

What do academics think they know about gold?

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Over the last decade gold, and other precious metals, have been on a remarkable run. In Feb 2001, when I began to become interested in the properties of gold as a financial asset, gold stood at c \$260 per oz, compared to its price now in the \$1360 region, a remarkable, sustained and intriguing bull run.

The purpose of this note is to give the readers an insight into what academics (think they) know about the economic and financial aspect of the gold market, and therein to perhaps set up what I hope to be a debate on how industry and academia can work better to gain a greater understanding. There are, as we shall see, relatively few academics working on the gold market. This is puzzling, especially when we compare the torrent of papers that rightly have been published on equity, bond and currency markets. To a great extent the research being carried out on gold is carried out “in house” and in what is called “grey” literature. That does not make it any more or less higher quality than peer reviewed academic papers, but it does beg a question as to why. One common response which I and others who do research gold get from fellow academics is “but why, isn’t that the realm of conspiracy theorists and the extreme right”. Its fair to say that the academic, and more generally the research community on gold has not managed to persuade the wider community that its work is worthy of attention.

One issue that confronts the researcher when searching bibliographic databases¹ is that gold appears as a major research trend in at least three discrete areas. These are the economic and financial aspects of gold (the focus here), gold as a currency (the gold standard, bimetallism and historical uses of the metal) and the nature and impact of gold mining on the environment and on society. Focusing on the first is not to in any way downplay the importance of the other two but merely to provide a framing for the discussion. In total, there are close to 700 papers published on these areas since 1990 . restricting further to academic papers on the investment and economic aspects of gold, I was able to identify approx 200 papers in the area. A full bibliography is available by email, but a number of trends emerge.

First, there has been a remarkable explosion in research on gold in the last number of years. Of the 186 papers which I have collated have been published in the last two years with a further 40 published in 2008-9. Given academic papers typically take 6m or more to go from idea to final publication, this indicates that since 2008 a major research shift has taken place. The implication of this is that the time is now ripe for greater market-academic intervention in a structured manner. In this issue of *Alchemist* we see a potential model for this, with the announcement of the LBMA Bursary, a PhD bursary in the Economics and Finance of the Gold Market. This model, if more widely adopted, would result within 3-5 years in the generation of a large body of research on aspects of the market of concern to the industry, the influx into the industry of high quality researchers trained to the highest modern standard in economics and finance, and the further mainstreaming of gold market research.

¹ The main bibliographic databases for academic economic and financial researchers would be Econlit, Scopus and SSRN.

Second, there are clear trends in the author and citation patterns, with a relatively small number of authors contributing the most heavily cited and downloaded papers. Thus while there is a growth in the literature it remains concentrated.

Third, there are a number of common trends in the literature in terms of the locus of investigation. The main areas of academic research are gold as a diversifier, as a hedge against inflation or other assets and the efficiency of the operation of the gold market. So what do academics know or think that they know about these issues?

Perhaps the most studied area is the role and weighting that gold might have in a portfolio. Sherman (1982) suggested a weighting of 5% in an equity portfolio resulted in lower risk and higher return, while weighting as high as 25% has been proposed by Chua (1990), mainly down to the then low or negative correlation between gold and equities. More recent research by Hillier, Draper et al. (2006) suggest weights in the small percentages for a variety of precious metals, with gold acting as the most efficient diversifier. Considering gold and oil together Bruno and Chincarini (2010) suggest a weight of 10% for non US based investors seeking portfolio diversification, while Scherer (2009) for sovereign wealth funds, Klement and Longchamp (2010) for high net worth individuals suggest a range of between 5-10% allocation by weight to gold in an equity portfolio.

Much of the attractiveness of gold, on reading these and related papers, comes from its low correlation combined with its positive skewness, where there is a greater chance of a, say, 1% rise in one day than there is a 1% fall in any one day. Examining this and explicitly noting that this provides downside risk, Lucey, Poti et al. (2006) examine portfolio choice where the investor is concerned with such downside protection, and find an optimal weight of between 6-25% depending on time period and the other (mainly equity) assets included.

The combination of low or negative correlation and high positive skewness also has begun to attract attention. An asset with low/negative correlation might well act as a natural hedge, while the skewness element might suggest safe haven properties. However, a hedge asset may not provide safe haven status.. These have been explicitly examined in recent years, with Baur and Lucey (2010) providing the first statistical test of when gold acts as a safe haven and when as a hedge, with Baur and McDermott (2010) extending this to more countries. They find that while gold acts on average as a hedge against equities it does not do so against bonds but that it can and does act as a safe haven for bonds as well as stocks, extending its usefulness to investors beyond equity investors.

There is of course a long and detailed research tradition examining gold as an inflation and dollar hedge, with major contributions from Fortune (1987), Moore (1990), Taylor (1998), Ghosh, E. J. Levin et al. (2004), Worthington and Pahlavani (2007), and more recently Bloise (2010) and Wang, Lee et al. (2010) on the hedging potential for gold against inflation, and by Johnson and Soenen (1997), Capie, Mills et al. (2005), Tully and Lucey (2007), Sjaastad (2008), Hammoudeh, Sari et al. (2009) and Sari, Hammoudeh et al. (2010) against the dollar. The general evidence is that while it can act as a useful diversifier this is a

longrun phenomena, and comes at the cost of increased shortrun volatility. There is also very significant evidence that these relationships are quite unstable over time with slow reversion to the norm.

Much work has also been undertaken by academic researchers on a wide variety of aspects of the operation, and efficiency of the gold market. Thus from Solt and Swanson (1981) through Diba and Grossman (1984), Ma and Sorensen (1988), Aggarwal and Soenen (1988), Lucey and Tully (2006), Aggarwal and Lucey (2007), and more recently Tully and Lucey (2007) and Lucey (2010) we find significant evidence that the gold market is not efficient, in the sense that there may be exploitable anomalous behaviour. At a more operational level Baker and Van-Tassel (1985), Tandon and Urich (1987), Ding, Granger et al. (1993), Byers and Peel (2001), Matsushita, Da Silva et al. (2006), Tully and Lucey (2007) and Khalifa, Miao et al. (2011) find that shocks to the gold price take a very long time to dissipate.

The relationships between the various precious metal markets have been examined by Ma (1985), Escribano and Granger (1998), Ciner (2001), Lucey and Tully (2006), and Hammoudeh, Sari et al. (2009), the general finding being that there is no strong evidence of long run stability in the relationship. The effect of macroeconomic information on gold has been examined by Tandon and Urich (1987), Christie-David, Chaudhry et al. (2000), Tully and Lucey (2007), Batten, Ciner et al. (2010) and Roache and Rossi (2010), who find two stylised facts: first, the dollar-gold relationship is strong, and second there is no consistent set of macroeconomic factors that appear to influence all precious metal markets in a similar manner. The relationship between gold and oil has recently attracted attention, with Baffes (2007), Sari, Hammoudeh et al. (2007), Cheng, Su et al. (2009), and Zhang and Wei (2010) finding mixed evidence as to the influence of oil on gold and vice versa

Overall therefore there is a rich, and rapidly growing body of research on the gold market. The research remains small scale, compared to the work on equities or bonds or FX, which is not representative of the importance of the precious metal markets actually or prospectively

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