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FUTURE OF GOLD AS AN INVESTMENT: DEVISING A PRICE PREDICTION ANALYSIS AND OUTLINING THE EFFECTS

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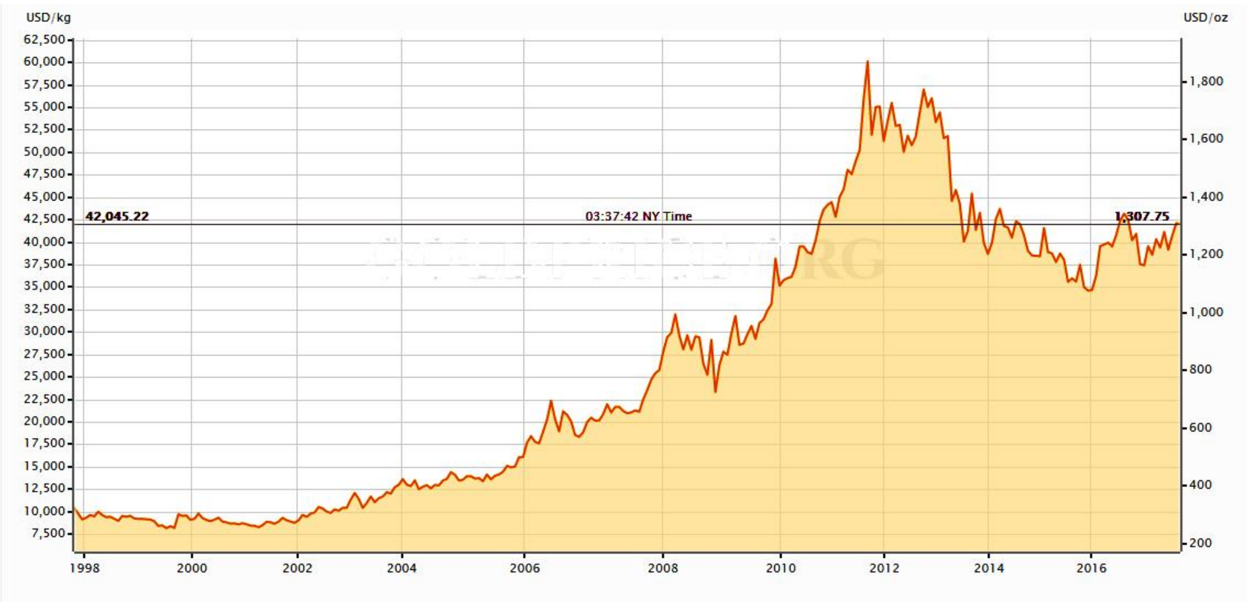
INTRODUCTION

Gold is one of the most expensive and finite metals. Since olden days gold has been used in the form of money, due to its rarity. Maybe this is the reason why gold is so heavily demanded in the world even now.

Gold is a finite resource that will exhaust one day. All the gold that has ever been mined in the entire human history is just 170,000 tones. It may seem a lot but it is equivalent to 3 ½ Olympic size swimming pools. But the uses of gold are way too many to fulfill if gold gets exhausted.

Even in today's world gold is valued because of its constant value. Hence, it is used for international transactions and other high long term payments. But if you look at the price of gold for the last few decades then you'll see that it is not that constant. The price of gold fluctuates at regular basis.



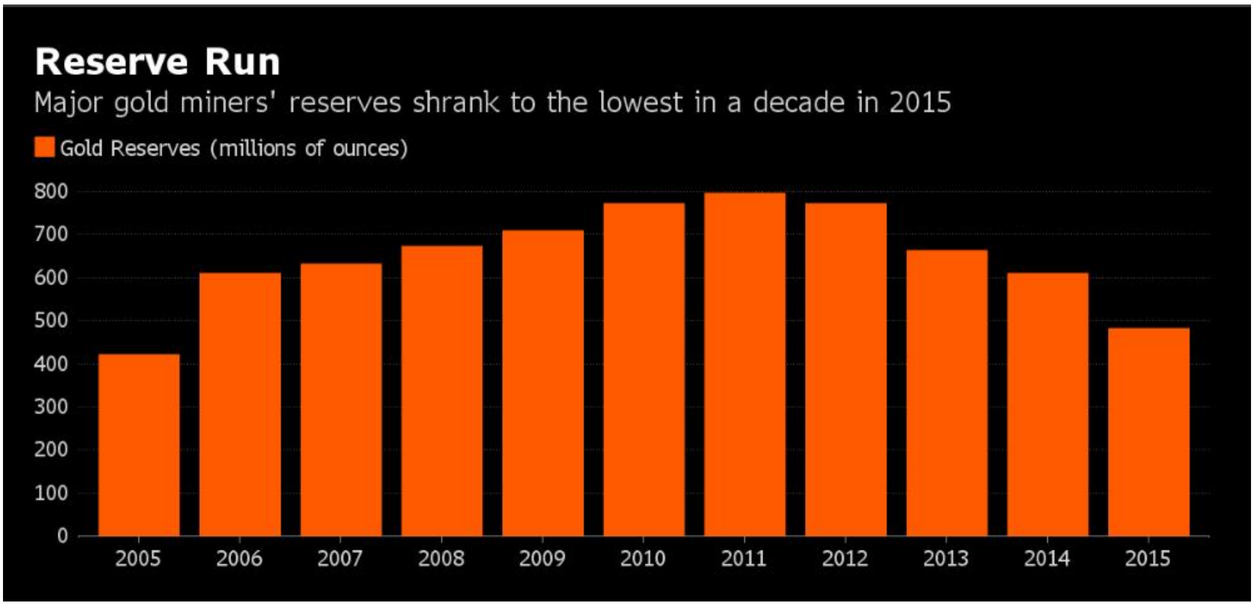
PRICE OF GOLD IN THE LAST TWO DECADES

The above graph shows the price of gold since the last decade. As it is seen that gold price is not that stable as it is believed so.

Gold mining is also a profitable business. But mining is a value industry it has never been or will be a growth industry. Top gold mining companies like Goldcorp say that mining gold is like farming, 'You always plough the most fertile area of land first'. So, gold is first mined from the land where the cost of mining is least, this way the companies will benefit greatest by mining gold at cheap prices and selling it at high price. In the recent years the capital expenditure has greatly reduced for gold miners.

FALL OF CAPITAL EXPENDITURE AND FUTURE PROFITABILITY GROWTH

A new cost disclosure structure i.e AISC (all-in sustaining costs) was introduced as an extension to cash costs by the World Gold Council in 2013. The AISC includes all the costs that incur i.e exploration to closure, in the mining cycle. The established 5 year average of AISC (all-in sustaining costs) is USD 1019, but right now the AISC is USD 817 which is lower than the establishes average and it has been declining for the past four sectors. The capital expenditure has shrunken extensively-21% drop over the previous year. In my opinion, the steady decline in AISC is due to the shrinking of capital expenditure. The gulf between gold mining costs on an AISC basis and gold prices has been widened by the price of gold environment in 2016, due to which the profitability of gold miners has been increased to an astonishing value of 80% on average over the previous quarters in 2016. Declining capital costs will ultimately result in lower AISC which will better the short term productivity of the gold miners but it will cause hindrance in the overall long term growth of the gold business. Therefore, it can be inferred that gold mining is a profitable business only till the time the expenditure of mining gold is less than the price of gold.



DYING GOLD RESERVES

It is said that all the mineable gold in the world will be mined till 2050 approx. One of the biggest gold producing countries, South Africa, has now been facing problems in the mining of gold. In 2002, 15% of world's gold was produced by South Africa and that percentage dropped to 12% in 2005, even though South Africa had produced 30% of the world's gold as recently as 1993. South Africa's gold exports were valued at 3.8 billion USD despite the decline in production. South Africa is the 3rd largest gold exporter. An estimation of world's gold resources by US Geological Survey showed that 50% of world's gold resources were held by South Africa. Statistics South Africa said in its environmental economics accounts aberege 2013, that the output levels show that in 38 years the proven South African gold reserves will be exhausted. A closer look at the rapidly decreasing importance of gold mining in South Africa shows that from a period of 2003 till 2013 the South African gold production has come down by 57%. This decline in the production of gold will soon be a global situation. Therefore, the gold mines will have to dig deeper in the earth to compensate the world's gold demand. But mining deeper will result in higher costs and capital expenditure. When this will happen then gold prices will skyrocket and people will try to sell their gold or physically acquire it for safety of their investments.

THE BULLION MARKET

The bullion market is the biggest gold market where 2,500 tons of gold transactions are held every single day. But when you buy gold in the bullion market, you don't actually get the physical state gold in your hand. Instead you get a document that shows how much gold you have purchased. GATA's board member and analyst Adrian Douglas calls it '**Paper Gold**'. The secretary of Gold Anti-Trust Committee (GATA) Mr. Chris Powell said that 80% of the gold in the world simply does not exist. This is due to the fact that the bullion market transacts gold more than it has. This statement is further backed by market analyst, Paul Mylchreest in 2009 in his report 'The Death of Gold Market'. In which he explains how the manipulation of the gold market is held and this manipulation goes unnoticed because of the opacity in the gold market. Based on the World Gold Council in the 2010 report "Liquidity in the Global Gold Market." "As the gold marketplace is largely otc, there is little transparency to the large number of transactions that take place every day. Given this opacity…".The OTC gold market, based in London, has not kept up in an era of greater transparency and regulatory oversight. The Bank of England has acknowledged that there is very little regulation. In a speech, "The Role of the Bank of England in the Gold Market", the Senior Manager of the BoE's Foreign Exchange Division, Graham Young, commented "I would like to say a word about the Bank's role in the regulation of the gold market in the UK. This is, in fact, a very limited one…The wholesale bullion market is considered to be an inter-professional market. This means that, in general, the principle of caveat emptor applies and the market is expected to be self-regulating."

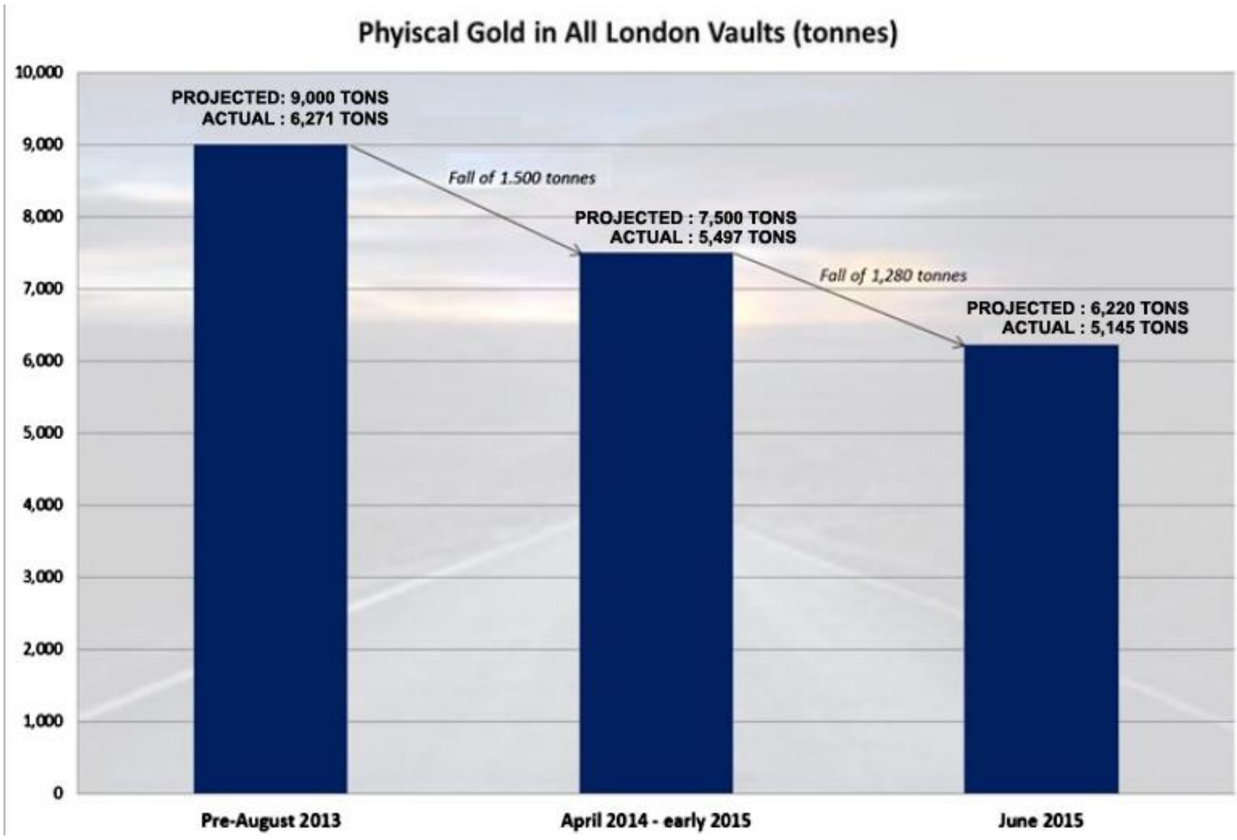
Using the data of London Bullion Market Association (LBMA) and Bank of England (BoE) on the gold storage in London vaults. The net United Kingdom gold export data which is known as 'float' the physical gold in London excluding gold owned with form of ETF's and by the central bank of England has started to decline.

	Quantity (TONNES)
Gold Storage in London (June 2015)	6220
Deducting: Gold held by London ETF's	1281
Gold storage by BoE	4510
Net export (June 2015)	450
Gold float (Physical/ Gold in London)	61 (Deficit)

Thus, The London Bullion Market is facing a drastic challenge from 1968, by which it has collapsed due to insufficient supply of physical gold.

Simply put the bullion market does not have enough gold to provide. Gold bullion stored in London has been on a declining trend. In early 2015, Bullion star noted that the LBMA's website contained the following statement on its vaulting page. "In total it is estimated that there are approximately 7,500 tonnes of gold held in London vaults, of which about three-quarters is stored in the Bank of England."Accepting that these are "ballpark" numbers, this statistic seems to have been accurate at some point between April 2014 and early 2015 since the same webpage contained the following comment in April 2014.

"In total there is approximately 9,000 tonnes of gold held in London vaults, of which about two-thirds is stored in the Bank of England." From further research, we have found references to the 9,000 tonnes gold figure as early as August 2013 in an article attributed to Goldcore on The Market Oracle website. However, it could relate to a still earlier point in time. Some commentators believe that it first appeared in 2011, but we can't be certain. However, the declining trend is clear.



The BoE provides an indication of the gold in its custody in its annual reports. The BoE's annual reports for 2013-15 reported gold held in custody by the bank on 28 February in each year as £210bn, £140bn and £130bn, respectively. Using the closing gold price and US$/£ rate, this translates into gold tonnages held at the BoE of approximately 6,271, 5,497 and 5,145 tonnes at the end of February 2013, 2014 and 2015, respectively. It is further said that every ounce of gold has 4 legal rightful owners. **Therefore, if gold exhausts and people ask for the physical value of their gold, the bullion market will not be able to provide it and would crash.**

So, summarizing what we know about the gold float in London.

- In June 2015, the total volume of gold in London vaults was 6,220 tonnes. It had been on a declining trend since mid-2013 or earlier.
- Of this 6,220 tonnes, about 5,145 tonnes or probably slightly less (because it had been declining) was held in the BoE's vault.
- The vast majority of gold in the Bank of England vault is owned by central banks and is, therefore, not available to the private market except for short-term loans/leases; and
- Subtracting 5,145 tonnes from 6,220 tonnes left approximately 1,075 tonnes of gold in non-Bank of England vaults, primarily JPMorgan Chase and HSBC, which dominate physical gold trading in London

So, when the gold mines run out in the future and people will start demanding the physical form of their gold from the bullion market. The market will not be able to provide the gold and would go bankrupt. This will create a high demand in gold and consequently the price of gold will skyrocket to stratospheric heights. This will create the situation of hyperinflation in the world economy. An estimate of the price of gold at that time of hyperinflation is predicted below using the price prediction formula.

PREDICTION OF FUTURE GOLD PRICE FORMULA

The appreciation in the price of gold explains the inflation in the price of gold. The price of gold can be explained with help of subsequent formula. The formula chooses a particular time period dependent function Y(T):

- P = Po * exp[Y(T)]

Where time function – Y(T)

The price of gold fluctuates annually. Therefore, Y(T) should be proportional to the particular time period.

- Y(T) = C * T (constant inflation)

Constant inflation means where there is almost no inflation. Inflation appreciates with time period. The rate of inflation also increases.

Therefore,

- Y(T) = exp[Y(T)]

Thus the price of gold should be written as

- P = Po * exp{ exp [Y(T)] }

The increasing Y(T) explains the increase in the inflation rate.

The appreciation of inflation rate accelerates quickly. This means the economy has to print more currency as inflation accelerates further.

Therefore, Y(T) itself increases geometrically.

Thus acceleration of inflation would be ;

- Y(T) = exp { C * (T - To) }

The beginning time To and acceleration factor ‘C’.

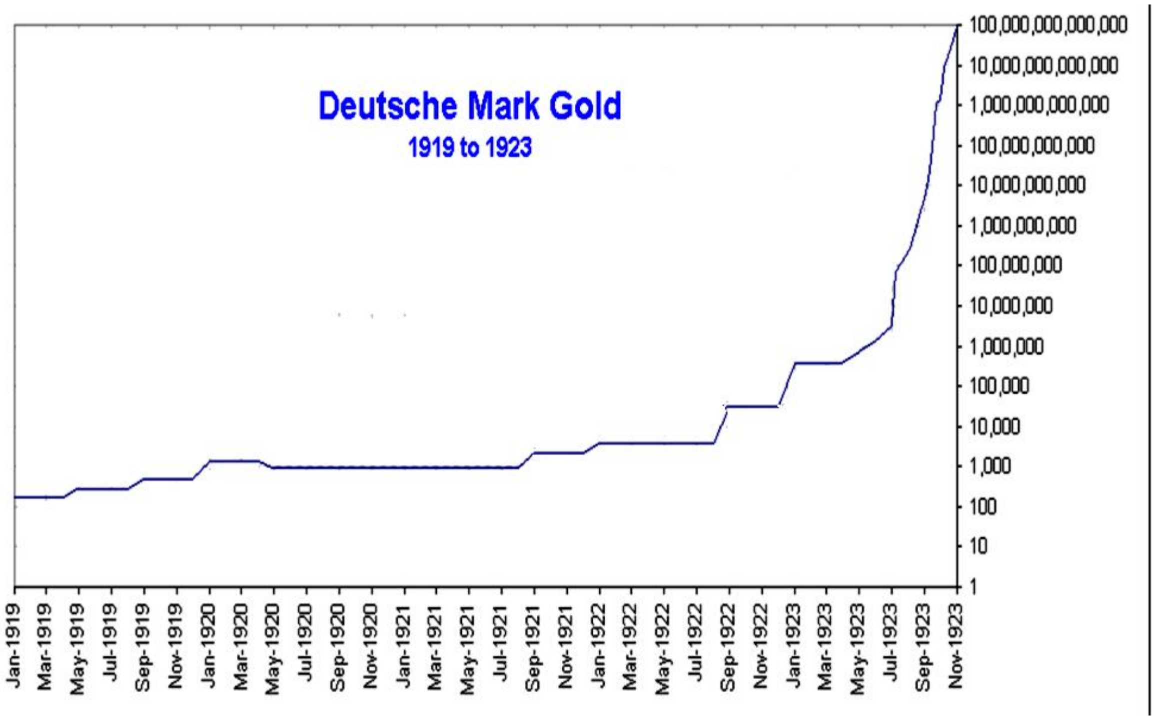
- P = Po * exp { exp [C * (T –To)] }

The constant C = 3/8 = 0.0375 gives the most accurate price match.

Therefore using this formula, we predicted that the price of gold in 2040 will be $3636656640548935800000000000000000000000. As far-fetched as it may seem, it is not. Similar cases of gold prices skyrocketing due to hyperinflation have been seen in the past too.

HYPERINFLATION AND GOLD PRICES IN THE PAST

This type of similar situation was faced by the Weimar Republic during the First World War. Gold prices rose from 170 Deutsche Marks in January 1919, only months following the conclusion of the First World War, to the astronomical sum of 87,000,000,000,000 Deutsche marks by the end of 1923.



Above chart vividly illustrates the staggering ascent of precious metals during the period of catastrophic hyperinflation which brought Weimar Germany to its knees in the early 1920's.

SUMMARY

Gold is one of the most precious metals. But gold is running out and there will a point in future where gold mining expenditure will be more than the price of gold, at this point gold mining will not be a profitable business. It is predicted that the South Africa gold mines will run out in 38 years. Due to this the prices will rise. Therefore, it can be a scenario in the future when gold prices will increase and if all the people simply asked for their gold. The banks and bullion market may not be able to provide it to any of them. They would simply go bankrupt. During such scenario, the price of gold will skyrocket and hyperinflation will prevail. As Chris Powell said, 'Gold price will reach such stratospheric height that there might not be enough zeros to put behind it.' I have also predicted an approx. price of gold during this hyperinflation using a gold price prediction formula. This case has also happened in the past during the First World War, when Weimar republic faced similar crises and their economy failed and gold prices were extremely high.

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