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H.C. Wainwright & Co. Economics Inc.

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Strategic Asset Selector

How much bullion would equity investors need to hold to insure against inflation?

If it's possible for a capital asset to be politically incorrect, gold would be the one. Put down by Keynes as a "barbarous relic" as early as 1925, its very mention produces within the Washington DC beltway a response that is frosty at best. Yet in recent years gold has produced higher consistent returns than almost any other asset class. The price of gold hits the headlines today more than it ever did, and its predictive power for the performance of other assets is as patently obvious to some as it is denied by others.

Numerous *Wainwright Economics* reports have explored the potency of gold prices as an early-moving market signal of currency depreciation and inflation that is flatly at odds with everything we hear from policymakers. We do not know of a better measure of currency depreciation or a better predictor of inflation and its manifestations.[1]

Since the US government introduced TIPS in 1994, equity investors have been urged to protect their portfolios by holding a portion of their assets in TIPS. The evidence that has since accumulated suggests that is a bad idea.[2] In this report we build on other work to estimate how equity investors could protect their portfolios by diverting part of their holdings to gold.

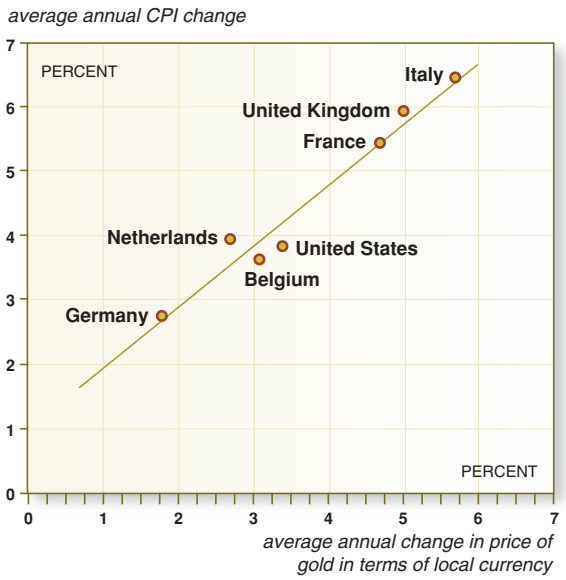
Asset markets reflect inflation long before economic statistics reveal it. Gold is not only a market signal. It is also an asset in its own right, and stands as an asset class of its own. It tends to produce particularly high returns following years in which its own price has already risen and credit spreads in the corporate bond market have widened. Under symmetrically opposite conditions it produces very low returns.[3]

Over long periods of time the relationship of the price of gold with the cost of living is almost exactly one for one, as shown in Figure One, which spans a fifty-year period.

Figure One

Inflation and Gold Prices in Seven Developed Countries

1949-99



Note: Calendar-year averages of daily U.S. gold prices (*Metals Week*) converted to local currency at current exchange rates (Federal Reserve Board) and of monthly consumer prices indices (International Monetary Fund).

Source: "Why the euro is not undervalued," *International Forecaster*, H.C. Wainwright & Co. Economics Inc., May 31, 2000.

1. See, for example, "The capital markets' own inflation signal," *Strategic Asset Selector*, H. C. Wainwright & Co. Economics Inc., January 30, 2010.
2. "The mysterious relationship between CPI inflation and the TIPS market," *Interest-Rate Outlook*, Wainwright Economics, August 31, 2010.
3. See *Research Summary*: "Systematic asset allocation strategies from market signals of growth and inflation," *Tactical Asset Selector*, Wainwright Economics, May 31, 2010, especially Figure Three.

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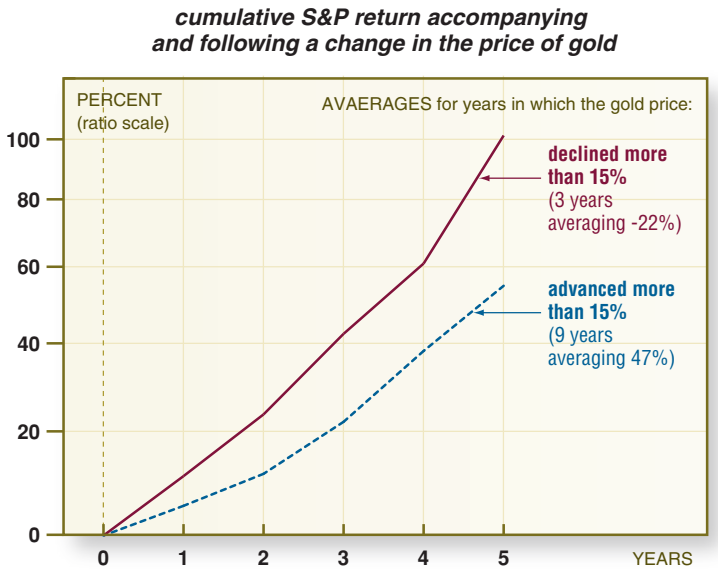
Figure One demonstrates that, over time, currency depreciation relative to gold and inflation as expressed by official estimates of the cost of living are just different ways of looking at the same thing. The same relationship holds with the far more volatile currencies of the emerging markets. But in many developed countries, especially the United States, this close linkage is less and less visible over short time frames. The average time lag between price movements in gold and US consumer-price changes is five or six years long.[4]

Current practice that defines inflation *de facto* as the change in the official cost of living index can therefore be highly misleading. It is a great mistake to define "real returns," as does Ibbotson Associates and other data sources, as nominal returns deflated by the consumer price index. For investors, inflation is ultimately nothing more or less than the depreciation of the currency and it is vital to recognize it early and not late—as soon, that is, as it is reflected in asset market prices. For that purpose, the consumer price index is no use at all. The most authoritative measure of the dollar's depreciation is its performance relative to assets such as gold whose real value is stable.

Returns from investments such as commodities and real estate are positively correlated with gold-price movements most of the time, and so these are inflation hedges. Bonds and most stocks, however, are vulnerable to inflation because their returns tend to be negatively correlated with gold. Prices of any assets that are traded in liquid markets move, whether directly or inversely, much more quickly than direct measurements of the cost of living such as the consumer price index. To protect against inflation, therefore, a US fixed-income or equity investor must hold inflation-hedge assets whose price movements anticipate changes in conventional measures of inflation many years before they become visible. Gold is such an asset. TIPS are not.

Figure Two

US Equities Underperform when the Dollar Depreciates Relative to Gold from 1968



Data: Calendar-year averages of month-end spot gold prices (*Metals Week/Wall Street Journal)* and total-return indices for the S&P 500 stocks (University of Chicago/Dimensional Fund Advisors).

For purposes of designing portfolios that are insured against inflation, gold again plays a double role. The correlation of its price movements with those of any investment portfolio serves as an objective measure of the vulnerability of the portfolio to the dollar's depreciation. Gold is also an asset that can be included in a portfolio of stocks or bonds to reduce its vulnerability. In this report we estimate how much gold an equities-gold portfolio mix needs to contain in order to provide 100 percent inflation insurance.

Sensitivity of an equity portfolio to the gold price. The correlation between the total return from an equity portfolio and changes in the price of gold is not simultaneous. Figure One illustrates the length of the lag. The average cumulative return from an investment in the S&P 500 index following a major rise in the price of gold is compared with that following a major decline.

As Figure Two demonstrates, the relationship between price movements in gold and returns from equities is not only contemporaneous but persists with a time lag stretching out for three to five years.

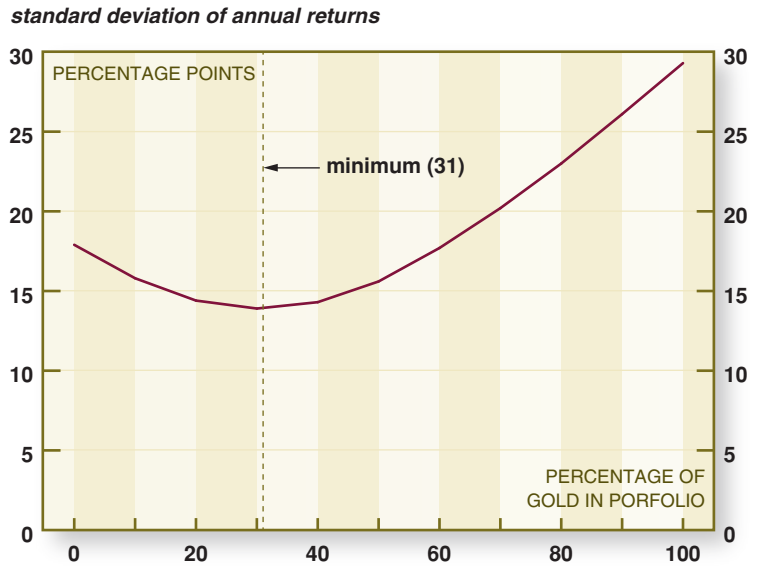
This chart therefore reveals the existence of two channels through which the admixture of gold in an equities portfolio will reduce its volatility and protect it from inflation. The first and obvious channel is the contemporaneous inverse correlation between equity returns and the gold price change. As a result of this correlation, annual returns from the mix have a lower standard deviation than those of annual returns from either asset alone. But the delayed inverse correlation is even stronger. The presence of gold protects the portfolio against damage to the portfolio that will not be felt in the form of stock-market responses for several years into the future. This correlation, which is also inverse, reduces even further the

4. "The first 'law' of money: Inflation thrives when a currency dives," *International Forecaster*, Wainwright Economics, June 28, 2007.

Figure Three

The Volatility of Stocks-Gold Portfolio Returns

as a function of portfolio composition, from 1968



Data: As for Figure Two.

volatility of the mix if we measure returns over multi-year time frames.

Measuring the riskiness of a mix of equities and gold. Naturally, the inclusion of gold in any portfolio tends to reduce the standard deviation of returns from the portfolio. Figure Three shows the standard deviation of annual returns from a variety of mixes of stocks and gold ranging from 100 percent stocks to 100 percent gold. We use the S&P 500 index as a measure of the stock market and assume that gold is held in physical form.

As indicated by Figure Three, the annual return from gold has a substantially higher volatility than the annual return from stocks. The point of minimum volatility in a mix of the two is reached in a portfolio containing 31 percent gold and 69 percent S&P 500. It's important to realize, however, that this is not necessarily an optimum portfolio in any other sense. As shown in Figure Four, the mix that maximizes the ratio of return to risk is slightly different: 32 percent gold, 68 percent stocks.

We are chiefly concerned here with still another distinct definition of risk: the sensitivity of the portfolio to inflation. In an earlier report we defined this sensitivity in terms of movements in the rate of change of the consumer price index, and obtained an estimate that a mix of 40 percent gold and 60 percent stocks would be completely insensitive to accelerations or decelerations in CPI inflation.[5] But this calculation suffers from the criticism that the CPI is only a very rough measure of inflation.

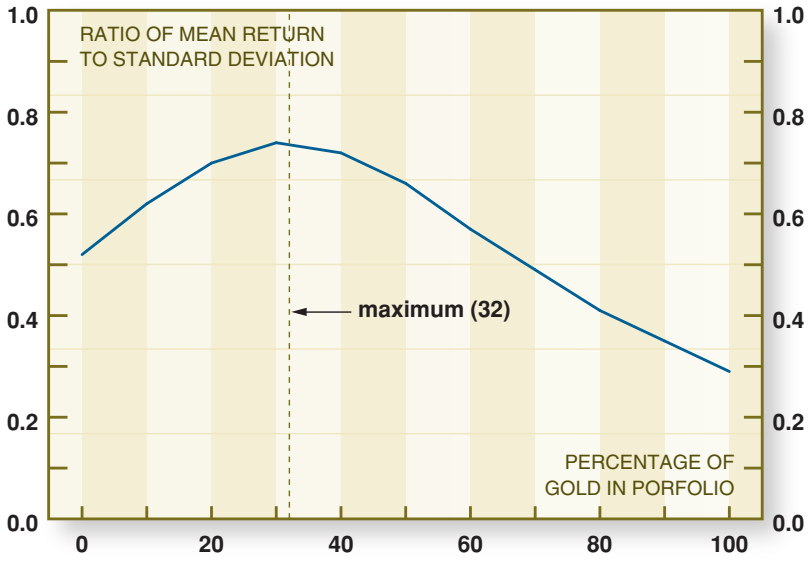
In this report, therefore, we use gold itself as a measure of inflation. From Figure Two we know that the damage to a stocks portfolio from a rise in the price of gold lasts about five years. In Figure Four, therefore, we use the five-year cumulative change in the price of gold as a measure of inflation.

This chart plots the way that the impact on portfolio return of a one percentage point change in the five-year change in the gold price varies according to the asset mix. As shown, the sensitivity of portfolio returns to the cumulative change in the price of gold is almost exactly zero at a mix of 15 percent gold and 85 percent stocks. According to our calculations, such a portfolio is almost exactly immune to the damage that inflation (as expressed by the gold price) does to stocks.

Figure Four

The Return-Risk Ratio of Stocks-Gold Portfolio Returns

as a function of portfolio composition, from 1968



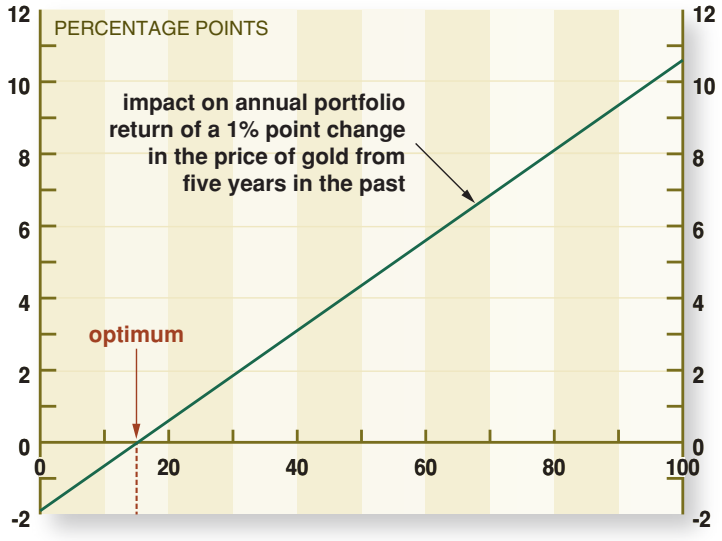
Data: As for Figure Two.

5. "Can gold immunize an equities portfolio against inflation?" *Equity-Market Outlook*, Wainwright Economics, February 27, 2004.

Figure Five

The Inflation Sensitivity of Stocks-Gold Portfolio Returns

as a function of portfolio composition, from 1968



Data: As for Figure Two. As a measure of the damage done by inflation to a equity portfolio we use the cumulative five-year change in the price of gold.

Investment conclusion. Including gold bullion in an equities portfolio has the effect of lowering the volatility of portfolio return and raising the return-risk ratio, just as the inclusion of any other asset would. But gold has a special risk-reducing property that other assets lack. It is not only a hedge against inflation, but a market leading indicator of inflation and, better still, a direct measure of the damage done by inflation to an equities portfolio. The negative impact on stock returns from a rise in the price of gold lasts for at least five years.

We calculate that a US equities portfolio in which 15 percent of the assets are diverted to gold bullion would be effectively immune from damage due to a rising gold price. That is equivalent, we believe, to immunity from inflation.

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