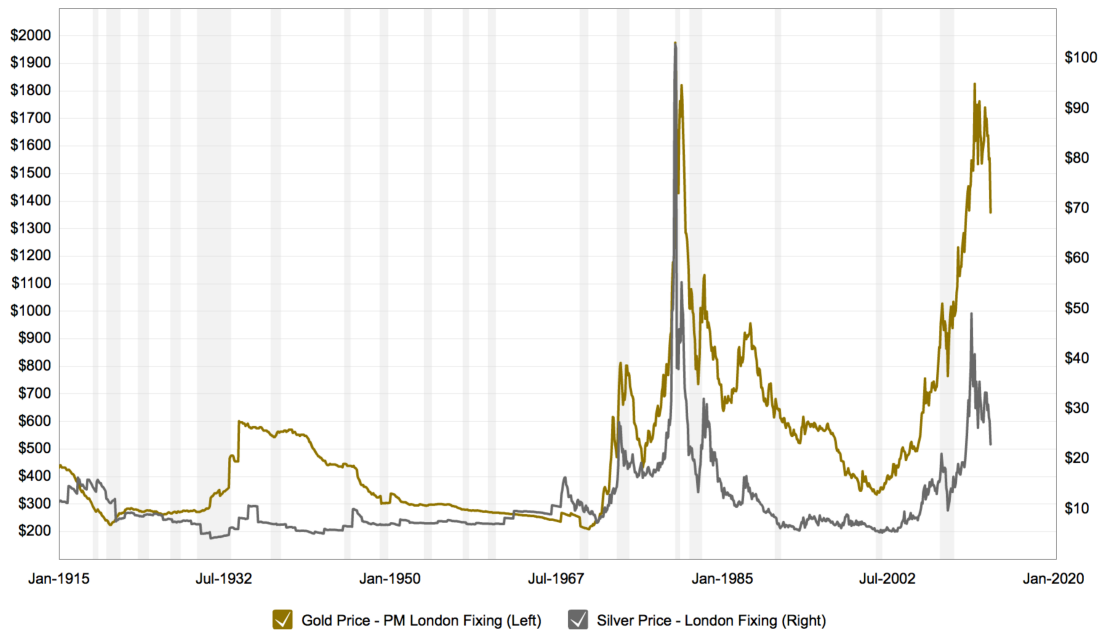


What is the value of gold?

The price of gold dropped by 9% on April 15, the biggest one day drop in thirty years. Not only did the prices of other precious metals (silver dropped 12%) and other industrial metals drop as well, but stock prices took a tumble as well. While the attention has focused on the price drop in recent days, gold has had a good run over the last decade.



The big question that has been debated in recent days is whether gold will continue to drop in the coming days. More generally, how do you determine whether gold is under or over priced?

Demand and Supply

One process for analyzing whether a commodity is reasonably priced is to look at the demand and supply for the commodity. While this may work for oil, iron ore or other industrial commodities, it does not for precious metals and in particular for gold. The demand for gold has less to do with its practical uses and more to do with perceptions and fears.

Does gold have an intrinsic value?

The intrinsic value of an asset is a function of its expected cash flows, growth and risk. Since gold is a non cash-flow generating asset, I have argued in the blog post below that you cannot estimate an intrinsic value for gold:

<http://aswathdamodaran.blogspot.com/2011/06/thoughts-on-intrinsic-value.html>

Note that I make the same argument about all collectibles: Picassos, baseball cards or Tiffany lamps.

Does gold have a relative value?

If gold does not have an intrinsic value, what is that drives its value. There are two factors historically that have driven the price of gold:

1. Inflation: If gold is the alternative to paper currency, you can argue that the price of gold will be determined by how much trust individuals have in paper currency. That trust is undermined when inflation increases.
2. Fear of crisis: Through the centuries, gold has been the “asset” of last resort for investors facing crisis. Thus, as investor fears ebb and flow, gold prices go up and down.

There is another way that you can frame the relative value of gold and that is against other precious metals. For instance, you can price gold, relative to silver, and make a judgment on whether it is cheap or expensive (on a relative basis)

The research on the relative price of gold

The most comprehensive paper that I have seen on the relationship between gold prices and inflation that actually develops a relationship between the two that can be used to price gold is by Erb and Campbell Harvey. You can find it here:

http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2078535

They have a follow up paper on the topic:

http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2148691

The bottom line is that these papers conclude that gold prices are high (at the time that the papers were written) on a relative basis.

Let the data speak

When confused, it is always best to let the data speak and you can find data on the last 50 years of gold & silver prices, as well as inflation rates, my estimates of the implied ERP and the Baa default spread (over the 10-year T.Bond rate). Here are my general findings:

1. Looking at the ratio of gold prices to the CPI index, I find what Erb and Harvey report, which is at 7.20 times the CPI index, gold was at an all time high at the end of 2012, edging above its previous highs set towards the end of the last boom in 1978-79. The median value is 2.53, suggesting either a steep fall in gold prices in the future or a break from history.
2. Looking at the ratio of gold to silver prices, the current ratio of 54.84 (gold price/silver price), it is slightly higher than the historical median value of 51.66. So, if gold is over priced, so is silver.
3. Looking at the percentage change in gold prices and the relationship to inflation (see the worksheet containing the regression), I find that there is a positive relationship (backing the general consensus that gold is a hedge

against inflation), but the R-squared is 20%, suggesting that there is a lot of noise in this process. Every 1% increase in inflation causes gold prices to go up by 4.37%.

4. Looking at the percentage changes in gold prices and the relationship to implied ERP, the relationship is weaker in terms of R-squared (about 10%) but every 1% increase in the ERP translates into about an increase in gold prices of 8.91%. That may explain the surge in gold prices between 2008 and 2012 and the drop off this year.