SPDR GOLD TRUST
Form FWP
July 15, 2009

**Filed Pursuant To Rule 433**
**Registration No. 333-158105**
**July 15, 2009**

**WGC Gold:Report July 2009 GOLD AS A TACTICAL INFLATION HEDGE AND LONG-TERM STRATEGIC ASSET**

# GOLD AS A TACTICAL INFLATION HEDGE AND LONG-TERM STRATEGIC ASSET

While 2008 was marked by deflation fears, the first half of 2009 saw a growing number of investors express concern over the prospect of a resurgence in inflation. Their fears emanated from the aggressive policy responses that were put in place around the world to deal with the financial crisis, alongside tentative signs that the worst of the recession might be behind us. If inflation does materialize, then traditional inflation-hedges like gold, commodities, real estate and inflation-linked bonds are likely to outperform other mainstream financial assets. Nonetheless, some investors may be reluctant, at this stage, to add/increase their exposure to specific assets that are recognised as performing well during periods of high inflation, as there are currently equally compelling reasons for inflation to remain low, not least the bleak outlook for consumer spending.

This leads us to ask whether any of the four traditional assets that are perceived to perform well during a high inflation environment could demonstrably enhance investors risk-adjusted returns even in a low to medium inflation environment, yet provide investors with the peace of mind that they have an asset in their portfolio that is likely to outperform should inflation materially accelerate.

Using a portfolio optimizer, we examined the relative performance of four short-run inflation hedges on this basis, over three historical periods and in a forecast scenario, using conservative real return assumptions for each of the inflation hedges. In two of the three historical scenarios, gold proved more effective than commodities, real estate and TIPS, at achieving both the maximum reward-risk portfolio and the minimum-variance portfolio. The required allocation to gold in the portfolio mix to attain minimum variance ranged from 4.0 to 6.3%, while the allocation required to achieve the maximum reward-risk ranged from 7.0 to 9.9%. A 6.9% allocation to gold also produced the highest reward-risk portfolio in the forecast scenario, while an allocation to TIPS produced the lowest variance portfolio. We also found a strategic case for gold in the portfolio of an investor that already holds TIPS, thanks to the additional diversification benefits gold brings to a portfolio.

**Author**

**Natalie Dempster**
natalie.dempster@gold.org
Natalie has 10 years experience as an economist, having worked at both the Royal Bank of Scotland and Chase Manhattan Bank, and is well versed with the world s financial markets. She holds a BSc in Economics from Queen Mary and Westfield College, University of London and an MBA from City University Business School, London.

**Juan Carlos Artigas**
juancarlos.artigas@gold.org
Juan Carlos has 4 years of experience in financial markets, having worked for JPMorgan Securities as a US and Emerging Markets strategist. He holds a BSc in Actuarial Sciences from ITAM (Mexico), and an MBA and MSc in Statistics from the University of Chicago, where he is also a PhD candidate on Econometrics and Statistics.

**Contents**

**Will today s solution become tomorrow s problem?**

A growing number of investors are expressing concern over the outlook for price stability. Their fears emanate from the aggressive policy responses that have been put in place around the world in a bid to stop the global economy moving from a deep recession into a 1930s-style deflationary depression. US Federal Reserve Chairman, Ben Bernanke, wrote the book on deflation, literally, in his 2000 publication Essays on the Great Depression. The book

spells out the devastating impact that deflation can have on an economy and why it should be avoided at all costs. In recent times Bernanke has practiced what he preached, cutting interest rates extraordinarily rapidly from 5.25% in mid-2007 to effectively zero and instigating an unprecedented quantitative easing (QE) program, buying up vast amounts of mortgage-backed securities and Treasury bonds, among others. Since the beginning of the financial crisis in August 2007 through to the end of May 2009, the Fed expanded its balance sheet from US$869 billion to US$2081 billion.

**Chart 1: US Federal Reserve total assets, US$ billions**

*Source: Federal Reserve*

The Fed is not the only central bank engaged in QE measures. The Bank of England, Bank of Japan, Swiss National Bank and even the notoriously cautious European Central Bank have all embraced QE in one way or another. But investors are growing concerned about the exit strategy. Might central banks leave interest rates too low for too long? They will be keen to avoid the criticisms levied at the Japanese authorities in the 1990s, who were widely blamed for not doing enough to stave off deflation and reversing some policy actions too quickly. But central banks are walking a fine line. Pumping too much money into the world economy for too long risks making today s solution into tomorrow s problem: a sharp rise in inflation.

**Looming inflation and the gold price**

If inflation is on the horizon it raises important questions for portfolio managers, as traditional assets like fixed-income bonds and equities are not known for their outperformance during periods of high inflation. Investors instead tend to flock to real assets or assets that are specifically designed to track inflation. The four most commonly purchased inflation hedges are arguably: gold, commodities in general, real estate and inflation-linked bonds. The last are similar to traditional government or corporate bonds, but with the coupon and principal repayments tied to changes in the general price level, typically the country s official consumer price index.

Gold s history as an inflation hedge spans centuries. It was perhaps best chronicled by Roy Jastram in his seminal book The Golden Constant, originally published in 1977. Jastram, then professor of Business Administration at the University of California at Berkeley, found that over the centuries and in different countries gold s purchasing power, while fluctuating, has returned to a broadly constant level. A new edition of the book was published in June 2009, with two additional chapters by Jill Leyland, formerly Economic Adviser to the World Gold Council, to bring it up to date.

A cursory glance at gold s performance in the years since The Golden Constant was first published shows an intuitive relationship between changes in the gold price and changes in the US consumer price index, with peaks in the gold price tending to lead peaks in the CPI.

**Chart 2: Gold price (US$/oz) annual growth vs**
**US annual CPI inflation; 2 year moving average, 1973-2008**

*Source: Bloomberg, WGC*

Gold s relationship with inflation is best illustrated by contrasting the performance of the gold price during high inflation years with its performance in moderate and low inflation periods. Between 1974 and 2008, there were 8 years where US inflation was high (defined as CPI inflation exceeding 5%), 21 years where US inflation was moderate (between 2% and 4.9%) and 6 years where inflation was low (below 2%). Whereas in the low and moderate inflation years gold only posted mildly positive real returns, in the high inflation years gold rose by an average of 14.9% in real terms.

**Chart 3: Average real annual percentage change in the gold price (US$/oz) during high, moderate, and low inflation years; 1974-2008**

*Source: Bloomberg, WGC*

Intuitively, commodities, real estate and inflation-linked bonds should also perform relatively well in periods of high inflation, although we do not have sufficient data on all three asset classes to carry out the same analysis (TIPS, for example, were only first issued in 1997). Nonetheless, at the time of writing, some investors may be reluctant to add an asset intended to function primarily as an inflation hedge to their portfolio as there are currently equally compelling reasons for inflation to remain low. This leads us to ask whether any of the four asset classes under consideration, that are widely recognised as performing well during an inflationary period, can demonstrably enhance investors risk-adjusted returns in a low to moderate inflation environment yet still provide investors with the peace of mind that they have adequate inflation protection in their portfolio should inflation accelerate. Real returns are not, after all, the only means of assessing portfolio performance. The volatility of an asset s returns and the way it interacts with other assets are also important. In the remainder of this report we examine how gold has performed relative to the other three traditional inflation hedges on each count individually, then collectively, using a portfolio optimizer. We also examine whether a strategic case can be made for gold in the portfolio of an investor that already holds TIPS.

**The data**

The assets we chose to represent the four asset classes were: the spot price of gold (US$/oz), at 5 pm in New York (we chose this, rather than the London PM fix, to be consistent with the closing prices of the other three assets); the S&P GSCI, a production-weighted commodities index that is commonly used by institutional investors; the Bloomberg Real Estate Investment Trust Index (BB REITs), a capitalization-weighted index of Real Estate Investment Trusts having a market capitalization of US$15 million or greater; and Barclays Aggregate US Treasury Inflation-Protected Securities Index (TIPS).

We chose the starting date of 1974 for gold and the S&P GSCI. Although a longer time series was available for both assets, prior to this date movements in the gold price were still constrained by the existence of the two-tier market

in gold that followed the United States closure of the gold window two years earlier. It was not until November of that year that the two-tier system was finally abandoned. The inclusion of data prior to 1974 would, therefore, have distorted gold s return assumptions. BB REITs data became available in 1993 and the first TIPS were issued in 1997. The lack of a uniform starting date meant conducting the analysis over three distinct periods: 1974 2009, 1993 2009 and 1997 2009. However, in many ways this was desirable, as it minimized the impact on the analysis of any period dependency or bias in the starting date.

**A comparison of real returns**

We began by comparing the real or inflation-adjusted returns of each asset over the respective time periods. In the first period, between January 1974 and May 2009, the nominal gold price rose from US$129.19/oz to US$979.15/oz, an increase of 658%, compared with a 997% rise in the S&P GSCI. Adjusting for the 357% cumulative increase in the US consumer price index over the same period, gold rose by 66.6%, while the S&P GSCI rose by 141.1%. This equates to an annualized real return in the gold price of 2.0% and an annualized real rise in the S&P GSCI of 2.8%. Over the second period, December 1993 to May 2009, gold posted an annualized real return of 3.6%, while the S&P GSCI rose by 2.1%. BB REITs were the worst performer, declining by an annualized 2.1% in real terms. In the final period, between March 1997 and May 2009, gold was the best performer, rising by an annualized 5.9% in real terms compared with a 0.2% decline in the S&P GSCI, a 3.8% decline in BB REITs and a 3.7% increase in TIPS.

**Table 1: Annualized Real Returns (%)**

| Period | GOLD | S&P GSCI | BB REITs | TIPS |
|---|---|---|---|---|
| Jan 1974 May 2009 | 2.0 | 2.8 | | |
| Dec 1993 May 2009 | 3.6 | 2.1 | -2.1 | |
| Mar 1997 May 2009 | 5.9 | -0.2 | -3.8 | 3.7 |

**Volatility**

Using the same time periods, we computed the annualized average volatility using real monthly returns for each of the series. Not surprisingly, TIPS had the lowest volatility since inception, of 6.2% from March 1997 to April 1997. However, gold consistently delivered a lower average volatility throughout the three periods relative to the S&P GSCI and BB REITs. In the periods from 1993 and 1997 to date, gold s volatility was significantly lower; about 30%.

**Table 2: Annualized Volatility (%)***

| Period | GOLD | S&P GSCI | BB REITs | TIPS |
|---|---|---|---|---|
| Jan 1974 May 2009 | 19.5 | 20.1 | | |
| Dec 1993 May 2009 | 14.7 | 23.0 | 21.4 | |
| Mar 1997 May 2009 | 16.0 | 25.0 | 23.4 | 6.1 |

** Annualized volatility computed using monthly real returns over the corresponding period.*

Also noteworthy is that in high inflation years, which we define as an annual rise in the US CPI of more than 5.0%, although volatility picked up, the ratio of return to risk increased from an average of 0.10 in periods of low and medium inflation, to 0.33. In other words, gold not only performed best in terms of real returns during high inflation years, it also delivered a better risk/return profile.

**Portfolio diversification**

Of the four potential inflation hedges, gold proved to be the most effective portfolio diversifier against the assets held by a typical US investor, although the S&P GSCI came a very close second. In the first period, neither gold nor the S&P GSCI showed a statistically significant correlation with any of the major asset classes that were also available from 1974 onwards (US Treasury bonds, global corporate bonds, the MSCI US Index and the MSCI World ex US Index, as a measure of international equities; total returns series were used for each of the asset classes).

**Chart 4: Correlations of monthly real returns on gold (US$/oz) and S&P GSCI vs various assets; Jan 1974 May 2009**

*Source: Bloomberg, WGC*

For the second and third periods we included the additional assets that had become common in US investors portfolios, namely, emerging market bonds, high yield bonds, international equities (instead of the MSCI World Index, which we used in the first scenario, we used the MSCI World ex US Index, which became available in 1987), and emerging market equities. The most noteworthy outcome from the second period was the poor performance of BB REITs as a diversifier. The index exhibited a correlation of over 0.4 with each of the equity indices (MSCI EM, MSCI World Index ex US and MSCI US), as well as strong relationship with high yield bonds. Gold had the lowest correlation, an average of 0.14 with the other assets, while the S&P GSCI had an average correlation of 0.2.

**Chart 5: Correlation of monthly real returns on gold (US$/oz)**
**S&P GSCI and BB REITs vs various assets; Dec 1993 May 2009**

*Source: Bloomberg, Barclays, WGC*

In the final period, when we introduced TIPS, they not surprisingly exhibited the strongest of any correlations, almost 0.7 with US Treasury and corporate bonds. But it was BB REITs that once again proved the worst diversifier, exhibiting an average correlation of 0.4 with the other assets, compared with 0.3 for TIPS. Gold and the S&P GSCI both showed an average correlation of 0.17 with the other assets. In summary, gold proved a far superior diversifier to either TIPS or BB REITs, but only a marginally better diversifier than the S&P GSCI.

**Chart 6: Correlation of monthly real returns on gold (US$), S&P GSCI,**
**BB REITs and TIPS vs various assets; Mar 1997 May 2009**

*Source: Bloomberg, Barclays, WGC*

**Portfolio optimization**

The natural next step was to combine all three traits return, volatility and diversification potential to examine whether the addition of any of the four assets recognised as performing well during a high inflation environment enhanced an investor s overall risk-adjusted returns and, if so, what allocation of the asset was required to do so? For each period, we computed the average monthly returns, volatility and correlations of the available assets as inputs into a portfolio optimizer. We used historical average returns as estimates for the expected returns, while the variance-covariance matrix was estimated using the Stein-Ledoit methodology[1]. Looking at the historical performance, we first analyzed the period from 1974 to 2009, using US Treasury bonds, global corporate bonds, the MSCI US Index and the MSCI World ex US Index as our benchmark basic portfolio. Then, using the Resampled Efficiency Optimization developed by Michaud and Michaud[2], we constructed the expected efficient frontier produced by those four basic assets. We subsequently added gold to the mix and re-computed the frontier, then removed gold and added the S&P GSCI to produce a third efficient frontier.

Both gold and the S&P GSCI expanded the basic efficient frontier in other words, adding either gold or commodities improved the risk-adjusted returns of the portfolio over the 1974-2009 period but the results came out marginally in favour of the S&P GSCI. The S&P GSCI was found to produce both the maximum reward-risk portfolio and the minimum variance portfolio (i.e. the portfolio mix with lowest expected volatility possible), with allocations to the asset of 6.9% and 9.4%, respectively.

In the second period, from 1994 to 2009 we once again computed average real returns, volatilities and correlations for gold and the S&P GSCI but this time added BB REITs to the mix. Similarly, we compared the basic portfolio to one including gold, another including commodities and finally, one including BB REITs. In this case, it was gold that produced both the maximum reward-risk portfolio and the minimum-variance portfolio. The maximum reward-risk portfolio was achieved with a 7% allocation to gold, while the minimum-variance portfolio was achieved with a 6.3% allocation. Subsequently, we analyzed the period from 1997 to 2009, adding TIPS into the portfolio mix and compared it to the performance of gold, the GSCI, and BB REITs. Gold once again proved the asset most likely to help investors achieve both the maximum reward-risk and the minimum-variance portfolio. The allocations required to achieve this are shown in Table 3.

[1] Ledoit developed a Stein-type estimation for the covariance matrix toward a Sharpe-Linter capital asset pricing model (CAPM) prior. Such prior assumes that assets are correlated to each other through their sensitivity to the market by a linear relationship between systematic risk

and return.

[2] Michaud, Richard and Robert Michaud (2008) *Efficient Asset Management: a practical guide to stock portfolio optimization and asset allocation*, 2nd edition, Oxford Press, New York.

**Table 3: Maximum reward-risk minimum-variance portfolio**

| Period | Asset Required | Allocation required to achieve maximum reward-risk portfolio | Allocation required to achieve minimum-variance portfolio |
|---|---|---|---|
| Jan 1974-May 2009 | GSCI | 6.9 | 9.4 |
| Dec 1993-May 2009 | Gold | 7.0 | 6.3 |
| Mar 1997-May 2009 | Gold | 9.9 | 4.0 |

While analyzing these three time periods helps us get a sense of the performance of our inflation-hedge assets as portfolio diversifiers, it is unlikely that any of these assets will deliver similar real returns in the next few years as those observed in the past, in particular the real returns of the last 12 years given the comparatively higher impact the last year has had on market returns and volatility over that period. To compare the performance of these four inflation hedges under standard conditions there were two parameters we needed to estimate: expected returns and covariance structure among assets. The selection of the latter is particularly relevant, as it is important to find a period that would tend to recreate standard expected relationships among assets.

Given the data restrictions on REITs and TIPS, we needed to find a period that was equivalent to the long-run correlation structure represented by the 1974-2009 but using the available information. If we tried to estimate too many missing values for both series, the reliability of such estimates would decrease with the number of years being estimated. Thus, we needed to arrive at a compromise between length of the period and correct representation of the correlation structure.

Statistical testing of the of the correlation matrices for the basic portfolio (US and international equities, Treasury and corporate bonds), plus gold and commodities in the three periods we previously analyzed (namely, 1974-2009, 1994-2009, and 1997-2009) lead to the conclusion that the correlation structure for the 1994-2009 and 1997-2009 periods is not statistically equivalent to that of the 1974-2009 period. This should come as no surprise, given the effect that the past year has had in the market structure. However, the correlation structure of the basic portfolio, plus gold and commodities from 1990 to mid-2008 does resemble that of 1974 to 2009. In other words, we could not reject the hypothesis that the correlation structure of the assets from January 1990 to Jun 2008 was equivalent to the long-term correlation structure given by the January 1974 to May 2009 period for the assets for which data is available.[3]

Therefore, we conducted a portfolio optimization to test each of our four proposed inflation hedges using monthly real returns for all the assets from January 1990 to June 2008. We used the EM Algorithm to adjust for the missing data in TIPS and BB REITS[4], and computed the variance-covariance matrix using Stein-Ledoit methodology. This time, however, we used our own expected

[3] We use the modified likelihood ratio test of equality of covariances (also known as Box test) to verify the equivalence of the correlation structures in the described periods. All tests were performed at the 5% significance level.

[4]

To estimate the missing returns, a multivariate normal is fit to the data using the Expectation-Maximization (EM) algorithm. The EM algorithim is an iterative method of estimation that alternates between computing an expectation (E) of the log likelihood with respect to a given estimate and the maximization (M) of such likelihood function until convergence.

real returns assumption, which we made conservative for the four inflation-hedge assets. The inputs are shown in Table 4. Were we to enter a period of high inflation, the real returns on each of the inflation hedges would likely be much higher, which an investor would need to take into consideration when deciding on an allocation.

**Table 4: Annualized Market Forecasts**

| Asset | Return (projection) | Std Dev (Jan 90-Jun 08) | Inf. Ratio |
|---|---|---|---|
| MSCI US | 8.0 | 13.9 | 0.576 |
| MSCI ex-US | 8.0 | 14.7 | 0.542 |
| US Treasuries | 4.5 | 5.0 | 0.900 |
| Corporates | 4.8 | 5.4 | 0.880 |
| Gold | 2.0 | 13.0 | 0.154 |
| GSCI | 2.0 | 18.8 | 0.106 |
| BB REITs | 2.0 | 14.3 | 0.140 |
| TIPS | 4.0 | 4.9 | 0.816 |

As seen in Chart 7, gold once again proved the asset more likely to help investors achieve the maximum reward-risk portfolio, based on a 6.9% allocation to gold. TIPS came a close second and the S&P GSCI a bit behind. Including TIPS produced the minimum variance portfolio by switching out of Treasuries, but the risk-return structure was not as appealing, i.e. the information ratio[5] was slightly lower than the one for the minimum variance portfolio that included gold, as TIPS are highly and positively correlated with Treasuries and corporate bonds and therefore do not offer the same diversification benefits as gold or commodities.In other words, an investor needs to sacrifice more return to achieve that lower variance with TIPS than it does with gold. Finally, BB REITs did not seem to enhance portfolio performance in any meaningful way.

**Chart 7: Expected efficient frontier for a basic portfolio, and after adding 1) gold, 2) commodities, 3) REITS, or 4) TIPS; projected scenario**

[5] The information ratio refers to a measure of risk-adjusted return, typically defined as expected active return divided by risk.

**Table 5: Annualized Market Forecasts**

| | TIPS | Gold | |
|---|---|---|---|
| **Asset** | **Min Var** | **Min Var** | **Max Reward/Risk** |
| MSCI US | 6.2% | 8.1% | 10.4% |
| MSCI ex-US | 6.1% | 3.8% | 8.9% |
| US Treasuries | 38.5% | 73.0% | 64.5% |
| Corporates | 1.0% | 4.8% | 9.3% |
| Gold | | 10.3% | 6.9% |
| TIPS | 48.1% | | |
| Portfolio Return | 4.6% | 4.7% | 5.1% |
| Portfolio Volatility | 4.3% | 4.4% | 4.6% |
| Information Ratio | 1.05 | 1.07 | 1.11 |

Lastly, we ran a portfolio optimization for the case of an investor who already has an allocation to TIPS as an inflation hedge. We found that adding gold to such a portfolio is still beneficial, as the investor would take advantage of the diversification properties of gold to obtain lower potential variance and higher reward per unit of risk, as chart 8 shows. The optimal allocation to gold in this case varies from 7.6% to 3.5% in the minimum variance and maximum reward/ risk portfolio, respectively.

**Chart 8: Expected efficient frontier for a basic portfolio with TIPS and after adding gold; projected scenario**

**Conclusion**

Gold has a role to play both as a tactical inflation hedge and as a long-term strategic asset. If the world economy experiences a resurgence in inflation, then gold, like the other traditional inflation hedges, is likely to outperform mainstream financial assets. Investors who are unsure whether to add a targeted, short-run inflation hedge to their portfolio at this stage should take solace from the fact that gold can be shown to enhance an investors risk-adjusted returns even in a low to medium inflation environment. The strategic case for gold rests mainly on its effectiveness as a portfolio diversifier. This reflects the unique and diverse drivers of gold demand and supply. In the periods considered, gold also consistently delivers a lower average volatility than either the S&P GSCI or BB REITs, something which may surprise readers, as gold is often erroneously perceived as an especially risky asset.

**Disclaimer**

SPDR® GOLD TRUST has filed a registration statement (including a prospectus) with the SEC for the offering to which this communication relates. Before you invest, you should read the prospectus in that registration statement and other documents the issuer has filed with the SEC for more complete information about the Trust and this offering. You may get these documents for free by visiting EDGAR on the SEC Web site at www.sec.gov. Alternatively, the Trust or any Authorized Participant will arrange to send you the prospectus if you request it by calling toll free at 1-866-320-4053 or contacting State Street Global Markets, LLC, One Lincoln Street, Attn: SPDR® Gold, 30th Floor, Boston, MA 02111.