

The Time Value Of Gold – Ignore It At Your Own Peril

by Tom Fischer (December 18, 2013)

After the recent publication of my piece “[Fekete's Arbitrage Fallacy](#)”, I had to endure the [wrath of the Fekete camp](#). However, a week later, I received an email by one of Fekete's followers, in which an actual argument regarding one of the underlying issues – me negating that backwardation in gold meant arbitrage – was made. Since this argument was flawed, and since it had been put to me before by another person, I analyze it in this essay. To make it brief, besides their shortcomings with regards to arbitrage theory, Fekete's “New Austrians” seem to ignore the time value of gold, which they should not. Furthermore, I repeat my recent warning to researchers, investors, and hobby economists, that not all is right in Fekete's theories.

In my article “[Faux Gold Arbitrage](#)” from early September, I had given a detailed explanation why backwardation in gold forward markets had nothing to do with arbitrage. In a follow-up titled “[Fekete's Arbitrage Fallacy](#)”, I pointed to the – as far as I can see – main source of this misconception, Antal E. Fekete, and explained the flaws in the definition and the use of the notion “arbitrage” in his writings. The need for this new article, for one, stems from an explanation why backwardation in gold supposedly meant arbitrage, that was given to me recently and that claims to use the standard definition of arbitrage – and not Fekete's own flawed one. Another reason is that, in this argument, the main intellectual fallacy – namely ignorance towards the time value of money and gold – is one, that I have not explicitly written about before.

The argument

The explanation that was put to me – paraphrased in my own words – goes as follows:

Backwardation in gold means that spot gold is more expensive than the forward price. Arbitrage is present when there is the opportunity to instantaneously buy low and sell high. Hence, assuming no counterparty risk, selling cash gold and buying the lower cost future simultaneously represents an arbitrage opportunity.

Ignoring transaction costs, it is correct that it constitutes an example of arbitrage if the same good can be bought at a certain price and be instantaneously sold at a higher price. However, the argument itself contains two major flaws:

1. An ounce of gold in the hand at present is obviously not the same good as the promise of the delivery of an ounce of gold in, say, one year's time – even if there is no default risk. For instance, the former ounce can be put into immediate use, but the latter one cannot.
2. While selling gold at spot generates immediate cash, the future contract will only be executed in a year's time. So, this is not an instance of an “instantaneous” overall positive cash flow, as the dollar payment is one year away.

Time value and time preference

Regarding the first flaw, the time value of money is an observable phenomenon (almost) everyone knows and has experienced personally: People, and hence markets, prefer cash in the hand over the same amount of cash promised in one year's time. Obviously, these also are not the same good. The existence of “time preference” cannot be ignored, as it is one of the main reasons for the existence of interest rates. Of course, time preferences and time value apply to gold as well, as gold is money with its own currency symbol, XAU. No one – central banks possibly excluded – would give

anyone else a gold loan for free, even if there was no counterparty risk. Why should they? This is why there is interest on gold loans, too: the gold lease rate. When counting our wealth in gold, one ounce in the hand today is worth more than one ounce promised in one year's time, even if there is no risk of default or failure to deliver. Regarding the second flaw, the argument also ignores the time value of dollars, since the trade from the future contract will only take place in one year's time. Unfortunately for the “New Austrians”, the first and the second mistake do not cancel each other out and make it right. Neither would discounting of the future dollar payment fix their argument, as the dollar profit would then simply equate the discounted risk-free gold interest that could have been made by lending out the ounce.

Correct definition, wrong application

Ignoring something as fundamental as time preference and time value, it is no wonder that Fekete's people applied the correct description of a particular instance of arbitrage to an inappropriate situation, and, subsequently, derived wrong conclusions about gold markets from it. As I explained in “[Faux Gold Arbitrage](#)”, the profit over the original ounce of gold of this supposed arbitrage strategy equals exactly the gold lease rate, which is gold's interest rate. Getting the prevailing interest rate in any currency is no arbitrage. Beating it is. In my piece “[Fekete's Arbitrage Fallacy](#)”, I had introduced arbitrage in any currency as “*an investment that outperforms the risk-free rate of interest in that currency*”. Due to their lack of knowledge in arbitrage theory, an anonymous commentator, but also the earlier mentioned “New Austrian”, had criticized this definition as wrong, as they only seemed to be familiar with the very narrow description of arbitrage used in the earlier stated argument (anonymous had paraphrased it as “*sale and purchase of similar assets in different markets to profit*”). However, there are more general and more accurate definitions of arbitrage that are used in financial research and teaching, which I will explain in the following.

Two definitions of arbitrage

Here are the verbal – and therefore, without the use of mathematics, still somewhat imprecise – descriptions of two typical definitions of arbitrage as used in academic finance:

1. An investment strategy that costs nothing at time zero, and that returns at least zero – and in a state with a non-zero probability strictly more than zero – at the future time horizon.
2. An investment strategy that outperforms the risk-free rate of interest, where “outperform” means “at least as good” and in at least one state of non-zero probability “strictly better”.

Taking a closer look

In both definitions, a future state of the world with non-zero probability (meaning: that state is a real possibility) and true outperformance is required. This is so, as it has to be avoided that the risk-free interest rate (as done by the Fekete camp), or simply “doing nothing”, is mistaken for an arbitrage. It is clear from both definitions that an arbitrage is always risk-free, as one can only gain something in the first definition, or outperform the risk free rate in the second definition. It is obvious why the first type can be called a “free lunch”, “money out of nothing”, or a “free lottery ticket”, and why the first and the second type can be described as being “too good to be true”. It is also obvious that the arbitrage definition used by the earlier mentioned critics of mine – the simultaneous purchase and sale of the same good at a lower, respectively higher price – simply is an instance of the presence of an arbitrage opportunity of the first type, as it generates a risk-less profit at present, with no obligations, and hence no risk of loss, in the future. This profit could immediately be invested at the risk-less rate, to finally create a strategy that costs nothing at the start and returns a guaranteed amount of money in the end. I had also mentioned in previous articles that arbitrage

does not depend on the currency or good (“numeraire”) that we count our wealth in.

Equivalence of the two definitions

Already in “[Fekete's Arbitrage Fallacy](#)”, I had explained why the second type implies the first type of arbitrage, however, they are indeed equivalent under the assumption that we can invest, but also borrow, at the risk-free rate. Here is why. If an arbitrage opportunity of the second type is present, an investor without any starting capital can borrow money at the risk-free rate and then outperform the loan's interest using the arbitrage strategy. At the end, she can pay back the loan, but she can also keep any profits she made above the risk-free return. Since there was a non-zero probability that she indeed had such a profit, she has hence realized a strategy that costs nothing at the start, but returns at least zero at the end, and with a positive probability more than zero. She therefore realized an arbitrage of the first type. Conversely, if there was an arbitrage opportunity of the first type present, and she had some starting capital, then she could simply put that capital in the risk-free investment and, additionally, realize the type one arbitrage. At the end, she would have achieved at least the risk-free return, but with a non-zero probability she would have earned money on top of it, thus she would have altogether obtained an arbitrage of the second type.

The backwardation “example” does not fit

I explained earlier why the backwardation-is-arbitrage “example” does not fit the instance of arbitrage, where a simultaneous purchase and sale of the same good happens. It obviously also does not fit the general definition of first type, as a starting capital of one ounce is needed. Further, it does not fit the second type either, as the strategy does not outperform gold's risk-free rate (the gold lease rate), but lands right on it. Hence, there is no arbitrage in gold backwardation. Should some readers doubt my definitions, I would refer them to any good textbook on financial mathematics to confirm what I wrote above. For the convenience of the reader, I point to these [lecture notes from the MIT Sloan School of Management](#) for another equivalent definition of arbitrage similar to our first one, where it says: “*Arbitrage is a feasible cash flow (generated by a trading strategy) which is non-negative in every state and positive with non-zero probability. We often describe arbitrage as a strategy with no initial investment, no risk of a loss, and positive expected profit.*” There are also these [lecture notes from the University of Illinois at Chicago](#) with a description similar to our second type of arbitrage, where it says: “*To arbitrage is to take simultaneous positions in different assets in a way that guarantees a riskless profit higher than the return on the riskless asset.*”

Further unsolicited advice to “New Austrians”

Fekete and his fellow “New Austrians” need to do their homework on arbitrage, and they need to stop spreading fallacies that have done damage and could do further damage to the sound money cause. Ignoring the time value of money, of gold or – in fact – of any good, will create sloppy “research” at best, and complete economic nonsense in the worst case scenario. Having laid out my case as well as I can without the use of mathematics, I hope that logic and reason will prevail.



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