The Case for Gold Yield in Investment Portfolios

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A small allocation of gold in a portfolio has a positive impact. A yield on gold amplifies the benefit and removes the storage and management costs of conventional gold investments.

INTRODUCTION | RISK ADJUSTED RETURNS IN PORTFOLIO MANAGEMENT

Capital allocators constantly face a tension between two competing objectives: increasing returns and decreasing investment risk. Risk is often considered the price one must pay for achieving a given investment return. Investors seek to "pay" as little risk for as much return as possible. This encapsulates the idea of *risk-adjusted return*. Risk is a broad concept, which can sometimes be difficult to define or quantify. In this paper, we will focus on price volatility and not default. If one can decrease volatility, without sacrificing returns, then the portfolio may be said to offer better risk-adjusted returns.

GOLD AND RISK ADJUSTED RETURNS

Modern portfolio theory states that a diversified portfolio of assets with low correlations to one another helps to decrease risk in a portfolio without sacrificing returns.[1] By itself, gold is more volatile than other assets like stocks or bonds.[2] However, due to its low correlation to other assets,[3] gold is additive to the overall performance of a portfolio when deployed in a diversifying role. A growing body of research with contributions from firms including Bridgewater Associates,[4] Goldman Sachs,[5] Price Waterhouse Coopers,[6] CPM Group,[7] and Oxford Economics[8] have documented the same or similar conclusions.[9]

"We like the fact that more often than not…gold is willing to zig when the rest of the portfolio zags. And for us trying to deliver a positive absolute return as long only investors who cannot short, it's a wonderful tool to have."

Charles de Vaulx, Chief Investment Officer, International Value Advisors LLC

Charles de Vaulx in Bloomberg Studio, photo courtesy of Zimbio

A MORE REALISTIC REPRESENTATION OF GOLD IN A PORTFOLIO

While the existing research suggests that gold has a role to play in the portfolio, we find that much of the research does not account for the cost of carry of conventional gold.

Unlike stocks, which may pay a dividend, or bonds which pay interest, gold does not *pay* anything. In fact, one must pay to own it. This ongoing cost of ownership could be conceived of as a negative yield and it must be factored into the total returns of the portfolio. This is true for nearly all methods of owning gold, some of which incur costs as high as 2% annually or more.[10]

Of course, it's not as simple as just cost. There are other factors to consider. Managers should be aware that not all gold investments are created equal. For further analysis on the risks and benefits of the different methods of owning gold, please see our companion white paper A New Way to Hold Gold.

PROPOSITION | GOLD YIELD IMPROVES PERFORMANCE

Monetary Metals' brand promise is A Yield on Gold, Paid in Gold®. We propose that this improves the performance of a typical gold-containing portfolio, by avoiding the costs of gold ownership—and adding a positive yield.

In this paper, we will assume the yield comes from gold bonds. These are bonds that are denominated in gold, and pay principal and interest in gold. The borrowers are businesses which have a gold income (e.g. miners). Gold bonds have no storage cost. We will assume an interest rate of 3.5% per annum.

METHODOLOGY

This paper is organized in three sections. First, we will reproduce the existing model showing benefits of incorporating gold into a diversified portfolio. Second, we will adjust our model by adding the carry cost of gold. Finally, we will replace the carry cost of gold with the positive yield of gold bonds. This will dramatically improve returns.

We will analyze the performance of four different model portfolios: Traditional, Conservative, Aggressive, and Diversified Aggressive. The name of each portfolio refers to the size of the gold allocation[11] in that portfolio. Please refer to Figure 1 on the next page for the asset composition of each of these portfolios. In each section of this paper we use a different set of returns for the gold portion of each portfolio. In section one we use the raw LBMA PM Fix. In section two, we add a 50bps fee to account for the real-world costs of storage and insurance. In section three, we use gold bonds.

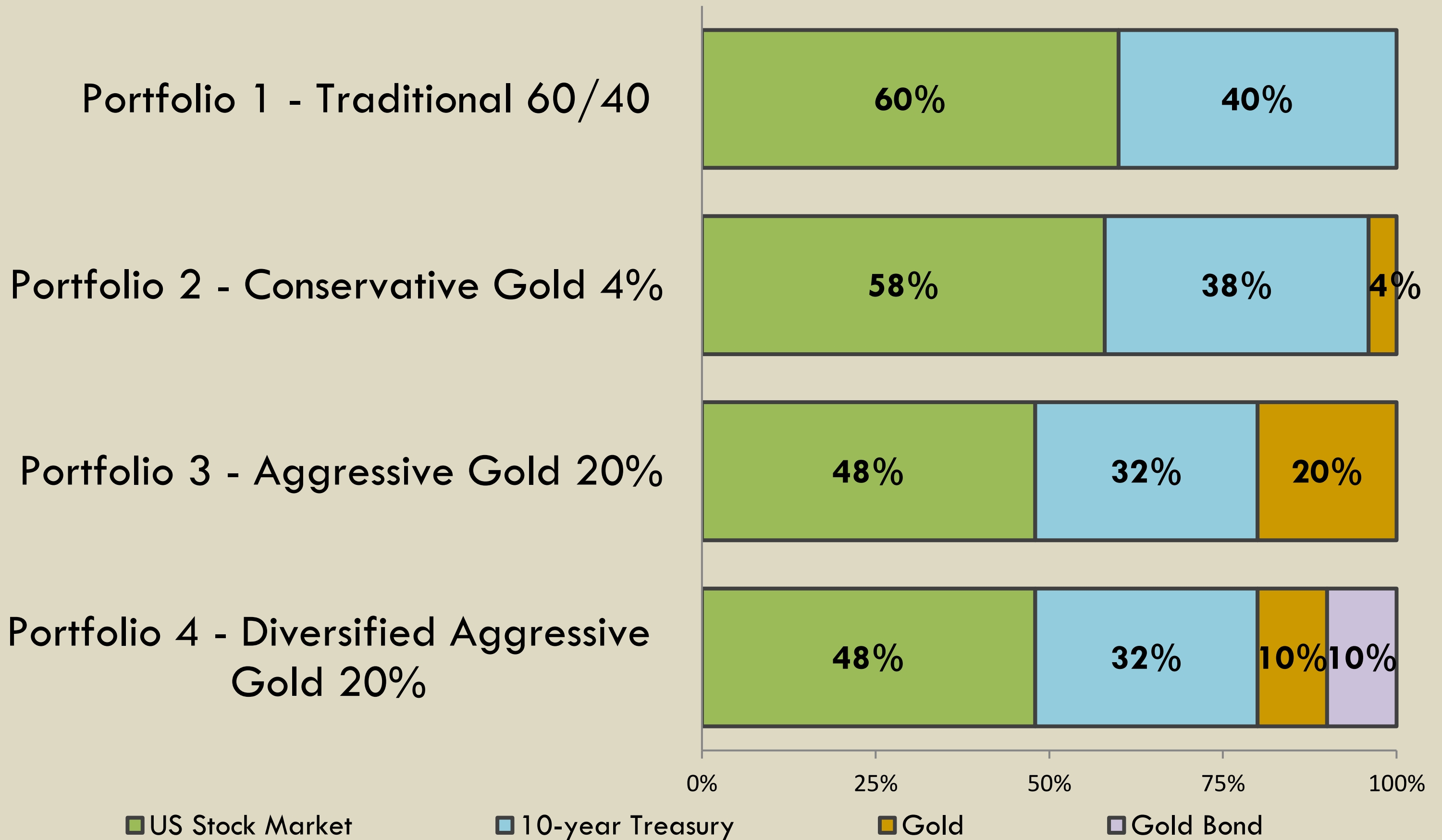
We will simulate these portfolios from January 1972 to January 2019.[12] We calculate several key metrics including price performance, CAGR (Compound Annual Growth Rate), standard deviation, maximum drawdown, and Sharpe and Sortino ratios.[13] Table 1 provides an example of the metrics we use and shows the historical results for each standalone asset class.

Table 1 - Key Metrics for Each Asset Class

Asset Class	CAGR	Stdev	Best Year	Worst Year	Max. Drawdown	Sharpe Ratio	Sortino Ratio	US Mkt Correlation
US Stock Market	10.20%	15.40%	37.82%	-37.04%	-50.89%	0.41	0.6	1
10-year Treasury	7.12%	8.09%	39.57%	-10.17%	-15.76%	0.33	0.52	0.05
Gold	7.42%	20.51%	133.41%	-32.15%	-62.00%	0.23	0.38	0.01

We start with a basic portfolio of 60% equities and 40% bonds, though of course there is no one-size-fits-all answer to the question of asset allocation in portfolio construction.[14] Typical recommended allocations for gold range from 2-10%.[15] Our Conservative model portfolio contains a 4% gold allocation and represents this view.[16] However, there are statistical studies which show gold produces the greatest benefit at around a 20-25%[17] allocation. Since this is significantly higher, our Aggressive portfolio contains 20% gold. Finally, we added a fourth

Diversified Aggressive portfolio that shows how a 20% gold allocation split between conventional gold and gold bonds would perform.



ONE | REPRODUCING THE CURRENT RESEARCH ON GOLD

Existing research shows that when gold is added to a diversified portfolio of assets, key risk metrics are improved without diminishing the total returns of the portfolio. In Figure 2 we show such improvements in both a Conservative 4% allocation to gold and an Aggressive 20% allocation to gold compared to a Traditional 60/40 portfolio.

Figure 1 – The Impact of Adding Gold to a Diversified Portfolio

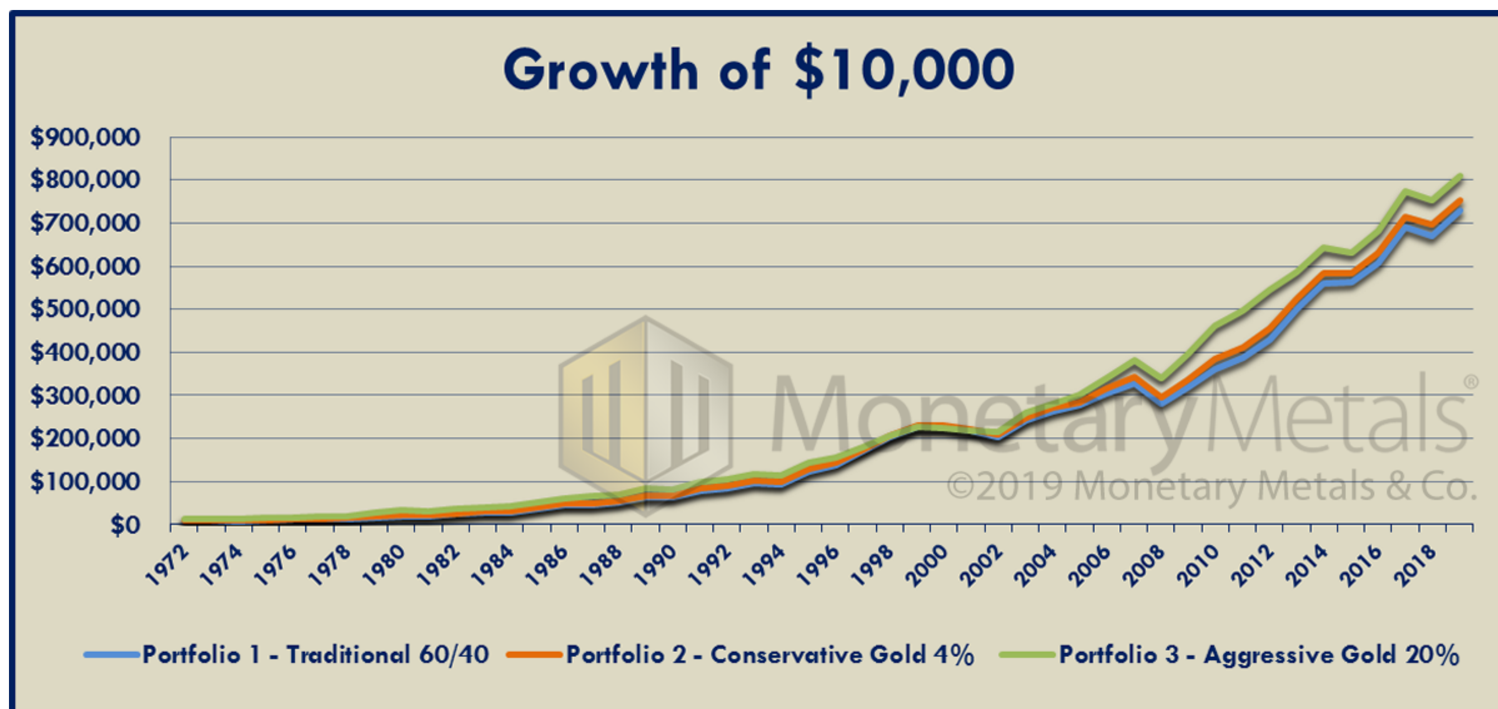


Table 2 - Key Metrics of Model Portfolios with Gold

Model Portfolio	Start Balance	End Balance	CAGR	Stdev	Best Year	Worst Year	Max. Drawdown	Sharpe Ratio	Sortino Ratio	US Market Correlation
Portfolio 1 - Traditional 60/40	$10,000	$728,836	9.47%	9.92%	31.69%	-15.07%	-28.54%	0.5	0.76	0.94
Portfolio 2 - Conservative Gold 4%	$10,000	$754,196	9.55%	9.58%	30.47%	-13.31%	-24.76%	0.53	0.79	0.94
Portfolio 3 - Aggressive Gold 20%	$10,000	$808,623	9.71%	9.15%	38.91%	-10.53%	-19.03%	0.56	0.86	0.82

While the Conservative gold portfolio ends at a similar valuation as the Traditional ($754,196 compared to $728,836), it's worth noting that the 4% gold allocation recorded lower volatility (standard deviation and maximum drawdown). This effectively replicates the existing research.

In this first data series, we used the raw price of gold, i.e. gold with zero yield. This is unrealistic as all conventional gold vehicles have a carry cost. In section two, we incorporate the negative yield and show that it creates a drag on portfolio performance.

TWO | THE COSTS OF CONVENTIONAL GOLD IN A DIVERSIFIED PORTFOLIO

We chose allocated gold as the vehicle to model the real-world costs of owning gold in our portfolios. Allocated gold is physical metal that is stored and insured in a depository. The costs of storage and insurance will vary depending on the account and the depository. For larger institutional accounts the rate will likely be lower. For smaller individual retail accounts, it will be higher. We used 50bps as a representative cost. Table 3 shows the results of the analysis.

Table 3 - Comparing the Real Costs of Owning Gold

Model Portfolio	Start Balance	End Balance	CAGR	Stdev	Best Year	Worst Year	Max. Drawdown	Sharpe Ratio	Sortino Ratio	US Market Correlation
Portfolio 2 - Conservative Gold 4%	$10,000	$754,196	9.55%	9.58%	30.47%	-13.31%	-24.76%	0.53	0.79	0.94
Portfolio 2a - Conservative Gold 4% with 50bps Cost	$10,000	**$747,036**	**9.52%**	9.58%	30.45%	-13.33%	-24.79%	0.52	0.79	0.94
Portfolio 3 - Aggressive Gold 20%	$10,000	$808,623	9.71%	9.15%	38.91%	-10.53%	-19.03%	0.56	0.86	0.82
Portfolio 3a - Aggressive Gold 20% with 50bps Cost	$10,000	**$771,406**	**9.60%**	9.15%	38.69%	-10.63%	-19.11%	0.55	0.84	0.82

The results show that the cost of carry reduces the benefit of gold. Note the lower ending balances and lower compound annual growth rates. The end balance of the Conservative Portfolio is about 1% less than its zero-yield gold counterpart. Whereas the Aggressive Portfolio returns a marked 4.6% less compared to its zero-yield allocation.[18] Costs and fees reduce long term portfolio performance, because of compounding. The adverse effect is greater for longer holding periods. Many portfolio managers avoid gold because of the cost, among other obstacles, despite whatever promise gold may offer as a portfolio diversifier.

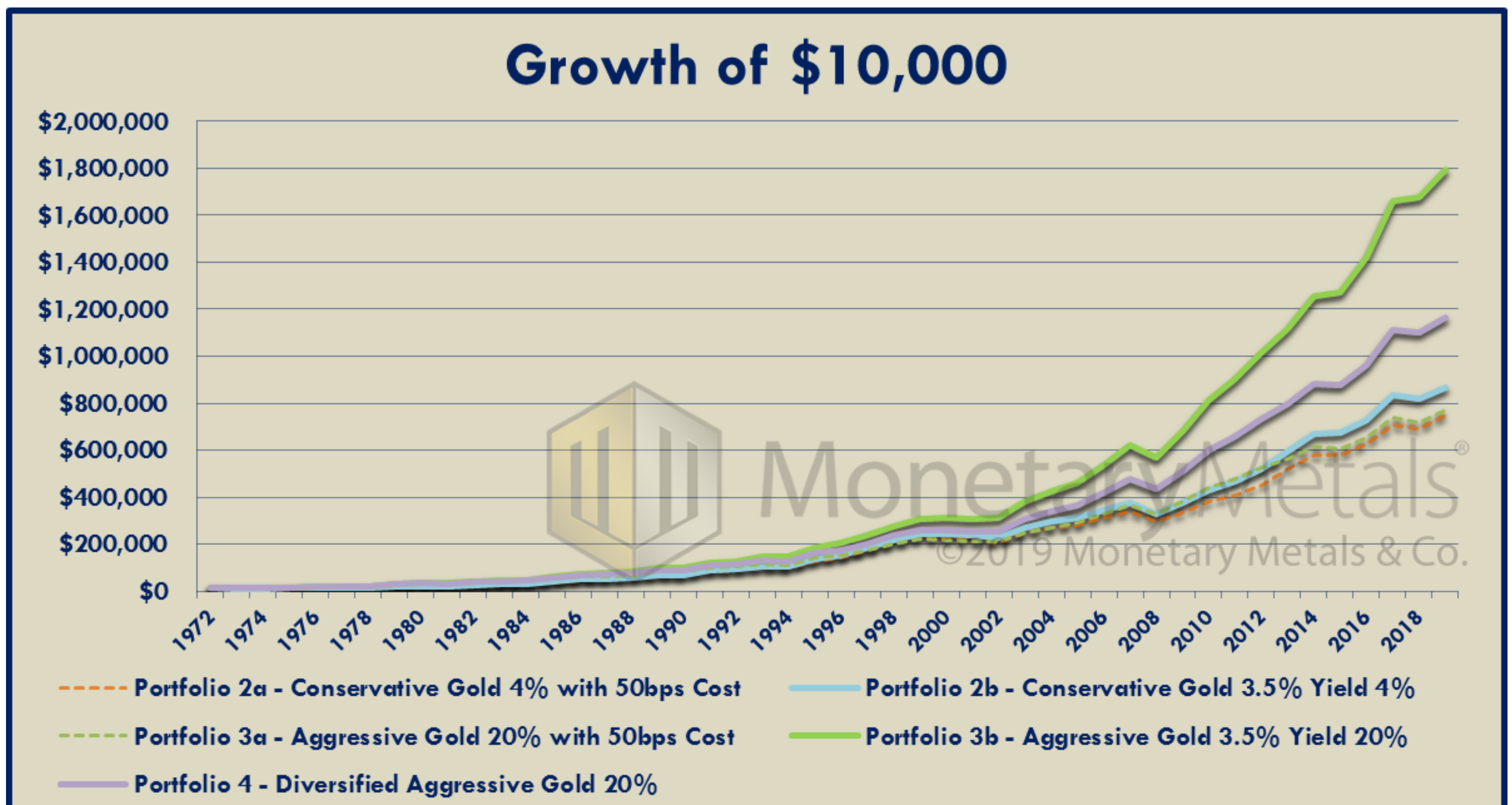
THREE | HOW GOLD YIELD IMPACTS THE PERFORMANCE OF A DIVERSIFIED PORTFOLIO

In this section, we used gold bonds paying 3.5%, with semi-annual coupon payments. Since gold bonds have not been available since 1933, we had to make several assumptions in our analysis, including an active secondary market, and reinvestment of the semi-annual coupons into identical gold bonds.[19]

We also introduce our fourth model portfolio, Diversified Aggressive, which shows how one might use a gold bond to diversify or offset the costs of an existing gold allocation. This portfolio has an overall 20% weighting to gold, but half is gold bonds and the other half is in allocated gold with 50bps storage cost.

Figure 3 illustrates the improvement on the Conservative and Aggressive portfolios where the gold bond is held instead of conventional gold. In Table 4 on the following page, we show the key metrics across all model portfolios examined in this paper.

Figure 2 - The Impact of Gold Yield on the Model Portfolios



DISCUSSION

Table 4 – Key Metrics Data for All Model Portfolios

Model Portfolio	Asset Composition	Gold Vehicle	Start Balance	End Balance	CAGR	St. Dev.	Best Year	Worst Year	Max. Drawdown	Sharpe Ratio	Sortino Ratio	US Stock Market Correlation
Portfolio 1 - Traditional	60% - US Stock Market 40% - 10yr US Treasury	NA	$10,000	$728,836	9.47%	9.92%	31.69%	-15.07%	-28.54%	0.5	0.76	0.94
Portfolio 2 - Conservative Gold 4%	57.6% - US Stock Market 38.4% - 10yr US Treasury 4% Gold	Zero Yield	$10,000	$754,196	9.55%	9.58%	30.47%	-13.31%	-24.76%	0.53	0.79	0.94
		Cost 50 bps	$10,000	$747,036	9.52%	9.58%	30.45%	-13.33%	-24.79%	0.52	0.79	0.94
		3.5% Gold Bond	$10,000	$864,981	9.94%	9.58%	30.79%	-12.82%	-24.08%	0.56	0.85	0.93
Portfolio 3 - Aggressive Gold 20%	48% - US Stock Market 32% - 10yr US Treasury 20% - Gold	Zero Yield	$10,000	$808,623	9.71%	9.15%	38.91%	-10.53%	-19.03%	0.56	0.86	0.82
		Cost 50 bps	$10,000	$771,406	9.60%	9.15%	38.69%	-10.63%	-19.11%	0.55	0.84	0.82
		3.5% Gold Bond	$10,000	$1,792,806	11.65%	9.29%	40.92%	-8.04%	-18.59%	0.74	1.18	0.80
Portfolio 4 - Diversified Aggressive Gold 20%	48% - US Stock Market 32% - 10yr US Treasury 20% - Gold	10% as 50bps Cost, 10% as 3.5% Gold Bond	$10,000	$1,166,781	10.64%	9.21%	39.80%	-9.33%	-18.85%	0.65	1.01	0.81

Zero Yield Gold is an unrealistic assumption in portfolios.

Performance, CAGR and risk/return measures improved when gold at 50 bps cost was replaced or further diversified with gold at 3.5% Yield. Gold Yield also improved Sharpe and Sortino Ratios

Gold held at 50 bps cost reduced overall portfolio returns over time, even for the Conservative portfolio.

CONCLUSION | GOLD YIELD HAS A POSITIVE IMPACT ON PORTFOLIO PERFORMANCE

When either a portion, or the entirety of the gold allocation in a portfolio has a positive yield, performance improves dramatically. Asset managers, who incorporate gold bonds in their asset allocation strategy have the potential to outperform similar strategies. The difference with a yield is the costs of carry plus the yield itself, compounded over the investment period. Portfolios with an allocation to gold bonds benefit from gold's non-correlation to other assets, while generating a productive income on their gold capital.

Monetary Metals® Yield on Gold, Paid in Gold® investments enhance the case for gold in a diversified asset allocation strategy.

As with any investment, gold bonds involve risk.

DISCLOSURES

This document is for information purposes only and should not be construed as an offer to buy or sell, or a solicitation of an offer to buy or sell, any security. Past performance may not be indicative of future results. Therefore, no current or prospective client should assume that the future performance of the Monetary Metals investment products or any other investments mentioned will be profitable or equal to corresponding indicated historical performance levels.

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Products available on our Gold Yield Marketplace™ platform

Gold Fixed Income - True Gold Lease™

With a True Gold Lease, investors who want to earn gold for the use of their gold are matched with businesses that use gold productively. This innovative gold fixed-income product is designed to reduce risk for the investor and be tax-efficient.

Other ways to invest in Gold

Gold Fixed Income - Gold Bond

A gold bond is similar to a conventional dollar bond, except that the principal and interest are denominated and paid in gold ounces. The gold bond issuer amortizes the bond from income the same way that a conventional dollar bond issuer does. Prospective issuers of gold bonds include companies who have a gold income. They want to borrow gold, because then their income is matched to their debt service, with no price risk. Issuers may include refiners, depositories, miners, and other businesses.

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REFERENCES:

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[1]This idea finds its original source in Harry Markowitz's seminal paper Portfolio Selection, in particular see pages 14 and 15. For a more modern description, see the following links here, here and here.
[2] See Table 1 on page 4 for metrics as well as Table 4 on page 9.
[3] Gold possess several unique attributes which make it ideal for portfolio diversification, including; Low/negative correlation to most other major asset classes, cross-cyclical performance in both inflationary and deflationary environments, asymmetric upside/downside relationship to other currencies including USD, a liquid, deep, global market, low to zero counterparty risk, a financial asset that cannot go "no-bid" unlike other assets e.g. sovereign debt, real estate etc., utility as an effective hedge against systemic or tail risk events, i.e. bank runs, sovereign defaults etc.
[4] Dalio has historically recommended 5-10% in gold to hedge against a financial crisis. Additionally, he confirmed that gold plays a role in his All Weather portfolio. The All Weather portfolio is the result of his pioneering work in risk parity portfolio strategies, which aim for better risk adjusted returns for investors. For reference, please see the following sources: Bloomberg Article, Nasdaq Article, All Weather Portfolio, Bridgewater Risk Parity, Bridgewater All Weather Story
[5] A cached version of the report can be found here.
[6] See their Research Report
[7] See CPM Group's Special Report to Strategic Wealth Preservation and its Clients found here
[8] See the report: The Impact of Inflation and Deflation on the case for gold
[9] The quote by Charles taken from Bloomberg Video - The Case for Gold as an Asset Class
[10] For more information on carry and de-carry rates, click here.
[11] Apart from gold, the model portfolios contain only two other asset classes US Public Equity and US government bonds. The US Stock Market Equity portion is comprised of AQR US MKT Factor Returns 1972-1992, Vanguard Total Stock Market Index Fund 1993+. Bonds are represented by 10-year US Treasuries. For gold returns please refer to each corresponding vehicle as explained in the text.
[12] Data for 2019 returns is partial based on the latest month.
[13] We used and rely on the accuracy of the online program Portfolio Visualizer to run our all portfolio back tests and simulations. For more information on the tool and how the calculations are made, click here. The backtested results include annual rebalancing of portfolio assets to match the specified asset allocation. The results use total return and assume that all dividends and distributions are reinvested. Taxes and transaction fees are not included. Stock market correlation is based on the correlation of monthly returns. Drawdowns are calculated based on monthly returns. Sharpe and Sortino ratios are calculated and annualized from monthly excess returns over risk free rate (1-month treasury bill). For our gold allocations, we used the following three custom data sets; One, gold "Zero Yield" we used the LBMA PM Price Fix. Two, gold at 50bps storage and insurance costs. We added the storage costs to the LBMA monthly price data. Three, the 3.5% gold bond. There are several assumptions used in our gold bond data set; an active secondary market, 100% performance (0% default rates), reinvested coupons into an identical gold bond investment which enables compounding etc. See endnote 19 for additional information.
[14] Another question might be – why only gold? Why not include some of the other precious metals – platinum, palladium and silver? For a definitive answer to that question we strongly recommend the reader consult CPM Group's Special Report to Strategic Wealth Preservation and its Clients found here.
[15] See the World Gold Council's Report, *Gold Investor Risk Management and Capital Preservation* – *page 14*
[16] 4% is also interesting also because it roughly corresponds to what a gold allocation would be in portfolio diversified based on total market capitalization across assets classes. For more information, see this article here.
[17] See both the CPM Report listed above and *The Role of Gold in Investment Portfolios* by Flexible Plan Investments, Ltd. Found here and here
[18] Note that our simulations assume annual rebalancing into the desired asset allocations. This goes a long way to help portfolio returns. Without this perfect record of rebalancing, it's the authors' opinion that the returns would be lower for those portfolios which include the cost of carry for gold.
[19]Since Gold Bonds have not been available as an investment since 1933, we had to make some assumptions in modeling our data. We use the LBMA monthly price return data and added the reinvested interest payments of a 3.5% bond with semi-annual coupons. Additional assumptions to those already cited include zero early repayment risk and zero interest rate risk. For more information on both our Gold Bonds and Gold Leases, please click here.