Bubbles in Gold?

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In the following article Brian Lucey and Fergal O’Connor consider the characteristics of a gold bubble, how financial economics tests for bubbles and what academic studies have to say on the issue.

Asset Bubbles

Whether the current price of gold is a speculative bubble is a question that both investors and academics would like to answer definitively. One of the unfortunate characteristics of bubbles is that, driven by the anticipation that prices are heading higher, investors are by compounding, they inflate very rapidly in their terminal period. You are sure something is a bubble only when it has burst. After over a decade of price rises from $300 up to $1,900 an ounce, gold does look somewhat like it is in a bubble at first glance.

From an academic perspective, a bubble is not simply a long-run rise in price or an historically high price. A bubble happens when the price of an asset rises above the price that can be justified by its fundamentals, the value discounted to today’s terms of all future cash flows or benefits that can be earned by owning it. This implies that the price of an asset should only change when these fundamental factors change, a price rise for any other reason indicates a bubble.

The bubble element is included in the price because investors share a mistaken belief which overestimates the future benefits of owning the asset. Bubbles are intrinsically social phenomena. This bubble component increases in value over time, giving them the return required and perpetuating the bubble’s existence. Once this shared belief fails apart, the bubble collapses to zero and the asset’s price returns to its true value. In fact, bubbles can overshoot on the downward side if investors’ pessimism in response to the bursting causes them to mark down the asset too aggressively.

Testing Gold

The first problem of deciding whether a bubble exists in gold, is that there is no universally agreed fundamental determinant of gold’s value. Some researchers use gold’s convenience yield, the benefit that the holder of a physical commodity earns relative to the holder of a futures contract, such as easy access for production. Others build models based on the macroeconomic factors that are believed to drive gold price changes such as inflation and the value of the US dollar. Others yet use relationship models to infer the ‘true value’ of gold. Because of this lack of agreement on what it is that is the fundamental determinant, we find a diverse set of answers to the bubble question, as researchers make use of the variety of models that exist in order to look for bubbles.

Our recent research is, we believe, the first to use gold lease rates as an observable cashflow that can be earned from owning gold. Relationship models look at statistical facts about the asset or its relationship with its fundamental driver that could indicate a bubble’s existence. These most commonly look for long-run equilibrium relationships between the asset and its fundamental driver. If no long-run relationship is found, then it may be that a bubble exists. But as we have no way of knowing how much data is needed to look at the long run, these tests may say ‘bubble’ when we simply do not have enough data to answer the question.

Lucey and O’Connor (2012) look at the long-run relationship between gold prices and gold lease rates. We look for periodically bursting bubbles, a class that can form, burst and reform, which seem closest to what we would expect to observe in reality. We find it probable that when we account for the statistical properties of gold, no bubble exists, but gold does vary between two regimes, one with a higher variance corresponding to times of market stress, when gold’s safe-haven characteristics become important.

Bialkowski, Bohl, Stephan and Wisniewski (2011) apply the same method, seeking periodically bursting bubbles, but use convenience yield, with a similar finding of no bubble since 1978. Pindyck (1993) found a bubble using gold’s convenience yield but used a more basic method and a shorter data set. Diba and Grossman (1984) looked at the opportunity cost of holding gold, the interest that could have been earned on commercial paper, to see if changes in its value were based on this, and found that the price of gold was entirely based on market fundamentals. Baur and Glover (2012) look at the statistical characteristics of the gold price, without making reference to any fundamental driver. They find evidence of a bubble both in the 1980s and in this century. They ascribe this finding to the actions of speculative traders.

Explicit models differ in that they attempt to compute the price that should be paid at any time in the past for the gold. Bertus and Stanhouse (2001) build an explicit model of the supply and demand for gold to derive a fundamental price and use this to estimate the difference between the market price and its ‘true value’ every month. They find that while there are differences, these are insignificant and do not indicate a bubble.

Counting models, also known as hazard models, are different in that they do not compare the time series behaviour of the determining factors of the value of the asset with its price, meaning that we do not need to worry about correctly specifying the underlying model for pricing the asset. Instead, they use the fact that if a bubble is present, we will observe a run of positive excess returns and a decrease in the probability of a negative excess return. When, Jirasakuldech and Emekter (2009) apply this idea, specifying the excess return on gold as its interest-adjusted basis, gold’s convenience yield less its cost of carry. They find evidence of a bubble in the gold price.

The conflicting answers found in the academic literature are a problem for all research on detecting bubbles. We cannot say definitively whether a bubble has been detected or the fundamental driver(s) of the asset’s price changed. And this assumes that we know the true driver of gold’s value. Bubbles can only be shown to have existed conclusively by looking in the rear view mirror, which doesn’t help investment decisions in real time.

One final point from bubble theory against a bubble existing in gold: once a bubble bursts, the price is expected to fall back down to its true price, as was seen after the dotcom bubble and the US housing bubble. However, if a bubble did exist in gold, its price fall from circa $1,900 should have indicated the bubble bursting and a fall in price back to its ‘true’ level. But we saw the price fall to the just below $1,600 and recover into the $1,700s and continue to fluctuate in this range in 2012. If this was the bubble bursting, it was a small one.

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