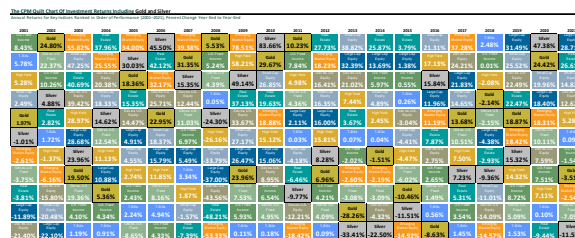


24 January 2022

Gold and Silver in The Pantheon of Investments

This report is about the relative performance of gold and silver as investment assets. It keys off an investment quilt chart comparing annual returns across asset classes. Many investment firms publish such quilt charts, but CPM has never found one that included gold and silver. We built one using the nine asset classes commonly used in such tables but adding gold and silver. **The results are stunningly in favor of precious metals as an asset class.**

Numerous sell-side financial firms ignore gold and silver as key parts of diversified portfolios for several reasons. However, numerous quantitative studies regularly show that having gold and silver improves the performance of a diversified portfolio. Investing in gold and silver is in investors' best interests. The CPM quilt chart including gold and silver is seen to the right here in miniature. The expanded, readable version is on page three.



It turns out that the two precious metals combined have been the top performing asset measured as the percentage change at the end of each year from the end of the previous year 30% of the time in the twenty-one years from 2001 through 2021. They were in the number two position 20% of the time and number three another 20% of the time.

In 2020, Silver was the top performing asset, returning 47.4% and gold had the second-best return at 24.4%. They were numbers eight and eleven in 2021, but that is because they were holding onto the gains that they had registered the previous year and in 2019, when gold had gained 18.9% and silver 15.3%.

CPM calculated the relative performance throughout the entire twenty-one-year period as well looking at the individual years. Here, as well, gold and silver shone brightly.

In this exercise, gold and silver were examined separately. Measuring single assets such as gold and silver against indices of hundreds or thousands of individual assets is not fair to the single assets. **Even so, as individual assets gold and silver each have shown themselves to be highly competitive against the other nine asset classes included in the study.** Gold was only outperformed by U.S. large and small cap equity indices over the entire period. Silver was

<u>Asset Or Asset Class</u>	<u>Weighted Performance</u>
Gold	138
Silver	129
Precious Metals (Gold and Silver)	267
Small Cap Equity (Russell 2000)	149
Real Estate (REIT)	144
Large Cap Equity (SP500)	140
Emerging Market Equity (MSCI)	135
High Yield Bonds	132
Developed ex-US Equity (MSCI)	126
U.S. Fixed Income	113
Global ex-US Fixed Income	94
Cash (90-day T-Bill)	86

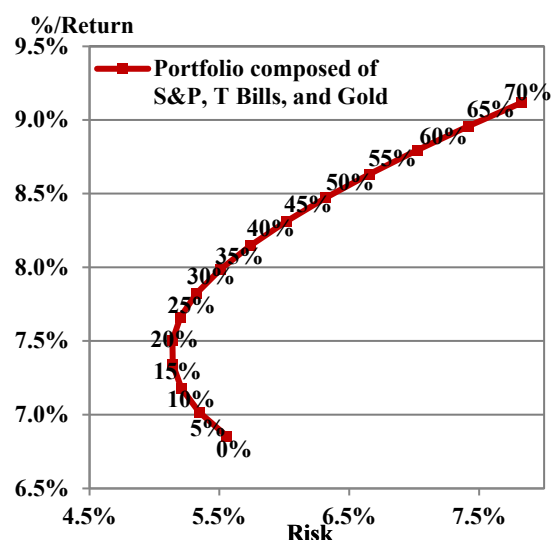
Source: CPM Group
19 January 2022

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outperformed by five of the other asset classes, including gold. It outperformed five of the other asset classes in the study.

Efficient Frontier of Portfolio with Gold -1968-2020



To make a fairer comparison CPM combined gold and silver into one sum, Precious Metals. Doing that, precious metals blew away the other assets in terms of their weighted ranking over the past twenty-one years, as the table shows.

Merely summing gold and silver together is not necessarily the most mathematically correct way to compare a precious metals index to indices of other asset classes. Averaging the two would mask the relative strengths of each. Creating a formal precious metals index requires subjective decisions to be made on the construction of such an index, including the weightings assigned gold and silver. CPM constructed two indices. The two indices confirmed that gold and silver combined as an asset class would have been highly competitive, in the top half of several types of investments considered in the quilt chart.

One further interesting point to note is the fact that in many years the ranking was not so much in terms of relative returns but the relative size of

losses of value over the course of the year. The top two ranking performing asset classes registered positive returns in all twenty-one years. However, by the time you get to the third-tier ranking, you have the third top performer showing a loss in value in one year: 2018. At the fifth 'best performing' return ranking there are three years. Obviously, overall returns deteriorate from there.

The conclusion is that gold and silver stack up very favorably to all other investment assets and deserve to have a significant position in diversified portfolios. CPM's updates of Ibbotson and Associates' work from the early 1980s on the optimal portion of a diversified portfolio that should be in gold show that the best risk/reward ratio of an overall portfolio has been 25% - 30% in gold from 1968 through 2020. The efficient frontier, as it is known, depicts the optimal asset allocation for gold coupled with a portfolio of the S&P index with T-bills.

The CPM Quilt Chart Of Investment Returns Including Gold and Silver

Annual Returns for Key Indices Ranked in Order of Performance (2001-2021), Percent Change Year-End to Year-End

2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
U.S. Fixed Income	Gold	Emerging Market Equity	Real Estate	Emerging Market Equity	Silver	Emerging Market Equity	Gold	Emerging Market Equity	Silver	Gold	Real Estate	Small Cap Equity	Real Estate	Real Estate	Small Cap Equity	Emerging Market Equity	T-Bills	Large Cap Equity	Silver	Large Cap Equity
8.43%	24.80%	55.82%	37.96%	34.00%	45.50%	39.38%	5.53%	78.51%	83.66%	10.23%	27.73%	38.82%	25.87%	3.79%	21.31%	37.28%	2.48%	31.49%	47.38%	28.71%
T-Bills	GBL ex-U.S. Fixed	Small Cap Equity	Emerging Market Equity	Silver	Real Estate	Gold	U.S. Fixed Income	High Yield	Gold	U.S. Fixed Income	Emerging Market Equity	Large Cap Equity	Large Cap Equity	Large Cap Equity	High Yield	Dev ex-U.S. Equity	U.S. Fixed Income	Small Cap Equity	Gold	Real Estate
5.78%	22.37%	47.25%	25.55%	30.03%	42.12%	31.35%	5.24%	58.21%	29.67%	7.84%	18.23%	32.39%	13.69%	1.38%	17.13%	24.21%	0.01%	25.52%	24.42%	26.61%
High Yield	U.S. Fixed Income	Real Estate	Dev ex-U.S. Equity	Gold	Emerging Market Equity	Silver	GBL ex-U.S. Fixed	Silver	Small Cap Equity	High Yield	Dev ex-U.S. Equity	Dev ex-U.S. Equity	U.S. Fixed Income	U.S. Fixed Income	Silver	Large Cap Equity	High Yield	Dev ex-U.S. Equity	Small Cap Equity	Small Cap Equity
5.28%	10.26%	40.69%	20.38%	18.36%	32.17%	15.35%	4.39%	49.14%	26.85%	4.98%	16.41%	21.02%	5.97%	0.55%	15.84%	21.83%	-2.08%	22.49%	19.96%	14.82%
Small Cap Equity	Silver	Dev ex-U.S. Equity	Small Cap Equity	Real Estate	Dev ex-U.S. Equity	Dev ex-U.S. Equity	T-Bills	Real Estate	Real Estate	GBL ex-U.S. Fixed	Small Cap Equity	High Yield	Small Cap Equity	T-Bills	Large Cap Equity	Small Cap Equity	Gold	Real Estate	Large Cap Equity	Small Cap Equity
2.49%	4.88%	39.42%	18.33%	15.35%	25.71%	12.44%	0.05%	37.13%	19.63%	4.36%	16.35%	7.44%	4.89%	0.26%	11.96%	14.65%	-2.14%	22.47%	18.40%	12.62%
Gold	Real Estate	High Yield	Silver	Dev ex-U.S. Equity	Gold	GBL ex-U.S. Fixed	Silver	Dev ex-U.S. Equity	Emerging Market Equity	Large Cap Equity	Large Cap Equity	Real Estate	High Yield	Small Cap Equity	Dev ex-U.S. Equity	Emerging Market Equity	Gold	GBL ex-U.S. Fixed	Gold	Emerging Market Equity
1.97%	2.82%	28.97%	14.62%	14.47%	22.95%	11.03%	-24.30%	33.67%	18.88%	2.11%	16.00%	3.67%	2.45%	-3.04%	11.19%	13.68%	-2.15%	18.87%	18.31%	5.28%
Silver	T-Bills	Large Cap Equity	GBL ex-U.S. Fixed	Large Cap Equity	Small Cap Equity	U.S. Fixed Income	High Yield	Small Cap Equity	High Yield	T-Bills	High Yield	T-Bills	T-Bills	Small Cap Equity	Real Estate	GBL ex-U.S. Fixed	Large Cap Equity	Emerging Market Equity	GBL ex-U.S. Fixed	T-Bills
-1.01%	1.72%	28.68%	12.54%	4.91%	18.37%	6.97%	-26.16%	27.17%	15.12%	0.03%	15.81%	0.07%	0.04%	-4.41%	7.87%	10.51%	-4.38%	18.42%	10.11%	0.09%
Emerging Market Equity	High Yield	Silver	High Yield	Small Cap Equity	Large Cap Equity	Large Cap Equity	Small Cap Equity	Large Cap Equity	Large Cap Equity	Small Cap Equity	Silver	U.S. Fixed Income	Gold	High Yield	Dev ex-U.S. Equity	High Yield	Real Estate	Silver	Dev ex-U.S. Equity	U.S. Fixed Income
-2.61%	-1.37%	23.96%	11.13%	4.55%	15.79%	5.49%	-33.79%	26.47%	15.06%	-4.18%	8.28%	-2.02%	-1.51%	-4.47%	2.75%	7.50%	-2.93%	15.32%	7.59%	-1.54%
GBL ex-U.S. Fixed	Emerging Market Equity	Gold	Large Cap Equity	High Yield	High Yield	T-Bills	Large Cap Equity	Gold	Dev ex-U.S. Equity	Real Estate	Gold	Emerging Market Equity	Emerging Market Equity	GBL ex-U.S. Fixed	U.S. Fixed Income	Silver	Silver	High Yield	U.S. Fixed Income	Gold
-3.75%	-6.16%	19.50%	10.88%	2.74%	11.85%	3.34%	-37.00%	23.96%	8.95%	-6.46%	6.96%	-2.60%	-2.19%	-6.02%	2.65%	7.23%	-9.36%	14.32%	7.51%	-3.51%
Real Estate	Dev ex-U.S. Equity	GBL ex-U.S. Fixed	Gold	U.S. Fixed Income	GBL ex-U.S. Fixed	High Yield	Dev ex-U.S. Equity	GBL ex-U.S. Fixed	U.S. Fixed Income	Silver	U.S. Fixed Income	GBL ex-U.S. Fixed	GBL ex-U.S. Fixed	Gold	GBL ex-U.S. Fixed	Real Estate	Small Cap Equity	U.S. Fixed Income	High Yield	Emerging Market Equity
-3.81%	-15.80%	19.36%	5.36%	2.43%	8.16%	1.87%	-43.56%	7.53%	6.54%	-9.77%	4.21%	-3.08%	-3.09%	10.46%	1.49%	5.31%	-11.01%	8.72%	7.11%	-2.54%
Large Cap Equity	Small Cap Equity	U.S. Fixed Income	U.S. Fixed Income	T-Bills	T-Bills	Small Cap Equity	Real Estate	U.S. Fixed Income	GBL ex-U.S. Fixed	Dev ex-U.S. Equity	GBL ex-U.S. Fixed	Gold	Dev ex-U.S. Equity	Silver	T-Bills	U.S. Fixed Income	Dev ex-U.S. Equity	GBL ex-U.S. Fixed	T-Bills	GBL ex-U.S. Fixed
-11.89%	-20.48%	4.10%	4.34%	2.24%	4.94%	-1.57%	-48.21%	5.93%	4.95%	-12.21%	4.09%	-28.26%	-4.32%	-11.51%	0.56%	3.54%	-14.09%	5.09%	0.10%	-7.05%
Dev ex-U.S. Equity	Large Cap Equity	T-Bills	T-Bills	GBL ex-U.S. Fixed	U.S. Fixed Income	Real Estate	Emerging Market Equity	T-Bills	T-Bills	Emerging Market Equity	T-Bills	Silver	Silver	Emerging Market Equity	Gold	T-Bills	Emerging Market Equity	T-Bills	Real Estate	Silver
-21.40%	-22.10%	1.19%	0.91%	-8.65%	4.33%	-7.39%	-53.33%	0.11%	0.18%	-18.42%	0.09%	-33.41%	-22.50%	-14.92%	-8.63%	1.45%	-14.57%	1.53%	-9.44%	-11.59%

Sources: Bloomberg, CPM Group.

Large Cap Equity - S&P 500

Small Cap Equity - Russell 2000

Developed ex-U.S. Equity - MSCI World ex USA,

Emerging Market Equity - MSCI Emerging Markets

U.S. Fixed Income - Bloomberg Barclays US Aggregate Bond Index,

High Yield - Bloomberg Barclays High Yield Bond Index

Global ex-U.S. Fixed Income - Bloomberg Barclays Global Aggregate ex US Bond Index,

Real Estate - FTSE EPRA Nareit Developed REIT Weighted Net Total Return Index

T-bill - 90 Day.

Gold and Silver, Comex Nearby Active Contracts

Annual Returns are percent changes year-end to year-end. T-Bills are year-end.