Global Commodities Focus

Gold Rush—how the safe haven asset shines by enhancing portfolio returns and reducing drawdown risks

- **In this report we analyze historical risk and return profiles for gold versus equities as an asset class across different market regimes, and evaluate how gold overlays can improve the risk-adjusted performance of a traditional equity/bond portfolio mix.** We examine basic overlay methods and propose a simple dynamic asset allocation strategy that significantly improves returns and reduces the variance for traditional bond/equity portfolios based on three decades of market data.

- **With policy uncertainty creeping higher amid murky global growth and 2020 US election outcome prospects, it is an opportune time to assess the important role gold can play in an equity and bond portfolio.** Indeed, global stock market benchmarks have rebounded to record levels in recent weeks, as trade and US growth sentiment improved. And despite Comex fund gold holdings hitting a record in 3Q'19, the ratio of global gold financial AUM (ex-OTC) versus world equity market capitalization remains light at ~0.215%, only about half the cyclical peak of ~0.40%. Despite optimism about a US-China phase 1 "skinny deal", Citi economists remain unconvinced that trade tensions will fully resolve before 2021 and indeed the trade spat could escalate again. Meanwhile, the stabilization of the US Manufacturing ISM after flashing a recessionary signal in October does not alter our US rates strategy team view of 2-3 Fed cuts in 2020 and lower for longer yields.

- **Gold is a safe haven asset during periods of market volatility and macro risk aversion, evident in historical gold market outperformance during periods of heightened geopolitical tensions and steep asset market drawdowns.** Late 4Q 2018 is a recent and poignant example, when the S&P 500 total return index declined ~13-15% on the back of a hawkish December FOMC, escalating US-China trade tensions, and fears of a severe global growth slowdown. While most commodities sub-indices (agriculture, energy, industrial metals) also ended the 4Q risk unwind period deeply in the red or at best unchanged, gold gained ~8%.

- **Earlier this month we reduced our 0-3m spot gold point-price target from north of $1,550/oz to $1,485/oz, albeit we remain medium-term bulls and still project fresh cyclical highs of $2,000/oz, which could be breached at some point over the next 12-24 months.**

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Figure 1. Gold market $notional holdings (COMEX spec gross longs, Shanghai, India and Tokyo futures total holdings, global ETFs) as a proportion of world equities market capitalization

Source: Bloomberg, CFTC, SGE, TOCOM, Citi Research

Figure 2. Performance of US equity markets (S&P 500 total return), bond markets (Barclays Aggregate Bond index) and gold (SPGSCI gold total return) during quarters when equities fell > 13% since 1990

	Equities	Bonds	Gold
3Q'90	-13.7%	0.9%	12.9%
3Q'01	-14.7%	5.0%	8.3%
2Q-3Q'02	-28.4%	8.4%	6.9%
4Q'08-1Q'09	-30.5%	3.3%	4.0%
3Q'11	-13.9%	3.9%	7.8%
4Q'18	-13.5%	1.6%	7.2%

Source: Bloomberg, Citi Research

As riskier assets across the efficient frontier, equities should generate higher returns versus bonds and gold, coupled with higher volatility. Yet, gold can outperform both equity and bond markets, while realizing lower volatility, during periods of market downturns or macro risk aversion.

- **We examine the performance of US$ assets—equities, bonds, and gold—during periods of significant market downturns going back to 1990.** As seen in the table above, gold outperformed both equities (S&P 500 Index) and bonds (Barclays Aggregate Bond Index) in total return terms during almost all of these “risk-off” episodes. If we annualize the returns, equities on average dropped by a sizable 56.8% annualized total return rate during these steep unwinds, while investment grade bonds gained 11.5% and gold rallied by a more impressive 27.8%.

- **We then backtest a static gold overlay strategy by adding fixed percentages of gold (futures/swaps) allocation to benchmark equity/bond portfolios (50/50, 60/40, 70/30, 80/20, pure bond, pure equity). Results suggest improved performance with moderate gold holdings.** The static gold allocation improves risk-adjusted returns across nearly all combinations of equity/bond portfolios since 1990 (except for the pure bond portfolio, perhaps due to the positive relationship between bonds and gold returns in our sample period). The Sharpe ratio for such static overlay strategies is maximized between a 10% and 20% portfolio allocation to gold. The static overlay also helps to reduce the maximum drawdown of the respective portfolios, thereby preserving investor capital, especially during periods of economic and market stress.

Note: Futures trading involves substantial risk of loss.

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Figure 3. Sharpe ratio and maximum portfolio drawdown improvement of various equity/bond portfolios since 1990 by adding static gold overlay strategies

Return

Gold %	0:100 Equity/Bond	50:50 Equity/Bond	60:40 Equity/Bond	70:30 Equity/Bond	80:20 Equity/Bond	100:0 Equity/Bond
0%	5.91%	8.28%	8.66%	8.99%	9.29%	9.79%
2%	5.91%	8.24%	8.61%	8.94%	9.24%	9.74%
5%	5.90%	8.17%	8.54%	8.87%	9.16%	9.66%
10%	5.88%	8.05%	8.40%	8.73%	9.02%	9.52%

Volatility

Gold %	0:100 Equity/Bond	50:50 Equity/Bond	60:40 Equity/Bond	70:30 Equity/Bond	80:20 Equity/Bond	100:0 Equity/Bond
0%	3.79%	8.73%	10.42%	12.15%	13.91%	17.46%
2%	3.75%	8.55%	10.20%	11.90%	13.62%	17.10%
5%	3.74%	8.30%	9.90%	11.53%	13.20%	16.57%
10%	3.86%	7.95%	9.44%	10.98%	12.54%	15.71%

Sharpe Ratio

Gold %	0:100 Equity/Bond	50:50 Equity/Bond	60:40 Equity/Bond	70:30 Equity/Bond	80:20 Equity/Bond	100:0 Equity/Bond
0%	0.94	0.67	0.60	0.54	0.49	0.42
2%	0.95	0.68	0.61	0.55	0.50	0.43
5%	0.95	0.70	0.62	0.56	0.51	0.44
10%	0.92	0.71	0.64	0.58	0.53	0.45

Max Drawdown (Rolling 3M) (%)

Gold %	0:100 Equity/Bond	50:50 Equity/Bond	60:40 Equity/Bond	70:30 Equity/Bond	80:20 Equity/Bond	100:0 Equity/Bond
0%	-5.78	-23.36	-27.29	-31.10	-34.79	-41.79
2%	-5.63	-23.06	-26.92	-30.67	-34.30	-41.19
5%	-5.65	-22.62	-26.37	-30.02	-33.55	-40.28
10%	-6.13	-21.89	-25.46	-28.93	-32.31	-38.76

Source: Bloomberg, Citi Research

- **While a static gold overlay can clearly improve the risk/return profile of a traditional investment portfolio over the long term, it may not always be the optimal strategy across different market regimes.** Upon analyzing the performance of the 60/40 equity/bond portfolio with and without a 10% gold overlay during different macro market cycles over the past 30 years, we found that the static overlay generally outperformed when equities declined and experienced high volatility, while it underperformed (relatively) during robust equity bull markets, for missing out a higher equities exposure (although gold bull cycles on their own have often been coupled with higher equity prices as many retail investors view gold from the purview of wealth preservation). The impact of the Fed and rates cycle is a little less clear despite the fact that gold tends to rally in low rate/rate cut regimes.

- **To fully capture upside equity returns during bull markets and diversify the portfolio for downside protection, a relatively simple signal-based dynamic allocation to gold could outperform both the traditional portfolio and static overlay strategy.** Since post-GFC gold trading usually shows a negative relationship with equity returns and has improved the portfolio Sharpe ratio by the most during equity market downturns, we base this gold allocation signal on equity markets. We propose three different gold allocation scenarios (maximum, neutral, minimum) for a traditional 60/40 equity/bond portfolio, based on 1-month equity momentum and 3-month realized volatility. If the equity market is on an uptrend with relatively low volatility, we call it the “risk-on scenario” and allocate minimum weight to gold. If the equity market is trending down with high volatility, we call it the “risk-off scenario” and allocate maximum weight to gold. Otherwise (if market up with high volatility, or market down with low volatility), we will apply a “neutral” allocation. Gold markets are extremely liquid, with *global* daily turnover in $notional terms nearly that of the US equity market, and they also have tight bid-offer spreads. So adding dynamic gold overlay using futures or look-alikes (e.g. swaps) should have minimal transaction costs and market impacts.

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Figure 4. Sharpe ratio under different market regimes for A) the 60/40 equity/bond portfolio, B) the 60/40 portfolio with 10% static gold overlay, and C) the 60/40 portfolio with dynamic gold overlay using a 12% vol cutoff and 0%/2%/20% scenario allocations to gold

Period	Macro Environment	No Gold Overlay	10% Gold Overlay	Dynamic Gold Overlay
Jan 94 - Jan 01	Equity up, rate hikes	0.96	0.87	1.15
Feb 01 - Jun 03	Equity down, rate cuts	(0.38)	(0.30)	(0.13)
Jul 03 - Nov 07	Equity up, rate hikes	0.85	1.07	0.97
Dec 07 - June 09	Equity down, rate cuts	(0.58)	(0.53)	(0.08)
July 09 - Nov 15	Equity up, low rate	1.22	1.19	1.42
Dec 15 - Jul 19	Equity up, rate hikes	1.01	1.14	1.55

Source: Bloomberg, Citi Research

- **We backtest the dynamic strategy since 1990, and it has outperformed across various market regimes. After optimization, we selected ~12% as the cutoff level for realized equity volatility and 0%/2%/20% as the scenario allocations to gold.** The strategy managed to capture most of the upside during prolonged risk-on equity bull markets, while turning defensive in the early stages of risk market unwinds, thus significantly outperforming both the unhedged 60/40 portfolio and the 10% static gold overlay strategy. Cumulatively, the strategy achieved a 23.5x return since 1990, while the 60/40 portfolio and the 10% static gold overlay portfolio both only achieved returns between 11x and 12x. The dynamic strategy had annual realized vol of 9.3% since 1990, versus 10.4% for the 60/40 portfolio with no gold and 9.4% for the 10% static gold overlay portfolio.

Figure 5. Cumulative return path since 1990 for A) the 60/40 equity/bond portfolio, B) the 60/40 portfolio with 10% static gold overlay, and C) the 60/40 portfolio with dynamic gold overlay using 12% vol cutoff and 0%/2%/20% scenario allocations to gold

Source: Bloomberg, Citi Research

- **We plan to expand on our gold allocation and pricing framework in the coming months.** Yet, this exercise alone suggests that macro investors should maintain a long gold allocation, even as bullion prices have pulled back a bit from

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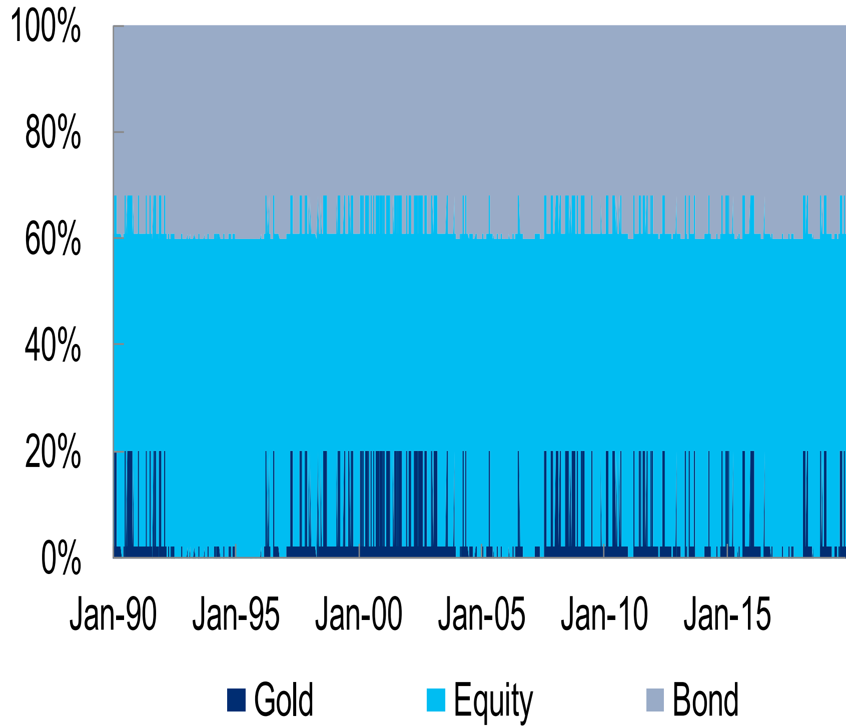
the 2019 peaks. Considering how rich equity and credit valuations already are, coupled with massive 2020 US political uncertainty, liquid gold markets seem like an attractive portfolio drawdown hedge and a way to enhance risk-adjusted returns this late in the business cycle.

Figure 6. Historical asset allocation to gold, equities, and bonds since 1990 for the dynamic overlay strategy (gold capped at 20%)



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