

# What does a US recession imply for the gold price?

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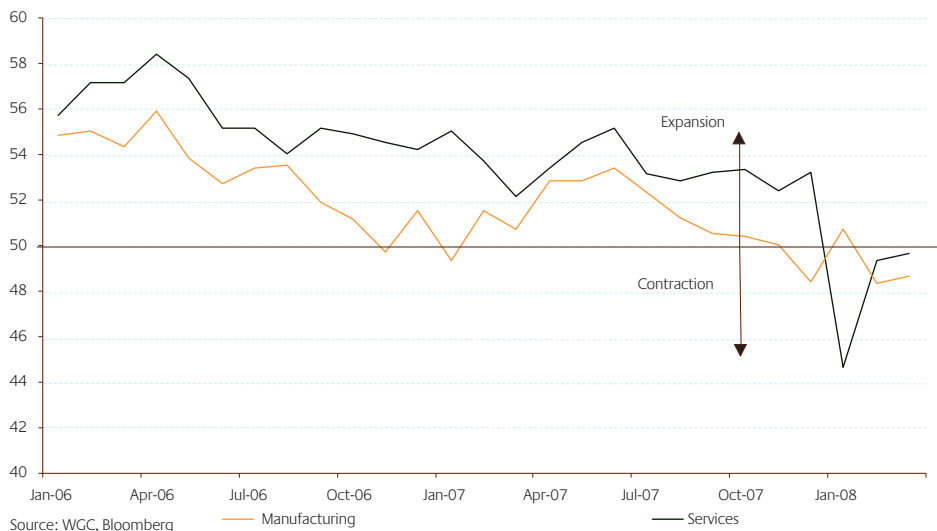
## Summary

Macro economic data, and the US Federal Reserve Bank's swift loosening in monetary policy, underline the risk that the US economy is on the brink of, or already in, recession. There are obvious winners in terms of asset performance in a recession, like fixed-income assets, and obvious losers, like cyclical stocks. But how is gold likely to fare? Regression and correlation analysis suggest there is no relationship between changes in US GDP growth and changes in the gold price. Consequently, a US recession would not have negative implications for the gold price. This reflects the unique drivers of the gold price and underpins gold's role as a diversifying asset, even in times of recession.

## An economy on the brink ...

The US economy is struggling. Contagion from the financial crisis that started in the sub-prime mortgage market has spread into the broader economy. Both the manufacturing and service sectors are contracting (Chart 1), according to the well-respected ISM survey, employment is falling (almost a quarter of a million people lost their jobs in the first quarter of this year alone) and, not surprisingly, consumers are distinctly less confident now than they were just one

**Chart 1: Manufacturing and Services ISM indices**



quarter ago. Leading indicators suggest that worse is to come. It is clear from both macro data and the US Federal Reserve Bank's rapid loosening in monetary policy (it has cut interest rates by 300 basis points in the past six months and pumped massive amounts of liquidity into the economy) that the US economy is at serious risk of, or possibly even already in, a recession.

### Relative asset performance

There are obvious winners and losers in terms of asset performance in a recession. Cyclical stocks, such as car manufacturers and homebuilders, as well as financial stocks tend to underperform, as consumption is cut back and bank lending slows. But it is not true of all stocks. "Defensive" stocks like biotech or foodstuffs whose markets are largely unaffected by the economic cycle tend to perform well. So do fixed-income assets, as interest rates are lowered in a bid to boost consumer demand. Commodities, on the other hand, tend to underperform as slower economic growth reduces demand for metals and energy etc used in the production of cyclical goods or in the provision of services.

During the recession that followed the high-tech bust, the DJ Industrial Average index and Reuters/Jefferies CRB Commodities Index fell by 0.3% and 8.4% respectively, while US 10-year bond futures rose by 1.9% and the NASDAQ Biotech index (which we use as an example of a defensive stock) rose by 23.4% (Table 1). But what about gold: how is the yellow metal likely to fare if the economy falls into recession?

**Table 1: Price performance of various assets during the last recession (March 2001 – November 2001)**

DJI Index	Reuters/Jefferies CRB Commodities Index	US 10-year Bond Futures	NASDAQ Biotech index
-0.3	-8.4	1.9	23.4

Source: WGC, Bloomberg

### Identifying the recessions

Analysis of past recessions helps to shed some light on the matter. Because the gold price was fixed for much of the 19th century until 1971, it is only relevant to consider recessions after that date. Since 1971, there have been five US recessions, according to the National Bureau of Economic Research, an economic research organization charged with setting the US economy's official business cycle dates.

The NBER defines a recession as: "a significant decline in activity spread across the economy, lasting more than a few months, visible in industrial production, employment, real income, and wholesale-retail trade. A recession begins just after the economy reaches a peak of activity and ends as the economy reaches its trough". The five recessions took place between the following dates:

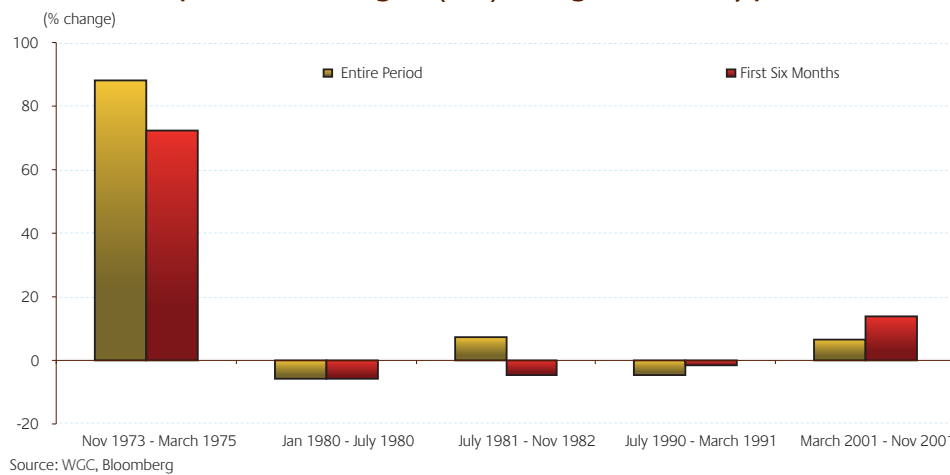
**Table 2: US recessions since 1971**

Start	End	Duration in months
November 1973	March 1975	16
January 1980	July 1980	6
July 1981	November 1982	16
July 1990	March 1991	8
March 2001	November 2001	8

Source: WGC, Bloomberg

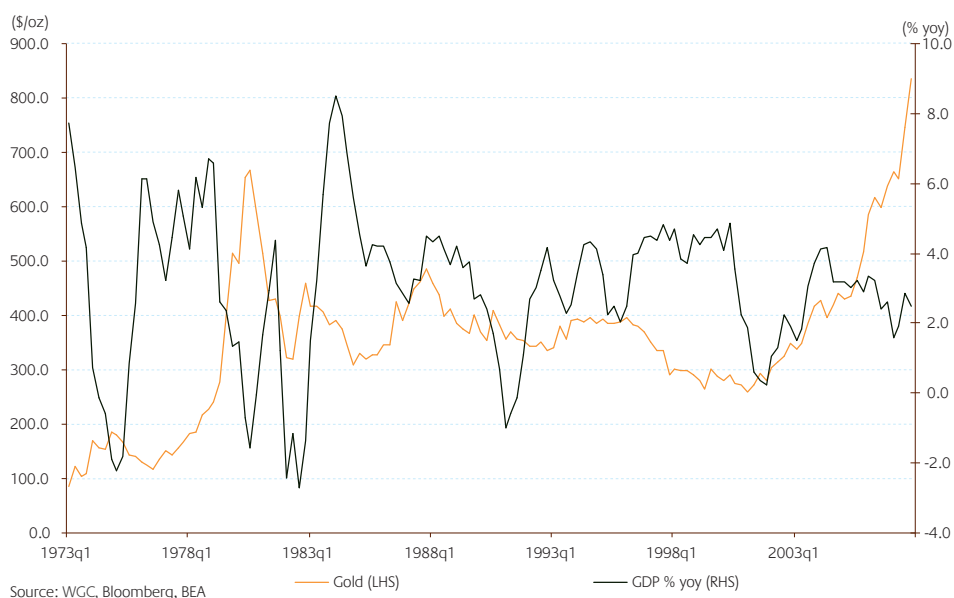
Chart 2 shows how the price of gold changed during each recession. In the first recession, between November 1973 and March 1975, the gold price rallied by 72% in the first six months and was 88% higher when the recession ended. During the second recession, which lasted only six months, the gold price fell by 6%. In the third recession, which also lasted for 16 months, the gold price initially fell (-5% in the first six months), but ended up 7% over the entire period. The gold price also declined during the July 1990 - March 1991 recession, both in the first six months and over the entire period. And in the latest recession that followed the bursting of the high-tech bubble in March 2001, the gold price rallied over both periods. In short, there has been no clear pattern in the behaviour of the gold price during an economic downturn.

**Chart 2: Price performance of gold (US\$) during recessionary periods**



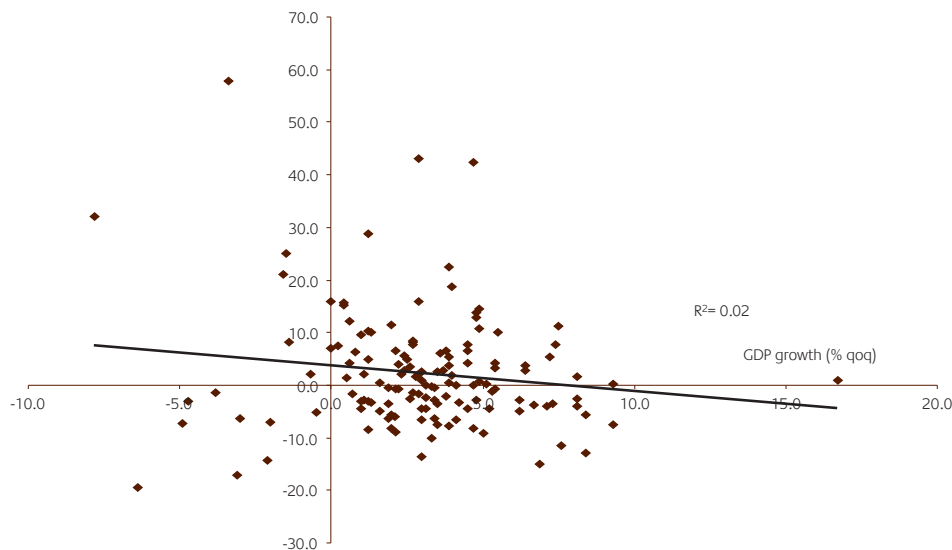
Indeed, there is no relationship between the gold price and economic activity full stop. Chart 3 shows the dollar gold price juxtaposed against quarterly GDP growth: there is no clear pattern between the two. At times the gold price has fallen as the economy has slowed, like between Q1 1988 and Q1 1991 (when US GDP growth slowed from 4.3% yoy to -1.0% yoy, while the gold price declined from \$456.95/oz to \$355.65/oz). But at other times the reverse has been true, for instance, during the latest slowdown, which has been accompanied by a strong rally in the gold price.

**Chart 3: Quarterly GDP growth and Gold Price (US\$/oz)**



Regression and correlation analysis help to reinforce this point. Both are measures of how one variable (in this case GDP growth) is related to another (the gold price), if at all. Chart 4 shows a scatter diagram of quarterly GDP growth versus the gold price between 1973 and 2007. A line of “best fit” (a straight line which passes as near to as many of the points as possible) is then drawn between the two. The resulting R-squared (R-squared is a descriptive measure between 0 and 1, indicating the degree to which one variable can be said to influence another; in this case, we are examining the strength of influence quarterly GDP might have had on the value gold) is tiny, at just 0.02. In other words, regression analysis says that quarterly changes in GDP growth have no influence on quarterly changes in the gold price.

**Chart 4: Quarterly change in the gold price**



Source: WGC, Bloomberg, BEA

A similar way of expressing this relationship, or lack of it, graphically is with a rolling correlation coefficient. A correlation coefficient measures the degree to which two assets move together. It ranges in value from -1 to 1, with -1 representing assets that are perfectly negatively correlated, 0 representing assets that have no correlation, and +1 representing assets that are perfectly positively correlated. The 10-year quarterly rolling correlation between changes in US GDP and changes in the gold price has (with the exception of two quarters in 1983) fluctuated in a narrow range of -0.2 and 0.2 since 1983, which, given the number of observations in this analysis, is classified as not statistically different from zero<sup>1</sup>.

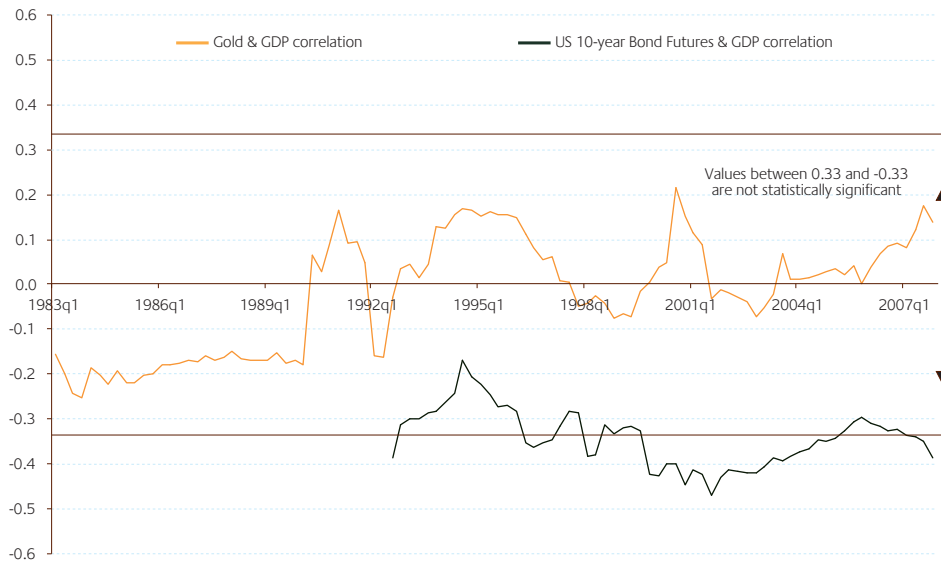
The same cannot be said for other assets. The correlation coefficient between 10-year US bond futures and US GDP growth, for example, has been continuously negative and statistically significant for much of the same period (Chart 5). Gold’s lack of relationship with US GDP growth helps to underpin its role as a diversifying asset, even in times of recession.

Independent researchers find similar results. In a recent briefing note<sup>2</sup>, David Ranson, President of H.C. Wainwright Economics stated that: “*any effect that recessions have on the price of gold is close to zero*”. He found the relationship between stocks and bonds and GDP during periods of recession far more statistically significant than that for gold, which he also found to be “*statistically insignificant*”. Ranson concluded that “*Gold not only holds up well in a recession, but offers diversification to an investor whose assets include stocks and bonds*”.

<sup>1</sup> At a 95% confidence level.

<sup>2</sup> *How would the price of gold withstand a recession?*, H.C. Wainwright Economics Inc, March 2008.

**Chart 5: Rolling correlation coefficients (10-year rolling quarterly averages)**



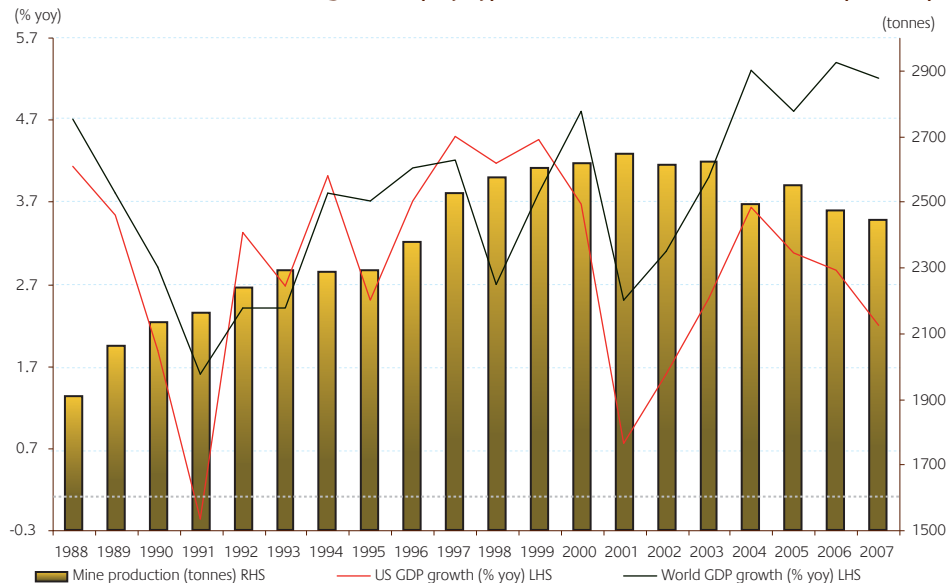
Source: WGC, Bloomberg

### An independent asset

It's not difficult to understand why the gold price moves independently from the economic cycle when one considers the diversity of its demand and supply base, the ultimate determinants of price movements.

There are three sources of gold supply: mine production, official sector sales and scrap or recycled gold. Mine production is by far the largest element, accounting for 70% of total supply last year. Changes in annual mine supply bear no relation to changes in US or even global GDP growth (Chart 6). The upward trend in mine production that was underway in the late 1980s was not arrested by 1990 recession (the US economy suffered an outright contraction, while world GDP growth slowed to 1.6% from 2.9% the previous year). Nor was the downtrend in mining output that began in 2001 reversed by the sharp acceleration in world growth that followed.

**Chart 6: US and World GDP growth (% yoy) and Annual Mine Production (tonnes)**



Source: WGC, GFMS, BEA, IMF

Mine production is influenced by very specific factors, such as the level of exploration spending, the success or otherwise in discovering new gold deposits and the cost of extraction (some new discoveries may not be economically viable). Lead times in gold mining are often very long. It can take years to re-open a closed mine, let alone find and mine new reserves. The decision to build a mine shaft (and often an entire infrastructure) is a long term one that will often see business cycles come and go.

Central bank decisions to buy or sell gold (they remain net sellers) are also usually strategic in nature, rather than reactive to the economic cycle. The decision to buy or sell gold is often made years in advance and then carried out over a period of years. In Switzerland, for example, the proposition to sell gold (the first gold sales programme) was first recommended by a group of experts in 1997. However, the actual sales programme did not commence until May 2000, with the sales then taking place over a period of five years.

Scrap supply is influenced by many factors, perhaps the most important being price and price volatility, but recessions and periods of economic distress have also had an impact. The most dramatic example is when Korea was pushed into recession during the 1998 Asian currency crisis; its scrap supply increased by almost 200 tonnes as the government bought gold from the local populace in exchange for won-denominated bonds. It then sold the gold on the international market in order to raise the dollars necessary to avoid defaulting on its external debt. Similarly, in Indonesia the 1998 recession saw scrap supply increase by 72 tonnes in the first quarter of the year, in this instance purely for independent reasons rather than at the behest of the government.

### Turning to demand ...

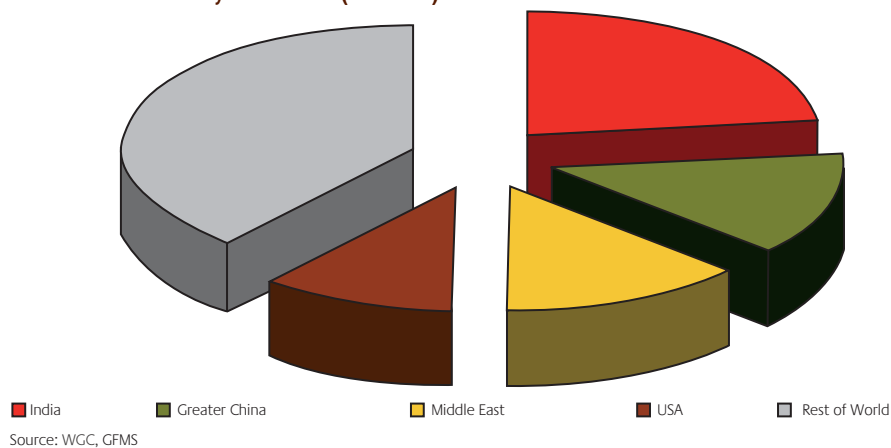
Conventional wisdom argues that recessions are bad for commodity prices. The reasoning goes that as consumer and business confidence falls, demand for goods and services is cut back and hence the materials used in the production of those goods or in the provision of services (many of which are commodities) declines, thereby depressing their price.

The argument is logical. However, a few points are worth bearing in mind with respect to gold. Demand for gold as an intermediate good is relatively small in comparison to many other commodities. Last year, just 14% of gold demand came from the industrial sector (mainly electronics). This is in stark contrast to base metals and even other precious metals, where the vast majority of demand comes from industry. As a result, gold is much less vulnerable to the vagaries of the economic cycle. That said, demand for gold in electronics is likely to fall if the economy falls into recession as consumer spending on non-essential electronics goods declines.

A US recession would undoubtedly have negative implications for gold jewellery demand in America, as consumer spending slows. However, this negative implication could be at least partially offset by the higher share of gold jewellery in the retail market that gold jewellery has enjoyed in recent years. Moreover, gold is much less vulnerable than other jewellery materials, such as diamonds or platinum, to a US recession as far more demand for gold comes from outside of the US – 70% of diamond jewellery demand comes from the US market, compared with just 10% for gold.

India is in fact the single largest consumer of gold jewellery in the world in tonnage terms. Last year, Indian households bought 558 tonnes of gold jewellery, more than double their US counterparts (Chart 7). Chinese consumers rank second, having bought 331 tonnes. US consumers are third in tonnage terms, although US demand remains highest in retail value terms due to its higher trade margins. The extent to which worldwide gold jewellery demand suffers from a US recession will depend partly on the spill-over effects to other countries. If proponents of “decoupling” prove to be correct (they argue that emerging market economies are now strong enough domestically to withstand a US slowdown) then worldwide jewellery demand need not fare badly.

**Chart 7: Jewellery demand (tonnes) 2007**



The final source of demand comes from investors. Investors buy gold for many reasons. Chief among these are gold’s inflation and dollar-hedging properties, both of which have been proven over long periods of time. How a recession affects investment demand would depend, in part, on how inflation and the dollar react.

The brewing recession has so far been positive for gold on both fronts. The dollar has continued its downward trajectory, while inflation has (unusually) headed higher. US consumer prices increased at an annual rate of 4.0% in February this year, up from 2.4% just a year earlier. If these trends continue, investment demand for gold as an inflation and dollar hedge is likely to remain strong. And if the recession deepens concerns over the health of the US banking sector, demand for gold as a safe haven asset is also likely to remain robust.

In summary, statistical analysis suggests there is no relationship between changes in US GDP growth and changes in the gold price. This reflects gold’s unique and diverse demand and supply base, which as for any freely-traded good ultimately determine the price. Consequently, a US recession does not have negative implications for the gold price. The only element of demand likely to be affected by a recession is investment demand, but that in turn will depend on the “type” of recession. So far, the brewing recession has been positive for gold, as it has been accompanied by a rise in inflation and a falling dollar, which has boosted demand for gold as a dollar and inflation hedge.

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