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EQUITY 101

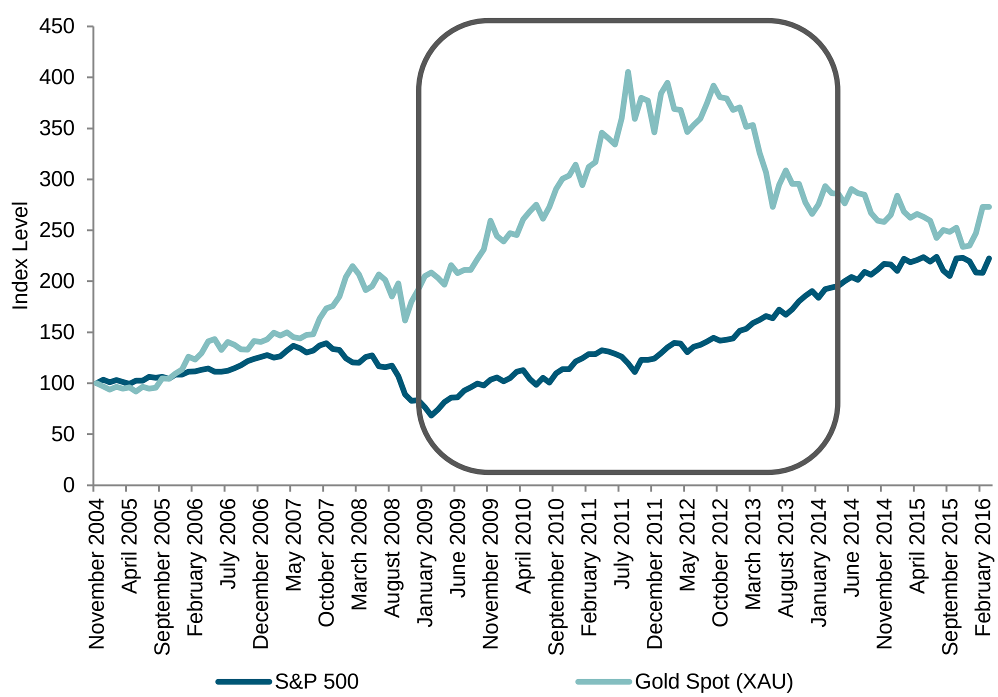
Gold-Hedged Strategies: An Introduction

INTRODUCTION

The power of gold has been demonstrated repeatedly in equity market crises going back to the Great Depression. At times of extreme pessimism, gold has tended to be buoyant and equities depressed; at times of extreme confidence, gold has tended to be depressed and equities buoyant. Historically, gold and the S&P 500® have moved in opposite directions, uncorrelated at 5% (see Exhibit 1). When markets have exhibited extreme volatility, such as during the global financial crisis in 2008, when the S&P 500 lost about 56% of its value between the October 2007 peak and the March 2009 trough, gold prices tended to increase, and they reached an all-time high in 2011. Due to the low levels of correlation between gold and equities, some market participants use gold as a hedge in an attempt to minimize the downside deviations in the value of an overall portfolio, reduce overall volatility, and potentially enhance returns.

At times of extreme pessimism, gold has tended to be buoyant and equities depressed; at times of extreme confidence, gold has tended to be depressed and equities buoyant.

Exhibit 1: Correlation Between Gold and the S&P 500



Source: S&P Dow Jones Indices LLC. Data from November 2004 to March 31, 2016. Chart is provided for illustrative purposes and includes hypothetical historical performance. Past performance is no guarantee of future results.

Some market participants consider gold to be the ultimate currency, while others assert that in the long run, gold has not kept pace with inflation, and that it is simply a shiny metal with limited industrial usage. Despite differing views, gold continues to be an important reserve asset for most central banks, even though it is no longer the center of the international financial system. Gold is no one's liability, meaning that unlike a currency, the value of gold may not be affected by the economic policies of the issuing country or undermined by local inflationary pressures. Gold also potentially brings much needed diversity to a central bank portfolio due to its low correlation with key currencies.

GOLD AS A MEANS OF PORTFOLIO DIVERSIFICATION

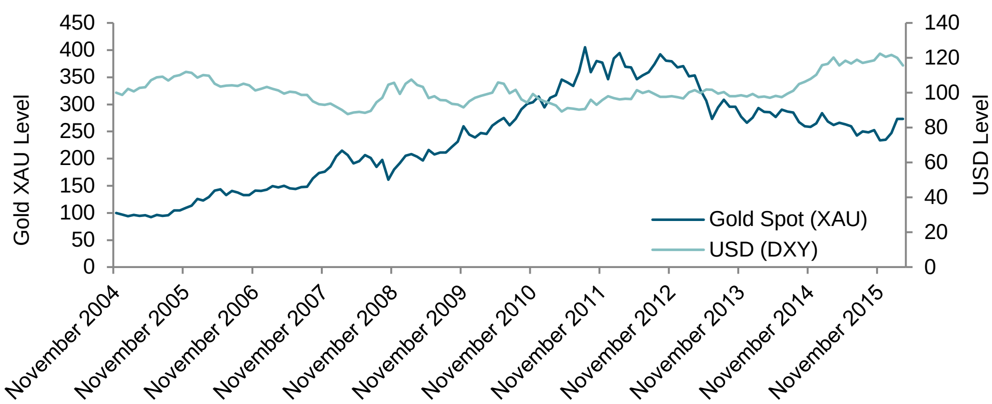
Gold has unique properties as an asset class that could be used as a means to attempt to enhance portfolio diversification. A number of approaches are available for investing in gold, including the following.

- Physical form of coins and bars
- Futures and options
- Indirectly, through gold-mining companies
- Exchange-traded funds (ETFs)
- Index-based hedged strategies (such as the S&P 500 Dynamic Gold Hedged Index)

Most often, gold is used to hedge macroeconomic events, such as inflation, deflation, and currency devaluation, potentially enabling investors to preserve their wealth.

Historically, gold has shown to move independently of other assets, thus it is generally used as a means of diversifying risk. Most often, gold is used to hedge macroeconomic events, such as inflation, deflation, and currency devaluation, potentially enabling investors to preserve their wealth. Gold has a negative correlation to the U.S. dollar and is widely considered a currency hedge. The negative correlation between gold and the U.S. dollar is often not evident on a daily or weekly basis, but it is almost always evident during periods of 12 months or longer (see Exhibit 2).

Exhibit 2: Gold Spot (XAU) Versus U.S. Dollar Index (DXY)



Source: S&P Dow Jones Indices LLC. Data from November 2004 to March 31, 2016. Chart is provided for illustrative purposes and includes hypothetical historical performance. Past performance is no guarantee of future results.

INDEX DESIGN AND CONSTRUCTION

The S&P 500 Dynamic Gold Hedged Index seeks to track an investment strategy that is long on the S&P 500 and hedged against the fluctuations of the U.S. dollar versus gold. The index is calculated by hedging the beginning-of-period S&P 500 (TR) index values using gold futures. The designated set of COMEX-listed gold futures used in the S&P GSCI is also used in the S&P 500 Dynamic Gold Hedged Index (see Exhibit 3).

The index rolls to the next gold futures contract in the first five trading days of the month prior to the expiration of the current contract. On each day, 20% of the gold futures contract is rolled into the new contract, and the index equalizes notional exposure to equity and gold. The index is also rebalanced to equalize notional exposure to equity and gold after the close of the first business day of September, if the difference between the values of the gold futures exposure and the equity exposure is more than 10% above or below the value of the index as of the last rebalancing, or if the sum of the equity return and gold futures return since the last rebalancing is more than 20% or below -20%.

The S&P 500 Dynamic Gold Hedged Index seeks to track an investment strategy that is long on the S&P 500 and hedged against the fluctuations of the U.S. dollar versus gold.

Exhibit 3: Schedule of Futures Contracts Rolled in the S&P 500 Dynamic Gold Hedged Index

Trading Facility	Commodity (Contract)	Ticker	Designated Contract at End of Month											
COMEX	Gold	Month	1	2	3	4	5	6	7	8	9	10	11	12
		GC	J	J	M	M	Q	Q	Z	Z	Z	Z	G	G

Source: S&P Dow Jones Indices LLC. Table is provided for illustrative purposes.

Exhibit 4: Month Letter Codes

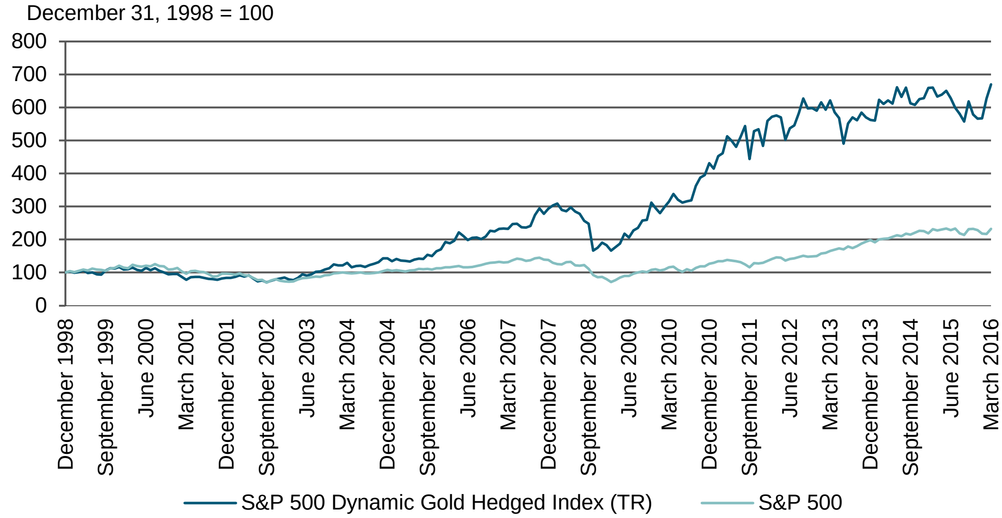
Month	Letter Code
February	G
April	J
June	M
August	Q
December	Z

Source: S&P Dow Jones Indices LLC. Table is provided for illustrative purposes.

RISK/RETURN PROFILE OF THE S&P 500 DYNAMIC GOLD HEDGED INDEX

The index is calculated based on the total return of a hypothetical portfolio consisting of long S&P 500 and long COMEX gold futures positions. Therefore, between one rebalancing and another, the returns of the index are returns from the S&P 500 and gold. As such, the index would outperform the unhedged S&P 500 when gold prices appreciate against the U.S. dollar and would underperform the unhedged S&P 500 when the U.S. dollar appreciates against gold (see Exhibit 5). The current low-interest-rate environment and the weak U.S. dollar have made gold-hedged investing a compelling strategy.

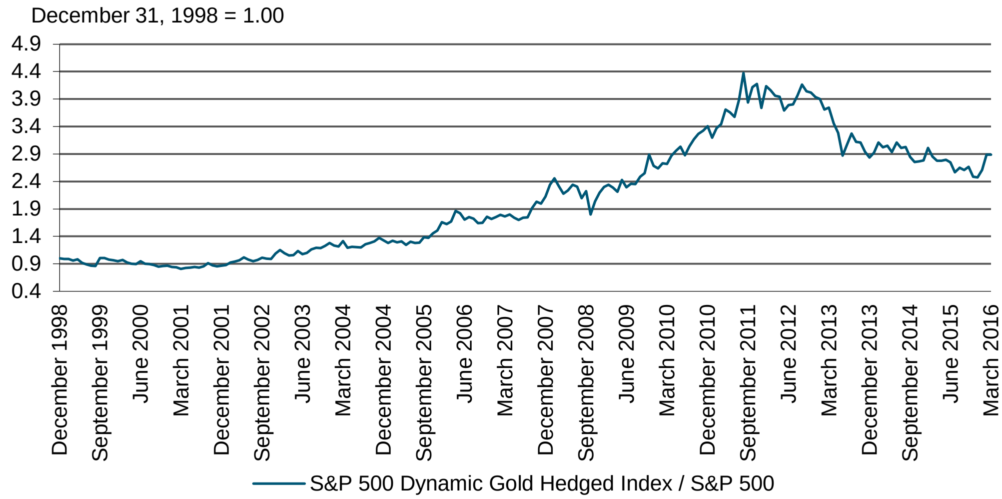
Exhibit 5: Wealth Curve of the S&P 500 Dynamic Gold Hedged Index



Source: S&P Dow Jones Indices LLC. Data from December 1998 to March 31, 2016. Past performance is no guarantee of future results. Chart is provided for illustrative purposes and includes hypothetical historical performance. It is not possible to invest directly in an index. Please see the Performance Disclosures at the end of the document for more information regarding the inherent limitations associated with back-tested performance.

The hedge only protects against adverse movements in the relative value of the U.S. dollar as expressed in the U.S. dollar price of gold.

Exhibit 6: S&P 500 Dynamic Gold Hedged Index/S&P 500 Ratio



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The hedge only protects against adverse movements in the relative value of the U.S. dollar as expressed in the U.S. dollar price of gold. By holding long gold futures contracts, investors stand to gain when the U.S. dollar loses value as expressed by gold. Conversely, they also stand to lose when the opposite occurs (see Exhibit 6).

Gold shows no statistically significant correlation with equities (see Exhibit 7); however, there is evidence of a significant correlation when equities are under stress. In other words, when shares are falling rapidly in value, an inverse correlation can develop between gold and equities. This aspect of gold's behavior counters the way other asset classes tend to perform in periods of stress for equities. The inverse correlation can be explained by gold bullion's appeal as a safe haven amid economic crisis. In general, the inverse correlation between gold and equities can be seen over the past three-, five-, seven-, and ten-year periods. In 2015, there was an anomaly in the relationship between gold and equities; the gold spot was at -11.37%, while the S&P 500 was relatively flat at 1.38%. In the first quarter of 2016, there was a correction in the equity market. The inverse relationship between gold and equities is illustrated in Exhibit 7, where it shows that equities have been relatively flat at 1.78%, leading to more investment in gold, which exhibited a return of 4.10%.

In general, the inverse correlation between gold and equities can be seen over the past three-, five-, seven-, and ten-year periods.

Exhibit 7: Three-Year Rolling Correlation

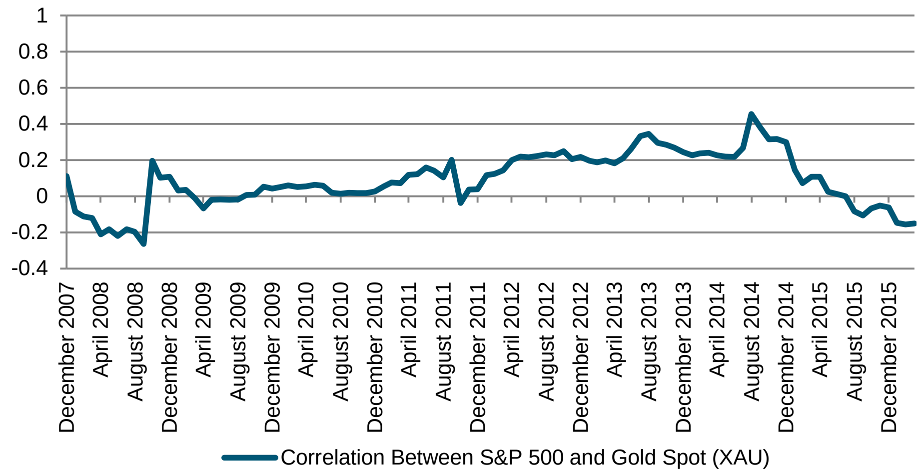

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Exhibit 8: Risk/Return Profile of the S&P 500 Dynamic Gold Hedged Index, the S&P 500, and the Gold Spot

Period	S&P 500 Dynamic Gold Hedged Index	S&P 500	Gold Spot
Annual Return (%)			
1-Year	5.86	1.78	4.10
3-Year	2.55	11.82	-8.25
5-Year	7.75	11.58	-2.95
7-Year	20.96	16.97	4.30
10-Year	13.03	7.01	7.73
Since Inception (Dec. 31, 1998)	11.66	5.00	8.81
Annual Volatility (%)			
1-Year	20.52	14.66	16.61
3-Year	19.94	11.35	17.13
5-Year	23.71	12.22	18.61
7-Year	24.36	13.49	18.21
10-Year	25.37	15.28	19.13
Since Inception (Dec. 31, 1998)	23.23	15.05	17.46
Annualized Risk-Adjusted Returns			
1-Year	0.29	0.12	0.25
3-Year	0.13	1.04	-0.48
5-Year	0.33	0.95	-0.16
7-Year	0.86	1.26	0.24
10-Year	0.51	0.46	0.40
Since Inception (Dec. 31, 1998)	0.50	0.33	0.50
Maximum Drawdown (%)			
3-Year	-16.27	-8.36	-28.30
5-Year	-21.85	-16.26	-42.33
7-Year	-21.85	-16.26	-42.33
10-Year	-46.08	-50.95	-42.33
Since Inception (Dec. 31, 1998)	-46.08	-50.95	-42.33

Source: S&P Dow Jones Indices LLC. Data from December 1998 to March 31, 2016. Past performance is no guarantee of future results. Table is provided for illustrative purposes and includes hypothetical historical performance. Please see the Performance Disclosures at the end of the document for more information regarding the inherent limitations associated with back-tested performance.

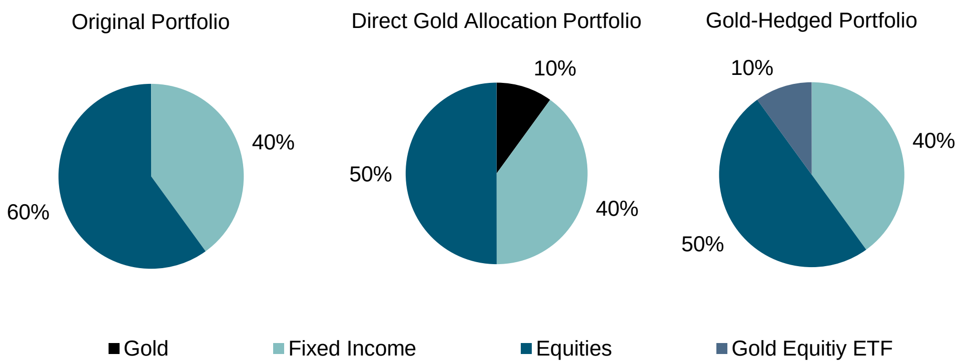
S&P 500 DYNAMIC GOLD HEDGED INDEX VERSUS THE DO-IT-YOURSELF METHOD

There are alternative formulations market participants may consider. The availability of gold ETFs with robust liquidity suggest market participants can overlay an S&P 500 futures position on such an ETF. The disadvantage of such an approach, however, is the fee built into the ETF prices.

Furthermore, the S&P 500 Dynamic Gold Hedged Index is designed to reflect the strategic overlay approach that provides a more efficient way to gain exposure to gold as a hedge against currency exposures. Market participants may choose to have direct gold allocation, which will then change their asset allocation (see Direct Gold Allocation Portfolio in Exhibit 9), or they may implement the overlay approach of the S&P 500 Dynamic Gold Hedged Index, which would allow them to add gold exposure while leaving their original asset allocation intact (see Gold-Hedged Portfolio in Exhibit 9). This second option is designed for investors to participate in any potential gains or losses generated by the equity investment underlying the gold overlay.

A direct investment in gold requires an upfront payment to purchase the asset.

Exhibit 9: Original Portfolio Versus Portfolio With Direct Gold Allocation Versus Gold-Hedged Portfolio



Source: S&P Dow Jones Indices LLC. Charts are provided for illustrative purposes.

A direct investment in gold requires an upfront payment to purchase the asset. To finance this upfront payment, investors may need to sell other assets, such as equities, which can change their asset allocation mix. In contrast, a futures contract is an agreement to purchase the asset at a future point in time. Gold-hedged investing is exposed to the price fluctuations of gold via futures in an amount approximately equal to the amount of equity exposure, and it rolls the futures contracts before they expire. As shown in Exhibit 9, the hypothetical gold-hedged strategy with an allocation to fixed income would have outperformed an allocation to only equities and fixed income and an allocation to equities, fixed income, and physical gold over most time horizons studied.

At each rebalancing, investors pay commission on selling outperformers and buying underachievers.

Period	Equities (60%) + Fixed Income (40%)	Equities (50%) + Fixed Income (40%) + Gold (10%)	S&P 500 Dynamic Gold Hedged Index (60%) + Fixed Income (40%)
Annual Return (%)			
1-Year	1.77	2.15	5.26
3-Year	8.25	4.37	2.50
5-Year	8.48	5.74	7.08
7-Year	11.29	9.42	16.99
10-Year	6.16	6.31	11.32
Since Inception (April 30, 2002)	6.09	6.56	12.77
Annual Volatility (%)			
1-Year	9.83	7.73	17.41
3-Year	7.50	6.46	17.01
5-Year	7.36	7.43	20.02
7-Year	7.63	7.48	19.88
10-Year	8.82	8.08	20.31
Since Inception (April 30, 2002)	8.33	7.60	18.46
Annualized Risk-Adjusted Returns			
1-Year	0.18	0.28	0.30
3-Year	1.10	0.68	0.15
5-Year	1.15	0.77	0.35
7-Year	1.48	1.26	0.85
10-Year	0.70	0.78	0.56
Since Inception (April 30, 2002)	0.73	0.86	0.69
Maximum Drawdown (%)			
3-Year	-5.54	-5.27	-14.26
5-Year	-7.63	-5.71	-19.04
7-Year	-7.63	-5.71	-19.04
10-Year	-30.46	-20.22	-37.45
Since Inception (April 30, 2002)	-30.46	-20.22	-37.45

Exhibit 10: Risk/Return Profile of the Hypothetical Asset Allocation Portfolios

Source: S&P Dow Jones Indices LLC. Data from December 1998 to March 31, 2016. Past performance is no guarantee of future results. Table is provided for illustrative purposes and includes hypothetical historical performance. Please see the Performance Disclosures at the end of the document for more information regarding the inherent limitations associated with back-tested performance.

Market participants may emulate the S&P 500 Dynamic Gold Hedged Index overlay strategy by separately owning shares from S&P 500 (TR) constituents and gold shares. As shown in Exhibit 10, owning equities and gold separately, as opposed to using the S&P 500 Dynamic Gold Hedged Index, may result in a lower return on investment. In addition, not only will there be a cost for purchasing these funds, but the investor will also have to pay a commission. This approach will also require manual monthly rebalancing, which may result in higher potential tax liabilities and commissions. At each rebalancing, investors pay commission on selling outperformers and buying underachievers. Gains are likely to be counted as short term and taxed at ordinary income rates.

Gold has shown attractive performance over a variety of different timeframes while maintaining a more contained risk profile relative to other asset classes.

Exhibit 11: Hypothetical Portfolio Returns by Asset Allocation

Strategy	Initial Investment (USD)	Annualized Returns (%)			Final Investment (USD)		
		3-Year	5-Year	10-Year	3-Year	5-Year	10-Year
S&P 500	100.00	11.82	11.58	7.01	139.82	172.95	196.87
Gold Spot	100.00	-8.68	-3.40	7.31	76.16	84.11	202.48
Gold Spot + S&P 500	200.00	2.52	7.63	14.53	107.74	144.45	388.24
S&P 500 Dynamic Gold Hedged Index	200.00	2.55	7.75	13.03	215.72	290.43	680.83
S&P 500 (Equities 60%) + U.S. Aggregate Bonds (Fixed Income 40%)	200.00	8.25	8.48	6.16	253.67	300.50	363.45
S&P 500 (Equities 50%) + Gold Spot (Commodities 10%) + U.S. Aggregate Bonds (Fixed Income 40%)	200.00	4.37	5.74	6.31	227.39	264.38	368.81
S&P 500 Dynamic Gold Hedged Index (Equities 60%) + U.S. Aggregate Bonds (Fixed Income 40%)	200.00	2.50	7.08	11.32	215.40	281.54	584.59

Source: S&P Dow Jones Indices LLC. Data as of March 31, 2016. Past performance is no guarantee of future results. Table is provided for illustrative purposes and includes hypothetical historical performance. Please see the Performance Disclosures at the end of the document for more information regarding the inherent limitations associated with back-tested performance.

CONCLUSION

Gold has shown attractive performance over a variety of timeframes, while maintaining a more contained risk profile relative to other asset classes. The ability to hedge U.S. dollars against gold with the S&P 500 Dynamic Gold Hedged Index may increase overall returns, while the low level of correlation between gold and equities may help generate diversification benefits. These attributes exhibited by gold can potentially help increase risk-adjusted performance, which tends to be higher in portfolios with exposure to gold relative to those without. Thus, market participants may use the S&P 500 Dynamic Gold Hedged Index to gain exposure to gold while potentially limiting the downside risk of equity strategies, which have historically been more susceptible to macroeconomic forces such as inflation well over the long term.

PERFORMANCE DISCLOSURES

The S&P 500 Dynamic Gold Hedged Index (the "Index") was launched on Sept. 28, 2015. All information presented prior to the launch date is back-tested. Back-tested performance is not actual performance, but is hypothetical. The back-test calculations are based on the same methodology that was in effect when the index was officially launched. Complete index methodology details are available at www.spdji.com. It is not possible to invest directly in an index.

S&P Dow Jones Indices defines various dates to assist our clients in providing transparency on their products. The First Value Date is the first day for which there is a calculated value (either live or back-tested) for a given index. The Base Date is the date at which the Index is set at a fixed value for calculation purposes. The Launch Date designates the date upon which the values of an index are first considered live: index values provided for any date or time period prior to the index's Launch Date are considered back-tested. S&P Dow Jones Indices defines the Launch Date as the date by which the values of an index are known to have been released to the public, for example via the company's public website or its datafeed to external parties. For Dow Jones-branded indicates introduced prior to May 31, 2013, the Launch Date (which prior to May 31, 2013, was termed "Date of introduction") is set at a date upon which no further changes were permitted to be made to the index methodology, but that may have been prior to the Index's public release date.

Past performance of the Index is not an indication of future results. Prospective application of the methodology used to construct the Index may not result in performance commensurate with the back-test returns shown. The back-test period does not necessarily correspond to the entire available history of the Index. Please refer to the methodology paper for the Index, available at www.spdji.com for more details about the index, including the manner in which it is rebalanced, the timing of such rebalancing, criteria for additions and deletions, as well as all index calculations.

Another limitation of using back-tested information is that the back-tested calculation is generally prepared with the benefit of hindsight. Back-tested information reflects the application of the index methodology and selection of index constituents in hindsight. No hypothetical record can completely account for the impact of financial risk in actual trading. For example, there are numerous factors related to the equities, fixed income, or commodities markets in general which cannot be, and have not been accounted for in the preparation of the index information set forth, all of which can affect actual performance.

The Index returns shown do not represent the results of actual trading of investable assets/securities. S&P Dow Jones Indices LLC maintains the Index and calculates the Index levels and performance shown or discussed, but does not manage actual assets. Index returns do not reflect payment of any sales charges or fees an investor may pay to purchase the securities underlying the Index or investment funds that are intended to track the performance of the Index. The imposition of these fees and charges would cause actual and back-tested performance of the securities/fund to be lower than the Index performance shown. As a simple example, if an index returned 10% on a US $100,000 investment for a 12-month period (or US $10,000) and an actual asset-based fee of 1.5% was imposed at the end of the period on the investment plus accrued interest (or US $1,650), the net return would be 8.35% (or US $8,350) for the year. Over a three year period, an annual 1.5% fee taken at year end with an assumed 10% return per year would result in a cumulative gross return of 33.10%, a total fee of US $5,375, and a cumulative net return of 27.2% (or US $27,200).

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