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The de facto Standard of Price and the Product Cost of Gold: Estimating the Depreciation Rate of the Dollar

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I. Objectives

Most economists and even Marxists have great doubts about the monetization of gold. In our modern credit money system there is no gold convertibility and hence there is no direct, visible link between a currency and gold. It leads us to the conclusion that gold is no longer money but rather an ordinary commodity.

However, once we consider money as a measure of value and as a means of payment, money ultimately needs to be tied to a product which has real value. In this paper, I will stress that gold is still proper money, that is, a measure of value. As long as gold is playing the role as a measure of value for money, it must work as the standard of price. In other words, a unit of gold must have a currency name, for instance, the Dollar, the Pound sterling and so on, The value of a currency, therefore, is not the "value" in the proper sense but some underlying gold volumes, which the currency represents.

The objective of this paper is to demonstrate the link between currency and gold through indirect means. First of all, to accomplish this, I'm going to point out how the national authorities are still currently holding gold, and then I will compare gold price movements with changes in consumer prices.

Secondly, we compute the de facto standard of price in Dollars, that is, how much gold a dollar represents, keeping in mind the logical relations between the market price of gold, the production cost of gold and gold as the standard of price. Then we compare the consequence of this computation to the consumer price index and the market price of gold. Finally I argue that gold underlies the so-called value of currency, even today. At the same time I am going to estimate how much the dollar has depreciated during the post Word War II era.

II. Gold Holdings of National Authorities and the Hoarding Money

The role of the credit system

Money is gold under the capitalist economy. But gold as such is actually the cost for the capital. Hence the capitalist system has expanded the credit system in order to economize the cost of gold as money. About saving circulation costs, Marx mentioned,

"The general remarks, which the credit system so far elicited from us, were the following:

> I. Its necessary development to effect the equalization of the rate of profit, or the movements of this equalization, upon which the entire capitalist production rests.
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> II. Reduction of the costs of circulation.
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> 1) One of the principal costs of circulation is money itself, being value in itself. It is economized through credit in three ways.
>
> A. By dropping away entirely in a great many transactions.
>
> B. By the accelerated circulation of the circulating medium. This corresponds in part with what is to be said under
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> 2). On the one hand, the acceleration is technical; *i.e.*, with the same magnitude and number of actual turnovers of commodities for consumption, a smaller quantity of money or money tokens performs the same service. This is bound up with the technique of banking. On the other hand, credit accelerates the velocity of the metamorphoses of commodities and thereby the velocity of money circulation.
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> C. Substitution of paper for gold money.
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> 2) Acceleration, by means of credit, of the individual phases of circulation or of the metamorphosis of commodities, later the metamorphosis of capital, and with it an acceleration of the process of reproduction in general. (On the other hand, credit helps to keep the acts of buying and selling longer apart and serves thereby as a basis for speculation.) Contraction of reserve funds, which may be viewed in two ways: as a reduction of the circulating medium, on the one hand, and, on the other, as a reduction of that part of capital which must always exist in the form of money" (Marx,1967c,pp.435-436).

Money which is saved, is the money cost or money itself as pure circulation cost. This cost arises from a social form of production process in which commodities are reproduced. Therefore, the direct inducement of individual capital doesn't cause this saving, but it is rather a social consequence, which the inevitable tendency of capital movements causes. It is simply that the credit system has accomplished this saving in the capitalist society. The credit system reduces both the money supply cost that is a money cost - a waste in circulation - as pure circulation costs, and the production cost of gold for money as a waste in production, saving moneys themselves, which are at the moment bound in circulation in unproductive forms. In sum, the capitalistic production system has a tendency to replace money as such circulation costs or a large part of them with valueless substitutes. It is also realized on the modern credit system.

Gold holding of authorities

Ultimately, "Countries in which the bourgeois form of production is developed to a certain extent, limit the hoards concentrated in the strong rooms of the banks to the minimum required for the proper performance of their peculiar functions" (Marx, 1967a,p.144). Furthermore, nowadays gold doesn't seem to present itself visibly as money in domestic and international aspects. But authorities in the world are holding gold as an important foreign reserve. We can at least say that gold is still playing a role only as the hoardings or the universal money of national authorities.

The IMF pointed out in a recent fact sheet, "The Second Amendment contained a number of provisions that, in combination, were intended to achieve a gradual reduction of the role of gold in the international monetary system and in the IMF. However, gold is still an important asset in the reserve holdings of a number of countries, and the IMF remains one of the largest official holders of gold in the world"(IMF, 2000). And the World Gold Council also expressed in its policy statement, "Monetary authorities have long held gold in their reserves. Today their stocks amount to some 900 million ounces - very similar to their holdings 50 years ago. It is sometimes suggested that maintaining such holdings is inefficient in comparison to foreign exchange. However, there are good reasons for countries continuing to hold gold as part of their reserves"(from the homepage of the World Gold Council).

Table 1 shows how much gold all authorities in the world have held since the World War II and it is also evidence supporting the WGC statement. Moreover, both the amount of gold which each country has held and each country's gold shares have also been stable for a long time (Table 2).

On the other hand, shares of gold in reserve, whether for the whole world or each country has decreased (Figure 1). But as Figure 2 shows, this trend appears to move with the gold market price in sync. Accordingly, this decrease is due to gold prices falling after1980, and doesn't mean the demonetization of gold. Gold is occupying the important position as a reserve asset, that is, a hoarding.

Rather, we must pay attention to the fact that the US has reduced the gold share in their foreign reserve slower than other countries. Accordingly, the US relative dependence on gold in the reserve compared to the rest of the world has (Figure 3). During the reign of President

Reagan supply-siders asserted the reversion to the gold standard (Market-determined Dollar Standard), which means the dollar standard backed up by gold reserves. Now the US might get more possibility to found that system from point of gold's weight in the foreign reserve.

Above all, we can point out that gold still plays the role of hoarding money among national authorities. Then we can be fairly certain that gold is still money or has a monetary feature. Put in other words, actual gold has a property suitable for money and is working as money. If that is the case, We could get its evidences in the price trend of the gold market. The next step is to do that.

Gold prices

The first function of money is the measure of value. This " is to supply commodities with the material for the expression of their values, or their values as magnitudes of the same denomination, qualitatively equal, and quantitatively comparable" (Marx ,1967a,p.97). The expression of the value of a commodity in money (that is gold), which is the measure of value, is its money-form or price. In this sense, "money itself has no price," because money (that is gold) can't express its own value by itself. " We have only to read the quotations of a price-list backwards, to find the magnitude of the value of money expressed in all sorts of commodities"(Marx ,1967a,p.98).

But actually gold has its own market price despite it is playing the role of the hoarding money as mentioned above. Then, what is the market price of gold? As gold is still money or has a monetary feature, we cannot say at all that the market price is the expression of gold's value. It follows that the gold market price must be nothing but the name of money given to a unit of gold. Namely, it is the reciprocal number of the standard of price.

In the price form of commodity, the values of commodities are "changed in imagination into so many different quantities of gold. Hence, in spite of the confusing variety of the commodities themselves, their values become magnitudes of the same denomination, gold-magnitudes. They are now capable of being compared with each other and measured, and the want becomes technically felt of comparing them with some fixed quantity of gold as a unit measure. This unit, by subsequent division into aliquot parts, becomes itself the standard of scale"(Marx ,1967a,p.100). Money must also serve as the standard of price.

As the gold price is the reciprocal number of the standard of price, as long as the standard of price is fixed, the gold market price is also stable. Even though the value of gold changes, if the standard of price is settled, the gold market price must be fixed. And when the standard of price fluctuates, the gold market price also moves with that fluctuation.

Marx described about the dissimilarity between the measure of value and the standard of price;

> "As measure of value, and as standard of price, money has two entirely distinct functions to perform. It is the measure of value inasmuch as it is the socially recognized incarnation of human labour; it is the standard of price inasmuch as it is a fixed weight of metal. As the measure of value it serves to convert the values of all the manifold commodities into prices, into imaginary quantities of gold; as the standard of price it measures those quantities of gold. The measure of values measures commodities considered as values; the standard of price measures, on the contrary, quantities of gold by the weight of another. In order to make gold a standard of price, a certain weight must be fixed upon as the unit. In this case, as in all cases of measuring quantities of the same denomination, the establishment of an unvarying unit of measure is all-important. Hence, the less the unit is subject to variation, so much the better does the standard of price fulfill its office. But only in so far as it its itself a product of labour, and, therefore, potentially variable in value, can gold serve as a measure of value"(Marx,1967a, pp.100-101).

What is important here is “the establishment of an unvarying unit of measure” and “the less the unit is subject to variation, so much the better does the standard off price fulfill its office” as the above quotation mentioned. This proposition should be carried out both institutionally and under economic law.

The actual settlement of the gold market price under the unconvertible system depends on conditions of supply and demand because the government abandons converting gold and currency. Accordingly the gold market price should be affected also by factors except the standard of price, for instance, speculations. Thus we see that in reality gold has two characters - monetary and commercial-. But as long as gold is money, the market must tend to make the gold market price close to the reciprocal number of the proper standard of price. In other words, the actual gold price goes up and down in relation to the reciprocal number of standard of price.

Hereafter, I would like to observe several data points in order to confirm this point. First of all, I will compare the trend of gold market price with changes in the Consumer Price Index after 1973 (Figure 4). Figure 4 shows us that there is an obvious turning point of the trend of gold market price in the 1980s. After the 80s the gold market price has converged with the CPI.

In the 70s countries in the world suffered from the disorder of the international monetary system and a threat of inflation. Under those conditions, speculative capital attacked the gold market so that its price was fluctuating violently. However after the 80s, countries in the world, especially developed countries could manage to get their inflation in check. Figure 5 shows the changing rate to previous years in the gold market price and the CPI. This data also gives us evidence of the trend mentioned above.

These data seems to suggest that the ‘70s fluctuation in gold price was speculative and had nothing to do with the price level, that is, the de fact standard of price. At the same time, it is likely to say that after the 80s the gold price movement has been close to the de fact standard of price. Now we shall now look carefully into these points. To begin with, we shall observe the ‘70s and the ‘80s separately. Figure 6 shows the changing rate of monthly CPI and the monthly gold market price to the previous year, and the long term and short term interest rate during the ‘70s. I put both the CPI and the interest rate on the left axis, and the gold market price on the right axis. Figure 7 shows the same quarterly data during the ‘80s

In Figure 6, the gold market price seemed to have similar fluctuation as did also not only the interest rate but also prices in the ‘70s. Countries in the world in the ‘70s, especially after two oil crises, were exposed to the menace of inflation so that interest rates almost always included inflation rate. This fact suggests that interest rates formed about the same wave as the price movement. In the same way, what I must understand from the fact that in those days gold market made its price wave like interest rates and prices, is that gold still played still the role of money and there was a tendency for gold to fulfill the de facto standard of price. Indeed the actual gold market price seesawed much more widely than prices and interest rates, but it must be noted that there were “excess Dollars” and speculative mentality coursed from the chaos of the international monetary system, that is, fragility in international financial aspects during the ‘70s.

In the’80s industrial countries, of course the US which is the key currency country, came out well to prevent their inflation. As the result, the gold market price began to keep pace with the price fluctuation. On the other hand, the gold market price has moved in the opposite direction to interest rates since the ‘80s. There is a negative correlation between the gold price and interest rates.

Shibata who belongs to the Marubeni Corporation, accepts that gold has both commercial and monetary characters so that it has lost its speculative allure under the recent market condition in which the stock market and the bond market in the US are booming. Kishida, an economist of the Mitsui & Co. Ltd, also replies to Shibata that gold seems to be the most ordinary commodity, given that most commodities in dollar should be inversely proportional to the value of the dollar (Eonomist in Japan,1996).

The point I wish to emphasize is that the features of gold as "the commodity" which they catch sight of there can be explained logically only by presupposing gold as money. On this point, moreover, it is especially noteworthy that the gold market price has quieted down to about the same price level as the '80s. Gold worked well both as measure of value and as hoarding money in a kind of hedge during the inflation era. Then, in the disinflation era, gold functioned as the hoarding money and has also had an arbitrated relation with the interest-bearing capital at the same time. What matters is rather that even in such fluctuations gold price has a tendency to keep up with the general price movement. This should mean that gold has intended to have a certain relation to the currency as the standard of price or the unit.

III. The de facto standard of price and the product cost of gold

The price of an ordinary commodity is of expressing its value in gold volumes. When gold has the standard of price, a price system in a unique currency name comes into existence. Therefore we can make the following formula that shows the price of an ordinary commodity.

F---- (1)

What I wish you to notice here is that "the gold price per unit" is that the reciprocal number of the standard of price. In other words, Gold doesn't have the price in the proper meaning at all. If a gold price were the expression of its value, it is a kind of tautology and doesn't make sense. Therefore it is the case that the gold price is the standard of price.

Well, when we accept the above logic, we can figure the purchasing power of gold in the following formula.

F--------- (2)

F--------- (3)

If we express the formula (3) in the index, then we can make the following formula.

F--------- (4)

Consequently, what is the index of purchasing power of gold is the ratio between the fluctuation of the gold value and the fluctuation of the ordinary commodity value, apart from the problem that the price fluctuates away from its value with the business cycle.

Roy W. Jastram calculated the purchasing power index of gold both for about 400 years (1560~1976) in England and for about 170 years (1800~1976) in the USA (The Golden Constant, John Wiley & Sons,1977). According to his estimation the long term trend in the index of the purchasing power of gold remained at 100 during the gold standard before 1930. This fact is evidence that the fluctuation of gold value kept pace with the fluctuation of the commodity value as the formula (4) mentioned above.

We have to observe the problem of the inconvertible system in turn.

The standard of price isn't fixed under the inconvertible system. When an excess currency circulates, the standard of price is virtually devaluated. Thereby the formula of the price of the ordinary commodity should be the followings.

F----- (5)

Under the inconvertible system the market price of gold is not always consistent with the de facto standard of price. Therefore the index of the purchasing power of gold should be the formula (6).

F------(6)

A point to notice in this formula is that "the price of a gold" on the denominator is quite different from "the price of a gold" on the numerator in this formula. Here we should consider the relation between "the value index of commodity/the value index of a gold" in the denominator of the formula (6) under the inconvertible system. But we cannot confirm this relation as such. Instead we try to compare the increasing rate of productivity in gold production with the increasing rate of the productivity in the ordinary commodity.

Socialism Study Group in West Germany (SOST; Sozialistischen Studiengruppen) computed the labor productivity in the gold industry in South Africa during 1940 and 1976 by the outputs of gold and total labor volumes in gold production (Gold, Preise, Inflation, VSA Verlag,1979). Now we compare this data with the index of the labor productivity in manufacturing industries in both the US and West Germany. Then we can see that the long term trend of the productivity in the gold industry roughly kept pace with one of the productivity in manufacturing industries. Therefore "the value index of commodity/the value index of a gold" should be close to 1 in a rough-and-ready manner. Consequently we can accept the following formula under the inconvertible system.

F------(7)

According to Jastram the index of purchasing power of gold became 100 between 1972 and 1973. In this period the gold market price should coincide with the reciprocal of the de facto standard of price. As the gold market price was approximately $70 in that period, $70 should be the reciprocal of the de facto standard of price. That is, we can suppose that the Dollar depreciated up to a half of $1=1/35 oz. in 1949.

Historical Statistics of the United States by the U.S. Department of Commerce reads that the price index at 1946 was 58.5 and at 1971 was 121.3, when we let 1967 be 100. We could point out this data could correlate with our logical hypothesis.

From now I would like to consider the relation between the cost price of gold (the output cost of gold) and the standard of price.

The cost price of gold is the price in gold volumes that represent total values of both the constant capital and the variable capital, which are invested in gold production. Therefore the output cost of a unit of gold can be formularized in the following:

F -----(8)

Since the value of gold is the individual value in the marginal mine of gold (C+V+S), the cost price of a gold in the marginal mine can be represented in the following formula.

F------(9)

The price of a gold in the formula (9) is the official gold price (the reciprocal of the standard of price) under the convertible system, and on the other hand, under the inconvertible system it is the gold price as the reciprocal of the de facto standard of price.

Now let the ratio of (C+V)/(C+V+M) in the gold industry be the letter *r*, then the cost price of a gold is the value which the price of gold *r* makes. The cost price of gold is nothing but the name of money given to *r* units of gold, because the price of gold is the name of money given to a unit of gold.

We can compute the ratio *r* by the cost price in the marginal mine and the official price of gold, because the official standard of price is equal to the de facto standard of price under the convertible system. But under the inconvertible system the official standard of price isn't always equal to the de facto standard of price

Therefore I try to calculate the ratio *r* with the data of the cost of gold mines before the double gold price system (1968) when the gold market price could approximately be in keeping with the official gold price. Moreover I have no chance but to use the data of the average cost in the gold mine (though strictly speaking, it must be the cost in the marginal mine theoretically).

The official gold price in South Africa was 25 Rand per ounce during 1949 and 1971/12. That is, an ounce of gold =25 Rand = $35. Next, I calculate a weighted average in the output cost of gold according to IMF (Staff paper, Vol. XV, No3,1968, p.483, Chart 6). It was about 17.1 Rand in 1961 and about 16.6 Rand in 1965. Eventually I got 0.68 in 1961 and 0.66 in 1965 as the ratio *r*.

I tried in turn the same calculation according to the data of the Wirtwatersland gold mine in South Africa in 1967 (Rae Weston, Gold: A World Survey, 1983, p.146) which showed that 30 million ounces of gold were produced as a whole and its average cost was $21 per ounce. Eventually we could get 0.6 as *r*.

Actually it is difficult to get the exact value, as we should put a couple of premises into this attempt. But here I would like to consider the ratio *r* to be approximately between 0.6 and 0.7. Then the next formula could stand up.

F---------------------------(10)

Consequently the cost of gold production has a great significance as the de facto standard of price.

Btw, the value of *r*, that is, the value of (C+V)/(C+V+M) in the gold industry should be stable as long as the organic composition of capital has never changed. About the organic composition of capital in the gold industry of the South Africa, SOST claimed,

> "According to our rough estimate using the Annual Statistics of Business in gold mines of South Africa, the ratio between the died labor (C) and the live labor (V+M) in gold as the end product hasn't changed so much during the considered period (1940~75)" (Sozialistischen Studiengruppen (Hrsg), Gold, Preise, Inflation, VSA Verlag, 1979, S.24).

Accordingly, the ratio *r* could be stable in general.

Now that I know the production costs in several gold mines of South Africa in 1981 by a material, I can estimate the rough average cost of gold production as about $242. When I put this value into the formula (10), I can get the value between $345 and $400. I can consider this value as the reciprocal of the de facto standard of price in 1981.

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