Weighting (%) | | | |
|---|---|---|---|---|---|
| | | Portfolio A | Portfolio B | Portfolio C | Portfolio D |
| Equity | MSCI AC World Daily TR Index | 40 | 39 | 37.5 | 35 |
| Total Equity | | 40 | 39 | 37.5 | 35 |
| Government Bonds | Bloomberg Global Aggregate Government Bond Index TR | 25 | 24 | 22.5 | 20 |
| IG Credit | Bloomberg Global Aggregate Corporation Bond TR Index | 17 | 17 | 17 | 17 |
| Inflation Linked Bonds | Bloomberg World Inflation Linked Bond TR Index | 2 | 2 | 2 | 2 |
| HY Bonds | Bloomberg Global Corporate High Yield Bond TR Index | 1 | 1 | 1 | 1 |
| EM Debt | Bloomberg Emerging Markets USD Aggregate Bond TR Index | 3 | 3 | 3 | 3 |
| Total Fixed Income | | 48 | 47 | 45.5 | 43 |
| Real Estate | Global Property Research General TR Index | 6 | 6 | 6 | 6 |
| Private Equity | LPX Composite Listed Private Equity TR Index | 3 | 3 | 3 | 3 |
| Commodities | Bloomberg Commodity Index TR | 3 | 3 | 3 | 3 |
| Gold | SPDR® Gold Shares | 0 | 2 | 5 | 10 |
| Total Alternative | | 12 | 14 | 17 | 22 |
| **Portfolio Total** | | **100** | **100** | **100** | **100** |

Source: State Street Global Advisors, as of December 31, 2021.
**The asset allocation scenario is for hypothetical purposes only and is not intended to represent a specific asset allocation strategy or recommend a particular allocation. Each investor's situation is unique and asset allocation decisions should be based on an investor's risk tolerance, time horizon and financial situation. It is not possible to invest directly in an index.**

From a risk-adjusted return perspective, our hypothetical blended portfolio results showed that adding a 2%, 5% or 10% allocation to SPDR® Gold Shares in the portfolio would have improved Sharpe ratios. Further, the results demonstrated that this hypothetical scenario would have outperformed multi-asset portfolios with identical index exposure but without equivalent allocations to SPDR® Gold Shares. From a risk management perspective, hypothetical portfolios with a SPDR® Gold Shares allocation had lower maximum drawdowns, with a 10% allocation to SPDR® Gold Shares reducing maximum drawdown by almost 383 bps.[6]

Figure 8
**SPDR® Gold Shares Has Had Low Correlation to Other Asset Classes in the Hypothetical Portfolio**




Source: Bloomberg Finance L.P., State Street Global Advisors, data from January 1, 2005 to December 31, 2021.
All correlation calculations above derived from monthly total return indices in US dollars.

Given that adding a 2% to 10% strategic asset allocation to SPDR® Gold Shares in a hypothetical multi-asset portfolio between January 1, 2005 and December 31, 2021 improved risk-adjusted return and reduced maximum drawdown compared with the portfolio without any exposure to gold-backed investments, global multi-asset portfolio managers should consider the merits of including gold in their portfolios.

From the results shown below in Figure 9, we found that under our hypothetical scenario:

- Portfolios B, C and D had higher Sharpe ratios, lower maximum drawdowns and lower standard deviations with higher returns compared with Portfolio A, the portfolio with no exposure to gold
- Portfolio D had the highest Sharpe Ratio (0.57) and highest cumulative return (197.91%)
- Portfolio D had the lowest maximum drawdown (-29.72%)

Figure 9
**Hypothetical Blended Portfolio Results**

| Hypothetical Portfolio | SPDR® Gold Shares Allocation (%) | Annualised Return (%) | Cumulative Return (%) | Annualised Standard Deviation | Sharpe Ratio* | Maximum Drawdown (%) |
|---|---|---|---|---|---|---|
| **Portfolio A** | 0 | 6.31 | 183.03 | 9.71 | 0.53 | -33.55 |
| **Portfolio B** | 2 | 6.38 | 185.97 | 9.64 | 0.54 | -32.79 |
| **Portfolio C** | 5 | 6.47 | 190.52 | 9.56 | 0.55 | -31.65 |
| **Portfolio D** | 10 | 6.63 | 197.91 | 9.48 | 0.57 | -29.72 |

Source: Bloomberg Finance L.P., FactSet, State Street Global Advisors, as of December 31, 2021.
* Assumes risk-free rate of Citigroup 3-month T-bills.
**The impact of adding SPDR® Gold Shares to an investor's portfolio will vary based upon an investor's asset allocation decisions and market performance, among other things. Index returns are unmanaged and do not reflect the deduction of any fees or expenses. Index returns reflect all items of income, gain and loss and the reinvestment of dividends and other income. Returns do not represent those of a specific product but were achieved by mathematically combining the actual performance data of the constituents as listed in Figure 7, according to their weightings detailed in Figure 7.**
**Performance of the hypothetical blended portfolio assumes no transaction and rebalancing costs, so actual results will differ. Performance of SPDR® Gold Trust reflects an annual expense ratio of 0.40 percent. Methodology computation can be found in the Glossary.**
**All data based on monthly measures of performance. Performance quoted represents past performance, which is no guarantee of future results. Investment return and principal value will fluctuate, so you may have a gain or loss when shares are sold. Current performance may be higher or lower than that quoted. All results are historical and assume the reinvestment of dividends and capital gains. Visit ssga.com/etfs for most recent month end performance.**

## A Convenient and Cost-Effective Way to Invest in Gold

While investment in physical gold bullion is the most direct way to invest in gold, it may involve higher ongoing costs for transport, storage and insurance. Gold mining company shares are another way to gain exposure to gold, but their growth and performance also depend on effective management, production costs, reserves and exploration, among other factors. Gold futures are also widely used by some investors looking for exposure to gold and have the benefit of being traded in standardised contracts on exchanges. Futures do not require full funding up front, which may be preferable to those investors looking for leverage, but the requirement to regularly roll futures contracts to maintain exposure does mean ongoing management of the gold position is required for a longer-term strategic allocation.

Physical-backed gold ETFs, like SPDR® Gold Shares, may help to eliminate many of the issues mentioned above, as ETFs seek to provide investors a relatively transparent and cost-effective way to track the price of gold. The "IPO of Gold" helped legitimise gold as an asset class in 1971, and the arrival of SPDR® Gold Shares in November 2004 transformed gold into an accessible liquid investment.

We believe that as the size and the number of investable asset classes continue to grow, gold — an asset with historically low and negative correlation with other asset classes — may play a more central strategic role in multi-asset portfolios and SPDR Gold ETFs may offer investors the transparency, liquidity, and convenience in one cost-effective wrapper.[7]

Figure 10

**Gold ETFs vs. Other Gold Investment Vehicles**

| | Gold ETFs | Mutual Funds | Gold Futures | Gold Mining Stocks | Gold Bars or Coins | Paper Gold Accounts |
|---|---|---|---|---|---|---|
| **Potential Advantages** | • Transparency<br>• Intraday Trading Capability<br>• Mostly backed by physical gold | • Mostly actively managed<br>• May be able to generate alpha | • Leverage<br>• Intraday Trading Capability*<br>• Relatively large positions with low commissions | • Leverage<br>• Intraday Trading Capability*<br>• Offers operating and financial leverage | • Physical possession<br>• Transparency | • Ease of use<br>• Transparency |
| **Consideration** | • Asset-Weighted Expense ratio (≈35 bps) | • Potentially higher management fees than ETFs<br>• Portfolios may include other asset classes in addition to gold | • Management of position<br>• Basis risk | • Have not exhibited perfect tracking to gold price<br>• Exposed to company specific factors | • Transport costs<br>• Storage costs<br>• Insurance costs<br>• Required to pay a 'premium' over spot | • Not backed by physical gold |
| **Trade Characteristics** | • Tactical and Strategic | • Strategic | • Tactical | • Tactical and Strategic | • Strategic | • Strategic |

Source: State Street Global Advisors, Bloomberg Finance L.P., as of December 31, 2021. There can be no assurance that a liquid market will be maintained.

Figure 11

**SPDR® Gold Shares Performance as of December 31, 2021**

| | Cumulative Returns | | | Annualised Returns | | | | |
|---|---|---|---|---|---|---|---|---|
| | 1 Month (%) | QTD (%) | YTD (%) | 1 Year (%) | 3 Years (%) | 5 Years (%) | 10 Years (%) | Since Inception 11/18/2004 (%) |
| NAV* | 0.84 | 4.33 | -4.14 | -4.14 | 11.94 | 9.00 | 1.05 | 8.18 |
| Market Value | 3.30 | 4.10 | -4.15 | -4.15 | 12.12 | 9.29 | 1.18 | 8.14 |
| LBMA Gold Price PM | 0.08 | 3.62 | -4.33 | -4.33 | 12.17 | 9.52 | 1.66 | 8.56 |

Source: Gross Expense Ratio: 0.40%. The gross expense ratio is the fund's total annual operating expense ratio. It is gross of any fee waivers or expense reimbursements and can be found in the fund's most recent prospectus. **Performance quoted represents past performance, which is no guarantee of future results. Investment return and principal value will fluctuate, so you may have a gain or loss when shares are sold. Current performance may be higher or lower than that quoted. All results are historical and assume the reinvestment of dividends and capital gains. Visit ssga.com/etfs for most recent month end performance.** *NAV return on the scheme is calculated on a single pricing basis (US$), on the assumption that all dividends and distributions are reinvested, taking into account all charges which would have been payable upon such reinvestment.

Figure 12

**Calendar Year Returns**

| | 2021 (%) | 2020 (%) | 2019 (%) | 2018 (%) | 2017 (%) |
|---|---|---|---|---|---|
| NAV* | -4.14 | 23.68 | 18.36 | -1.54 | 11.41 |
| Market Value | -4.15 | 24.81 | 17.86 | -1.94 | 12.81 |
| LBMA Gold Price PM | -4.33 | 24.61 | 18.43 | -0.93 | 12.66 |

Source: Bloomberg Finance L.P., & State Street Global Advisors, as of December 31, 2021. **Past performance is not a reliable indicator of future performance.** *NAV return on the scheme is calculated on a single pricing basis (US$), on the assumption that all dividends and distributions are reinvested, taking into account all charges which would have been payable upon such reinvestment.

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## Endnotes

1 **Frederic Dodard**, CFA®, FRM®, EMEA Head of ISG, **Amy Le**, CFA®, Macro-Investment Strategist, Global Macro Policy Research and **Amlan Roy**, PhD, Head of Global Macro Policy Research, What is the Portfolio of Assets Held by the World, State Street Global Advisors Worldwide Entities, 2019.

2 SPDR Gold Shares was listed on the New York Stock Exchange on November 18, 2004, so returns of our hypothetical blended portfolio began with the first full year of SPDR® Gold Shares' existence.

3 Bloomberg Finance L.P. & State Street Global Advisors, August 13, 1971–December 31, 2021.

4 From 1900–1967, the dollar price of gold is calculated from the average annual exchange rates of the dollar against the British pound taken from a table published for the London and Cambridge Economic Service by Times Newspapers Ltd. as part of The British Economy: Key Statistics. From 1968–March 19, 2015, the gold price is based on the London Gold Fix, a daily survey of spot gold prices conducted by telephone. From March 20, 2015–present, the gold price is based on the LBMA Gold Price, which is determined twice each business day (10:30 a.m. and 3:00 p.m. London time) by participants in a physically settled, electronic and tradable auction. All gold prices from 1968-present based on data compiled by Bloomberg Finance L.P. **Performance quoted of SPDR Gold Shares above represents past performance, which is no guarantee of future results. Investment return and principal value will fluctuate, so you may have a gain or loss when shares are sold. Current performance may be higher or lower than that quoted. All results are historical and assume the reinvestment of dividends and capital gains. Visit ssga.com/etfs for most recent month end performance.**

5 **Frederic Dodard**, CFA®, FRM®, EMEA Head of ISG, **Amy Le**, CFA®, Macro-Investment Strategist, Global Macro Policy Research and **Amlan Roy**, PhD, Head of Global Macro Policy Research, What is the Portfolio of Assets Held by the World, State Street Global Advisors Worldwide Entities, 2019.

6 Maximum portfolio loss for Portfolio A, B, C and D occurred during 2007–2009 at the height of the financial crisis. Bloomberg Finance L.P., and State Street Global Advisors, December 31, 2021.

7 Source: Bloomberg Financial L.P. & State Street Global advisors. Note SPDR® Gold Shares is the most liquid gold-backed ETF in the world with AUM of US $71.2 billion and US $1.4 billion daily average trading volume in the last 12 months, date as of December 31, 2021.

**Information Classification: General Access**

**Glossary**

**Asset Allocation —** is a method of diversification which positions assets among major investment categories. Asset Allocation may be used in an effort to manage risk and enhance returns. It does not, however, guarantee a profit or protect against loss. Diversification does not ensure a profit or guarantee against loss.

**Bloomberg Emerging Markets Hard Currency Aggregate Index —** A flagship hard currency Emerging Markets debt benchmark that includes USD-denominated debt from sovereign, quasi-sovereign, and corporate EM issuers.

**Bloomberg Emerging Markets USD Aggregate Bond TR Index —** A flagship hard currency Emerging Markets debt benchmark that includes USD-denominated debt from sovereign, quasi-sovereign, and corporate EM issuers.

**Bloomberg Euro Aggregate Bond Index TR —** Includes fixed-rate, investment-grade Euro denominated bonds. Inclusion is based on the currency of the issue, and not the domicile of the issuer. The principal sectors in the index are treasury, corporate, government-related and securitised.

**Bloomberg Global Aggregate Corporate Bond TR Index —** Corporate Index is a flagship measure of global investment grade, fixed-rate corporate debt. This multi-currency benchmark includes bonds from developed and emerging markets issuers within the industrial, utility and financial sectors.

**Bloomberg Global Corporate High Yield Bond TR Index —** A multi-currency flagship measure of the global high yield debt market. The index represents the union of the US High Yield, the Pan-European High Yield, and Emerging Markets (EM) Hard Currency High Yield Indices. The high yield and emerging markets sub-components are mutually exclusive.

**Bloomberg Global Aggregate Government Bond Index TR —** Government index is a measure of investment grade rated debt from 25 local currency markets. This multi-currency benchmark includes treasury and government-related fixed-rate bonds from both developed and emerging markets issuers.

**Bloomberg U.S. Aggregate Bond Index TR —** A benchmark that provides a measure of the performance of the US dollar denominated investment grade bond market, which includes investment grade government bonds, investment grade corporate bonds, mortgage pass through securities, commercial mortgage backed securities.

**Bloomberg US Corporate Bond Index TR —** A benchmark that measures the US investment grade, fixed-rate, taxable corporate bond market. It includes USD denominated securities publicly issued by US and non-US industrial, utility and financial issuers.

**Bloomberg U.S. Corporate High Yield Bond Index TR —** Measures the USD-denominated, high yield, fixed-rate corporate bond market. Securities are classified as high yield if the middle rating of Moody's, Fitch and S&P is Ba1/BB+/BB+ or below. Bonds from issuers with an emerging markets country of risk, based on Barclays EM country definition, are excluded.

**Bloomberg U.S. Treasury Bond Index TR —** A benchmark of US dollar denominated, fixed-rate, nominal debt issued by the US Treasury. Treasury bills are excluded by the maturity constraint, but are part of a separate Short Treasury Index.

**Bloomberg World Inflation Linked Bond TR Index —** Measures the investment-grade, government inflation-linked debt from 12 different developed market countries. Investability is a key criterion for inclusion of markets in this index, and it is designed to include only those markets in which a global government linker fund is likely and able to invest.

**Bloomberg Commodity Index TR —** A broadly diversified commodity price index distributed by Bloomberg Indexes that tracks 22 commodity futures and seven sectors. No one commodity can compose less than 2 percent or more than 15 percent of the index, and no sector can represent more than 33 percent of the index.

**Brexit** — An abbreviation of the term “British Exit” referring to the UK referendum on June 23, 2016 that resulted in the country’s decision to withdraw from the European Union.

**CPI, or Consumer Price Index** — A widely used measure of inflation at the consumer level that helps to evaluate changes in cost of living.

**Debt Ceiling Crisis** — A contentious debate in July 2011 regarding the maximum amount of money that the US government should be allowed to borrow. Congress did end up immediately raising the “debt ceiling” by US $400 billion, from US $14.3 trillion to US $14.7 trillion, with the possibility of future increases included in the agreement as well, but the contentious nature of the debate led Standard and Poor’s to downgrade the US’ credit rating from AAA to AA+, even though the U.S. did not default.

**Diversification —** A strategy of combining a broad mix of investments and asset classes to potentially limit risk, although diversification does not guarantee protection against a loss in falling markets.

**Fiat Currency** — Currency that a government declares to be legal tender, but that it is not backed by a physical commodity. The value of fiat money is linked to supply and demand rather than the value of the material that the money is made of, such as gold or silver historically. Fiat money’s value is instead based solely on the faith and credit of the economy.

**Global Financial Crisis** — The economic crisis that occurred from 2007–2009 that is generally considered one of the biggest economic challenge since the Great Depression of the 1930s. The GFC was triggered largely by the sub-prime mortgage crisis, which led to the collapse of systemically vital US investment banks such as Lehman Brothers. The crisis began with the collapse of two Bear Stearns hedge funds in June 2007, and the stabilisation period began in late 2008 and continued until the end of 2009.

**Global Property Research General Index**
A broad-based global real estate benchmark that contains all listed real estate companies that conform to General Property Research’s index-qualification rules, bringing the number of index constituents to more than 650. The index’s inception date was Dec. 31 1983.

**Gold Standard** — A monetary standard under which the basic unit of currency is defined by a stated quantity of gold. In 1971 US President Richard Nixon ended the ability to convert US dollars into gold at the fixed price of US $35 per ounce.

**LBMA Gold Price** — The LBMA Gold Price is determined twice each business day — 10:30 a.m. London time (i.e., the LBMA Gold Price AM) and 3:00 p.m. London time (i.e., the LBMA Gold Price PM) by the participants in a physically settled, electronic and tradable auction.

**LPX Composite Listed Private Equity Index — A** broad global listed private equity index whose number of constituents is not limited. The LPX Composite includes all major private equity companies listed on global stock exchanges that fulfils the index provider’s liquidity criteria. The index composition is well diversified across listed private equity categories, styles, regions and vintage years. The index has two versions: a price index (PI) and a total return index (TR) that includes all payouts.

**MSCI AC Asia ex Japan Index —** Captures large and mid cap representation across 2 of 3 Developed Markets (DM) countries (excluding Japan) and 9 Emerging Markets (EM) countries in Asia. With 1,187 constituents, the index covers approximately 85% of the free float-adjusted market capitalisation in each country.

**MSCI ACWI Index, or MSCI All Country World Index —** Captures large and mid cap representation across 23 Developed Markets (DM) and 26 Emerging Markets (EM) countries. With 3,050 constituents, the index covers approximately 85% of the global investable equity opportunity set.

**MSCI Emerging Markets (EM) Latin America Index —** Captures large and mid cap representation across 6 Emerging Markets (EM) countries in Latin America. With 112 constituents, the index covers approximately 85% of the free float-adjusted market capitalisation in each country.

**MSCI Europe Index —** Captures large and mid cap representation across 15 Developed Markets (DM) countries in Europe. With 437constituents, the index covers approximately 85% of the free float-adjusted market capitalisation across the European Developed Markets equity universe.

**MSCI Japan Index —** Designed to measure the performance of the large and mid cap segments of the Japanese market. With 324 constituents, the index covers approximately 85% of the free float-adjusted market capitalisation in Japan.

**Real Rate of Return** — The return realised on an investment, usually expressed annually as a percentage, which is adjusted to reflect the effects of inflation or other external factors, on the so-called nominal return. The real rate of return is calculated as follows: Real Rate of Return = Nominal Interest Rate — Inflation.

**The S&P 500 Index —** Widely regarded as the best single gauge of large-cap U.S. equities and serves as the foundation for a wide range of investment products. The index includes 500 leading companies and captures approximately 80% coverage of available market capitalisation.

**Sharpe Ratio —** A measure for calculating risk-adjusted returns that has become the industry standard for such calculations. It was developed by Nobel laureate William F. Sharpe. The Sharpe ratio is the average return earned in excess of the risk-free rate per unit of volatility or total risk. The higher the Sharpe ratio the better.

**Sovereign Debt Crisis** — A period of time beginning in 2008 when several European countries on the periphery of the Eurozone became unable to repay or refinance government debt or bail out banks without the assistance of the European Central Bank and the International Monetary Fund. It was brought to heel in July 2012 with the ECB’s pledge to save the euro and the Eurozone at all costs. While the crisis began with the collapse of Icelandic and Irish banks, it became largely focused on southern European countries — mainly Greece, but also Spain, Portugal and even Italy.

**Standard Deviation —** A statistical measure of volatility that quantifies the historical dispersion of a security, fund or index around an average. Investors use standard deviation to measure expected risk or volatility, and a higher standard deviation means the security has tended to show higher volatility or price swings in the past. As an example, for a normally distributed return series, about two-thirds of the time returns will be within 1 standard deviation of the average return.

**Hypothetical Blended Portfolio Performance Methodology** — Returns shown in Figure 9 do not represent those of a fund but were achieved by mathematically combining the actual performance data of MSCI AC World Daily TR Index, Bloomberg Global Aggregate Government Bond Index, Bloomberg Aggregate Global Corporate Bond Index, Bloomberg Emerging Markets Debt Index, Global Property Research General Index, S&P Listed Private Equity Index, Bloomberg World Inflation Linked Bond Index, Bloomberg Global Corporate High Yield Index, S&P GSCI Index, and SPDR® Gold Shares between January 1, 2005 and December 31, 2021. Each portfolio is re-balanced at the beginning of each year to maintain target portfolio weights. The performance assumes no transaction and rebalancing costs, so actual results will differ. It is not possible to invest directly in an index. Performance of SPDR® Gold Shares reflects annual expense ratio of 0.40%. The impact of adding SPDR® Gold Shares to an investor’s portfolio will vary based upon an investor’s asset allocation decisions and market performance, among other things.