

Whither Gold?

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Introduction

The year 1971 was a milestone in the history of money and credit. Previously, in the world's most developed countries, money (and hence credit) was tied to a positive value: the value of a well-defined quantity of a good of well-defined quality. In 1971 this tie was cut. Ever since, money has been tied not to positive but to negative values -- the value of debt instruments.

This innovation has had two immediate consequences, both of which are pointedly ignored in the technical and scholarly literature on the subject: (1) the power to reduce the world's total debt in the course of normal payments has been lost: total indebtedness can now be reduced only through default or through currency depreciation; (2) countries have lost the option to balance their current accounts with the rest of the world: each country has to cope with unending deficits.

The exception is a couple of countries that have been coerced into holding the debt of the world, upon which the burden of default and currency depreciation will eventually fall: Germany and Japan. As a result of these two features the world's monetary system, which previously was patterned on the model of an anchor, is now patterned on the model of a weather vane. As the tide of unpaid and unpayable debt grows, so the value of money ebbs.

That we have lost the facility to reduce the world's total indebtedness without resorting to default or monetary depreciation becomes clear at once if we consider the fact that a debt of x dollars can no longer be liquidated. If it is paid off by a check, the debt is merely transferred to the bank on which the check is drawn. The situation is no better if it is paid off by handing over x dollars in Federal Reserve notes, ostensibly the ultimate means of payment. In this case the debt is transferred to the U.S. Treasury, the ultimate guarantor of these liabilities. But substituting one debtor for another is not the same as liquidating the debt. The very notion of 'debt maturity' has lost all reasonable meaning previously attached to it. At maturity the creditor is coerced into extending his original credit plus accrued interest in the form of new credits, usually on inferior terms. It is true that the option to consume his savings remains open to him -- but is it not a strange monetary system, to say the least, which forces the savers to consume their savings whenever they are dissatisfied with the quality of available debt instruments, or with the terms on which they are offered?

Mainstream economic orthodoxy teaches that a depreciating currency is a boon to the country, and a valid tool in the hands of the government to increase competitiveness and thus to reduce or to eliminate the current account deficit. A debased currency makes the country an attractive place for foreigners in which to buy and an unattractive place in which to sell. Exports are boosted, imports curtailed; thus the deficit is narrowed.

This is one of the most pernicious doctrines ever concocted -- as demonstrated both by theory and practice. Deliberate currency depreciation puts the country at a clear disadvantage, causing its terms of trade to deteriorate. As all items for export have imported components, no one can maintain for long low export prices in the face of ever rising cost of imports. This theoretical remark is fully borne out by history as shown, for example, by the experience of the United States during the past 25 years.

As the American government has been crying down the (yen) value of the dollar, the terms of trade of the U.S. *vis-a-vis* Japan is greatly undermined, creating an unending stream of trade deficits which the Japanese are obliged to finance. To be sure, the Japanese are also depreciating the value of their currency. But as long as they do it at a lower rate, which is what the Americans demand that they do, Japanese trade surpluses will continue unabated.

The grievous faults of the prevailing monetary arrangements raise serious questions about the regime's stability and durability. The governments are busily constructing an enormous Debt Tower of Babel, apparently without giving the slightest thought to the wisdom or safety of their construction. The year 1996 marks the twenty-fifth anniversary of the Brave New World of reckless debt breeding. A quarter of a century is not a great length of time in the course of history. But it might be sufficiently long to warrant an examination of this deliberate policy of heaping more debt upon unpaid and unpayable debts.

Has the policy of unbridled credit expansion, blindly embraced by the governments of the world some 25 years ago, served the people well? Or do the negative results of this experiment call for a more careful examination of the principles involved than hitherto provided? The question is not raised, and the anniversary is being ignored by the opinion-makers. A great deal of obfuscation surrounds the issue.

Officially, the topic is off limits to scholarship and research. Anyone who dares to question the legitimacy of the world's present monetary arrangements, or challenges the doctrine that the regime of irredeemable currency represents 'progress' over 'obsolete' metallic monetary regimes, is browbeaten; his reward is official ostracism. Professional standing is reserved for those who pay lip service to the dogma that 'emancipation' from a metallic monetary standard was a progressive, even necessary, historical development.

This essay attempts to defy the odds. It intends to show that the essence of the gold standard is not to be found in its ability to stabilize prices (that is neither desirable nor possible). It is to be found in its ability to stabilize the interest-rate structure at the lowest

level compatible with economic conditions, and thereby to keep debt within limits. In the absence of a gold standard, efforts to keep the rate of interest under control are doomed.

Rising and gyrating interest rates bring about a wholesale destruction of values, as can already be seen in the bond and real estate markets (not to mention the Japanese stock market). Further delay in putting the cancer-fighting gold corpuscles back into the monetary bloodstream may bring about a credit collapse and chaotic conditions in the world economy, eclipsing the memory of the Great Depression.

1. A Brief History of Money

It was Carl Menger who in his epoch-making book *Grundsätze der Volkswirtschaftslehre* (first published in 1871) elucidated the origin of money in terms of an evolution from direct to indirect exchange. Menger introduced the Principle of Declining Marginal Utility asserting that anybody acquiring subsequent units of the same economic good will earmark the last unit for uses with lower priorities than those assigned to previously acquired units.

This is paraphrased by saying that the marginal utility of an economic good is declining. It is possible to rank goods according to the rate of decline in marginal utility. The economic good with a marginal utility declining more slowly than that of any other is destined to become money.

Constant marginal utility

In fact, the decline in the marginal utility of money is so slow that it may be considered negligible, so that the marginal utility of money is constant. In 355 BC a keen observer of antiquity, Xenophon, in his work *Ways and Means, a Pamphlet on the Revenues of Athens*, described what we herein call the constant marginal utility of money in these words:

"Of the monetary metal, no one ever possessed so much that he was forced to cry "enough!" On the contrary, if ever anybody does become possessed of an immoderate amount, he finds as much pleasure in digging a hole in the ground and hoarding it as in the actual employment of it. And, from a wider point of view, when the state is prosperous, there is nothing that people so much desire as money. Men want money to expend on beautiful armor, fine horses, houses, and sumptuous paraphernalia of all sorts. Women betake themselves to expensive apparel and ornaments. Or, when the states are sick, either through barrenness of corn and other fruits or through war, the demand for current coin is even more imperative (whilst the ground lies unproductive) to pay for necessities or for military aid. And if it be asserted that another metal is after all just as useful as the monetary metal, without gainsaying the proposition I may note this fact, that with a sudden influx of the former, its value is depreciated, while causing at the same time a rise in the value of the latter. "

The practical significance of the constant marginal utility of money can best be seen through examples. The government may open the Mint for the free and unlimited coinage of a certain metal only if the marginal utility of that metal is constant. Equivalently, the Central Bank may post fixed bid/asked prices for an economic good only if it has constant marginal utility. This quality alone will guarantee an orderly and controlled flow of the metal into circulation in the form of coined money, and will make the orderly exchange of coined money for credit instruments possible. If the government violates this principle, then the Mint and the Central Bank will be buried under an avalanche of inferior metal.

This in fact happened in the 1870's. People continued to overwhelm the mints and central banks of the Latin Monetary Union with silver, while draining away their gold. In the end the governments threw in the towel, closed the mints to silver, and instructed their central banks to stop the deluge by lowering the price of silver in terms of gold. In doing so the governments were eating their words, as this effectively demonetized silver -- something they had said they would never do. The demise of bimetallism is an interesting episode in monetary history, yet it is not well understood by authors. Ludwig von Mises writes in *Human Action*:

In the second part of the nineteenth century more and more governments deliberately turned toward the demonetization of silver . . . The important thing to be remembered is that with every sort of money, demonetization -- i.e., the abandonment of its use as a medium of exchange -- must result in a serious fall of its exchange value. What this practically means has become manifest when in the last ninety years the use of silver as commodity money has been progressively restricted (*op.cit.*, PP 428-9).

This appears to confuse cause and effect. In reality, the demonetization of silver was not the cause but the effect of the decline in the relative value of silver. Moreover, it was not the governments but the markets that did the demonetizing. Elsewhere in the same book Mises confirms this:

"The emergence of the gold standard was the manifestation of a crushing defeat of the governments and their cherished doctrines. In the seventeenth century the rates at which the English government tariffed the coins overvalued the [gold] guinea with regard to silver and thus made the silver coins disappear. Only those silver coins which were much worn by usage or in any other way defaced or reduced in weight remained in current use; it did not pay to export and to sell them on the bullion market.

Thus England got the gold standard against the intention of its government. Only much later [did] the laws make the *de facto* gold standard a *de jure* standard. The government abandoned further fruitless attempts to pump silver into the market and minted silver only as subsidiary coins with a limited legal tender power Later in the course of the nineteenth century the double standard resulted in a similar way in France and in the other countries of the Latin Monetary Union in the emergence of *de facto* gold monometallism. When the drop in the price of silver in the later seventies would automatically have effected the replacement of the *de facto* gold standard by the *de facto*

silver standard, these governments suspended the [unlimited free] coinage of silver in order to preserve the gold standard (*op.cit.*,pp 471-2). "

It would be more accurate to allude to government efforts "to pump silver *back* into the market" -- silver that people were dumping at the doorstep of the mints. It was, of course, not any affection for gold, nor lack of affection for silver, that caused governments to abandon the latter. Governments were silverite by instinct.

Moreover, bimetallism had been a lucrative, if illegitimate, source of revenues to them. They fought a fierce rear-guard action. But at one point they realized that the battle to save bimetallism had been lost as silver no longer had the necessary characteristic of a monetary metal: it no longer had constant marginal utility. Further resistance to market forces would have meant unsustainable losses. The lesson from this historical episode is that the hands of the governments can be forced by the people. It was the market that brought about the *de facto* demonetization of silver in the 19th century. The writing is on the wall that it may bring about the demonetization of irredeemable currencies in the 21st.

The fixed bid/asked prices the Central Bank may post for the monetary metal, gold, are also called the lower/upper gold points, respectively. These points are not determined arbitrarily; they are, in fact, market prices. The upper gold point is closely related to the *gold export point* above which the standard gold dollar is worth more in melted than in coined form (making it profitable to export it); the lower gold point is closely related to the *gold import point* below which gold is worth more in coined than in bullion form (making it profitable to deliver imported gold to the Mint -- which explains how these points earn their names).

The most important consequence of constant marginal utility is the fact that the utility of money is proportional to its quantity, and money is the only economic good with this property. This fact was instrumental in the disappearance of barter. Because of declining marginal utility, barter involves losses. One can minimize these losses by bartering for goods with more slowly declining marginal utility. Clearly, the best terms of trade are reserved for those who barter for (with) the good having constant marginal utility.

It is a misunderstanding to suggest, as Ludwig von Mises does (*op. cit.*, p 404) that the concept of constant marginal utility is contradictory because it is synonymous with infinite demand. Rather, it is the concept of demand that is contradictory, and should not be used in deductive science except, perhaps, in a metaphorical sense. The appropriate interpretation of constant marginal utility is this: people are willing to accept money in discharge of debt in unlimited quantities, not because they want to hold wealth in the form of unlimited quantities of money, but because they understand that the way to minimize the inevitable losses inherent in any exchange is to execute it through the agency of money.

Under the gold standard *all* the gold above ground is deemed to be on offer for sale, as it is deemed to be in demand. The value of the unit weight of gold is independent of the

number of available units. By contrast, consider the value of the unit weight of iron. Certainly not all the iron above ground is on offer for sale. The first unit weight of iron has a much greater utility to its owner than the one acquired last. The value of iron is determined by its declining marginal utility, making it depend on the quantity available. The difference in the behavior of the two metals in exchange is obvious.

Menger introduced the concept of marketability of goods (*Absatzfähigkeit*) in order to elucidate the emergence of indirect exchange. A commodity with a lower rate of decline in its marginal utility is more marketable than another with a higher rate. The monetary commodity is the most marketable good, preferred by all market participants, even if they have already satisfied all their personal needs for it. 'Most marketable' is synonymous to 'having constant marginal utility'. There is no need to quibble about the use of the word 'constant' in this context.

The lowest rate of decline will result in a marginal utility that is constant for all practical purposes, as the marketability of the commodity with that property will 'snowball' in time. The first gold coin received by an individual certainly has the same utility to him as the last: he can exchange both coins on exactly the same terms.

The evolution of the monetary standard as the economic good with constant marginal utility or highest marketability is the crowning event in the transition from direct to indirect exchange, replacing the barter system with the monetary economy. The subjective theory of value, which explains price formation as a convergence phenomenon (as opposed to the quantity theory of money that explains price formation as an equilibrium phenomenon) is a consequence of that evolution.

Convergence is a process, while equilibrium is state. The market is narrowing the price range within which transactions take place, in response to the activities of arbitrageurs. This analysis of price formation shows how the market process ultimately translates marginal utilities into market prices.

The rise of indirect exchange has also made it possible for the first time to distinguish between buyers and sellers. Under barter no such distinction could be made. The emergence of money separates the buyers who give up and the sellers who expect to receive the monetary commodity in the exchange. It is precisely his command over the monetary commodity that puts the buyer in charge -- making the sellers his servants. His control over the monetary commodity gives the buyer a choice. He can buy, or he can refrain from buying. Sellers don't have the luxury of choice. If they don't sell, then they admit to failure and have to drop out of the rank of sellers. It is interesting to note that the regime of irredeemable currency attempts to abolish this prerogative. It puts pressure on the buyers to buy indiscriminately, before their buying power is further eroded by currency depreciation.

The role of plunder

There is a certain confusion prevailing among authors in regard to the objective *versus* subjective nature of the value of money. It cannot be denied that all economic phenomena, including the value of money, find their ultimate explanation in the subjective value-judgments of individuals.

However, through a long chain of causation taking place over very long periods of time, a cumulative economic process has lent an objective character to the value of the monetary commodities. The value of a monetary commodity is the result of an evolution that took millennia to complete. Consumers, producers, and other actors in the economic drama tend to keep sizeable stores of the monetary commodity on hand (partly because constant marginal utility makes money an ideal place where to park one's assets).

The cumulative effect of this causes the combined stocks of the dispersed monetary metal to reach a singularly high level, relative to the rate of annual production. As a consequence, the stocks-to-flows ratio (total stocks divided by annual production) eventually becomes a high multiple, quite unheard-of for other commodities. In the case of gold this ratio has been estimated to be 50. This means that the total world stock of gold is about 50 years' production at present rates of output. The same ratio for a non-monetary commodity is usually a small fraction, at any rate, no higher than 1. The ratio 1 may be reached in case of staple food items harvested once a year, at harvest-time. This means that society is not willing to carry in store more than a few weeks' or months' supply of most economic goods. The only exceptions are the monetary commodities.

As the stocks-to-flows ratio for the monetary metal is so high, the likelihood of an upstart commodity displacing it is remote. In order to bring about such a change it would be necessary to accumulate stocks -- a process that might take hundreds of years. (The displacement of silver by gold in the second half of the 19th century was, in effect, a case of monometallism replacing bimetallism -- not a case of one monetary commodity replacing another, as explained above.)

Thus the hegemony of the monetary metal, once established, can hardly be challenged. It is possible to argue that the value of gold, unlike that of other goods, is objective. It is rooted in the objective fact that the world's accumulated stock of gold is a high multiple of the annual flow of new metal from the mines -- a fact independent of subjective value judgments. As already stated, this is not to deny that ultimately value must be explained by subjective considerations; but in assigning a subjective value to gold the human mind first must deal with the objective fact that large and well-dispersed stocks of gold exist, relative to which the flow of new gold from the mines is small.

The suggestion that the value of the monetary metal has often fallen, constant marginal utility notwithstanding, reflects a confusion of ideas. Historical examples cited in support of that suggestion are the dispersal of Persian gold after the sack of Persepolis by Alexander the Great in 331 B.C., and the dispersal of the Inca's silver and gold after the sack of Cuzco by Francisco Pizarro and the conquistadores in 1533 A.D.

Both events have been followed by periods of pronounced and prolonged price rises all over the trading world, making the impression that the monetary metals have lost value. The pat explanation offered for this phenomenon is the quantity theory of money. The value of silver and gold is no different from the value of other commodities -- so the argument goes. They are determined by available quantity. Whenever they become more abundant, as they did in 331 B.C. and again in 1533 A.D., these monetary metals suffer a loss of value.

However, the suggestion that the value of gold may decline under a gold standard is preposterous. The length of a measuring rod in terms of itself as unit is always 1. The correct interpretation of these historical episodes has nothing to do with the quantity theory of money, which is a pernicious doctrine. An across-the-board increase in prices is one thing, and loss of value of the monetary unit is another. The former may occur in case of general scarcity, quite independently of the latter. In analyzing these historical episodes we must carefully note the role of plunder in each case.

Wherever large stores of certain goods fall prey to plunder, scarcity results. The prices of these goods rise, and will stay high as long as scarcity persists. An apparent exception to the general rule is the plunder of stores of precious metals that is never followed by a rise, but is often followed by a fall in value. Can this paradox be reconciled with the Principle of Declining Marginal Utility? Well, I argue that the value of gold cannot fall, any more than the value of other commodities can, as a result of plunder. The key to the paradox is the fact that plunderers do not want gold for its own sake -- just as the bank robbers do not want bank notes for their own sake. What they ultimately want is a host of goods. Bank robbery is the quickest way to loot society's store of marketable goods.

Likewise, when a large store of gold is plundered, it is economically equivalent to the plunder of stores of all kinds of marketable goods. Thus, then, price rises in the wake of plundering gold are explained by the subsequent scarcity of marketable goods. Higher prices always and everywhere indicate greater scarcity of goods -- never a greater abundance of gold.

Plunder -- modern style

In the same light I wish to examine the across-the-board price rises that occurred under the gold standard in 1896-1921 and, again, in 1934-1968. These episodes are no more explained by a greater abundance of gold than are those of 331 B.C. and 1533 A.D. The key to the understanding of these, surprising as it may sound, is also plunder -- making marketable goods relatively scarcer. It is true that the plunder involved is of a subtler kind than the brutal events of 331 B.C. and 1533 A.D. Subtle or not, plunder remains plunder. Here is what happened.

As monometallism was gaining ground over bimetallism, there was a great increase in gold prospecting and production. However, a funny thing happened to gold on its way from the mines to the mints. Central banks hijacked it, in order to build a credit-pyramid, up to *twenty times* as great, upon their increased gold reserve. Without this interference

from the banks there would have been no extra demand for marketable goods and, hence, no price increases -- regardless how fast output of new gold may have grown.

The new gold would have entered circulation in coined form. The Haberler-Pigou effect, to be described in the next paragraph, would have prevented any across-the-board price increase. The real cause of price increases in the inflationary episodes of 1896-1921 and 1934-1968 was not the pronounced increase in gold output. It was the unwarranted credit expansion engineered by the central banks that hijacked the gold.

The same is true of the California gold rush and other similar episodes. Prices of goods and services rose in California in the wake of the 1848 discovery of gold because of the scarcity caused by the influx of newcomers. But why did prices also rise in New York and elsewhere a little later? Well, they did because of the unwarranted credit expansion that the banks in New York and elsewhere constructed upon the hijacked gold that was not allowed to flow into circulation. If anyone denies this proposition, then he assumes the burden of proof that no credit expansion took place following the California gold rush -- clearly an impossible task.

Consumers controlling the gold coin could effectively resist price rises either in delaying purchases, or in buying alternative products and in shifting custom. An across-the-board price increase would represent a capital loss inflicted upon holders of the gold coin, who would scramble to recoup their losses by restricting purchases. Voluntary restraint on consumption is the ultimate factor blocking price increases. *Note, however, that the Haberler-Pigou effect operates only on the gold component of the money supply, but not on the credit component.*

As far as the latter is concerned, restricting purchases is an empty gesture. It is true that the holders of bank notes also suffer capital losses represented by the price rise but, because they are creditors to the extent of their holdings of fiduciary media, another group of people -- their debtors -- will have experienced an equivalent capital gain. The stepped-up spending of the latter group will offset the spending restraint of the former, and the net result is an across-the-board increase in prices. (For more on the Haberler-Pigou effect see: R. Hinshaw, ed., *Monetary Reform and the Price of Gold*, Baltimore, 1967.)

Abolishing the gold standard because it could not prevent price rises due to plunder (followed by a collapse in prices) is akin to putting the bearer of bad news to death. Gold was simply doing its job in reporting the extent of economic disruption caused by plunder, credit expansion, flood, earthquake, war, etc. In no way can gold be held responsible for the disruption itself.

Rumors about the death of the gold standard are grossly exaggerated. In 1930 Keynes correctly described the impact of the two great historic dispersals of gold on the future monetary role of the metal in his book *A Treatise on Money*. He made a convincing case that dispersal of gold from fewer to more numerous hands has always been instrumental in promoting the monetary qualities of the yellow metal. But Keynes went on to prophesy

that the exact opposite would take place in the 20th century -- probably having a fatal effect on gold's future prospect to continue as the monetary metal *par excellence*.

What he referred to was the weaning of the public from the gold coin, the concentration of gold in central bank vaults, and the unprecedented increase of bank notes in circulation. We need not be surprised that Keynes avoided using the word 'plunder' to describe this process: he himself was the chief instigator of the trick of "taking gold away from man's greedy palms".

However, Keynes' prophecy concerning gold's future fell short of the mark. Keynes failed to foresee the coming of the third (and so far the greatest) dispersal of gold a generation after his death in 1947. It took the form of a great official gold dumping, ushered in by the U.S. Treasury gold auctions in 1974, followed by further auctions of central bank gold under the aegis of the International Monetary Fund (IMF). Later the auctions were suspended -- possibly because it was belatedly realized that the U.S. Treasury and the IMF had made themselves the laughing stock of the world.

They were throwing away their most reliable asset in exchange for irredeemable promises to pay -- at ludicrous prices to boot. Still, official holders such as Canada, Belgium, and the Netherlands occasionally dump gold on the market. Moreover, in 1995 there was more talk about new IMF gold give-aways (ostensibly to raise funds for economic aid to support the less developed countries). Thus the third great dispersal of gold is still continuing. It may be confidently predicted that the ultimate effect will be the same as that of previous historic dispersals: a reconfirmation of gold's position as the paramount monetary asset of the world.

The irony is that the authors of these gold dumpings were the most ardent students of Keynes, but they completely misunderstood the teachings of their prophet about the consequences of gold dispersal. When all has been said and done, these authors will appear as foolish as King Canute ordering the ocean to recede.

Whose standard?

It is the task of the government and the legal system of the country, in order to preserve civil conduct in the market place, to define the standard of weights and measures, and to define the standard of value by issuing coinage and, in case of non-performance on contracts or in case of fraud, to compel the delinquent party to live up to his side of the bargain, through the use of the government apparatus of coercion. However, this ideal has often been corrupted by governments misusing their prerogative, in defining the standard of weights and measures capriciously, in order to favor a minority at the expense of the majority. This type of government intervention in the voluntary exchanges of market participants is no longer practiced. Public opinion would not tolerate the arbitrary shortening of the standard unit of length through the device of crowning an infant king, and declaring the length of his foot the new standard.

Just how much this improvement in government policy is due to enlightenment and proper sense of justice, and how much to the changing parameters of public ignorance, can be decided only after considering the fact that it is still not below the dignity of governments to tamper with the standard of value capriciously, in order to favor a minority at the expense of the majority. Governments have found that the level of general ignorance concerning the nature of value is such that public opinion can suffer the affront of manipulating the standard of value.

Out of sheer ignorance, people meekly accept the consequences of this policy of victimization. In fact, governments of the 20th century have carried the practice to its ultimate. They have accomplished what no government in the long history of civilization has been able to do, hard as they may have tried. Governments can now tamper with the standard of value on a monthly, weekly, daily, or hourly basis with impunity, through the instrument of irredeemable currency, and through open-market operations in the foreign exchange and bond markets. Governments not only get away with this dangerous prestidigitation: they are lionized for performing it. (Part of the explanation for the anomaly of our "ignorance amidst informational bounty" is the subtle control governments have over education -- but that is another story.)

Before the tampering with the standard of value was developed into the high art of deception it is to-day, governments wishing to alter the terms of trade in favor of a minority at the expense of the majority could only do so at their own peril. They always had the prerogative to coin money. But in attending to this task governments did not create money, still less wealth. An economic good becomes money only by virtue of the public's preference in making its marginal utility constant. Governments don't select the monetary metal: that is the market's prerogative. The government stamp placed upon a piece of metal does not create value; all it does is to certify the weight and fineness of the coin. The purpose of stamping is to obviate weighing and the application of the acid test to each gold piece at every exchange. It is to facilitate the circulation of coins by tale rather than by weight.

Whenever governments have resorted to debasing the standard of value by issuing coins of a baser alloy, but with the same stamp, the same name, and the same outward appearance of coins, they knew full well that they were engaging in a fraudulent attempt to cheat the public. To the extent that it took time to expose the fraud, governments have been making an illegitimate profit, and they have been enriching a favored minority (the export merchants) at the expense of the unsuspecting majority (the domestic consumers). But after the fraud is exposed, as sooner or later it must be, the debased coins go to a discount representing the extent of debasement. Governments have insisted that it is not the alloy but the stamp that has made the coins valuable. They have declared it illegal to discriminate against light coins in favor of the heavy ones. They have declared maximum prices. Violation of the 'law of maximum' has sometimes been made punishable by death. But as the government's writ stops at the border, and people on the other side are free to separate the light from the heavy coins as they see fit, the coin debasers are forced to admit that their policy is a failure. However, tampering with the standard of value

continues. Techniques do change -- the intent to benefit a favored minority at the expense of the unsuspecting majority does not.

Bimetallism -- stratagem to benefit a minority at the expense of the majority

As two precious metals, silver and gold, were used side-by-side as money, governments declared a statutory bimetallic ratio at which the monetary metals were to be valued at the Mint. We may bypass the question whether it was ignorance or deviousness which motivated governments to enforce a rigid bimetallic ratio, in pretending that value could be created or altered by legislation. Be that as it may, bimetallism was dear to the heart of governments as it offered an opportunity to tamper with the standard of value on a regular basis. This is how it worked.

The public would deliver the overvalued metal to the Mint, making this metal the *de facto* monetary standard, while using the undervalued metal for payments abroad where it commanded a higher value. In this way one monetary metal always appeared to be abundant, while the other appeared to be scarce before disappearing altogether. It was the inconvenience to trade caused by the abundance-*cum*-scarcity of bimetallic coinage that gave occasion to repeated tampering with the standard. To grant relief, governments would alter the bimetallic ratio in favor of the scarce metal. This would cause the abundant coins to become scarce and the scarce coins to become abundant. The wrong shoe was now on the other foot, and the game of changing the bimetallic ratio could start all over again.

It should be clear that whenever a change in the standard unit of value is proposed, some people stand to gain (namely those net long in the metal to be overvalued, or net short in the metal to be undervalued by the impending change), while others stand to lose (namely those net long in the metal to be undervalued, or net short in the metal to be overvalued). Since the general public is always long in the metal to be undervalued, it is always on the losing side. A minority of insiders with advance knowledge of the timing and extent of the devaluation stands to gain from it at the expense of the general public. Yet the game of dropping one shoe after the other, only to repeat the trick afterwards, was wearing one shoe thin faster than the other. The alternating standard resulted in a progressive depreciation of silver in terms of gold.

In antiquity the gold/silver ratio was about 10. Five hundred years ago, at the time of the discovery of America by Columbus, the ratio was still only 11. The decline in the value of silver continued during the next three hundred years. On April 2, 1792, the U.S. dollar was defined as 371.25 grains of fine silver or 24.75 grains of fine gold. This was bimetallism at the ratio of 15 at a time the market ratio was closer to 15, thus overvaluing silver and putting the dollar on a *de facto* silver standard. On June 28, 1834, the U.S. Congress increased the official bimetallic ratio from 15 to 16.

This new ratio was higher than the market ratio, overvaluing gold and putting the dollar on a *de facto* gold standard. By 1870 the accelerating decline in the value of silver threatened the U.S. Mints with a deluge of the silky metal. To meet this threat Congress

in the Coinage Act of 1873 dropped the standard silver dollar from the list of coins that could be minted freely on private account. Thereafter, silver was to be coined at the pleasure of the government. This would have put the dollar on a *de jure* gold standard, had the U.S. Mints been open to gold. But they were not. In 1873 the U.S. government still maintained a regime of irredeemable paper currency, the greenbacks -- a legacy of the Civil War. This fact explains why the 1873 demonetization of silver went unnoticed by the general public, including the powerful silver lobby.

The fall in the value of silver continued to accelerate as the gold/silver ratio rose from 16 to 19 by Resumption Day in January 1879, when the U.S. government reopened the Mint to gold, and resumed gold convertibility of the greenback. Thereafter the value of silver was falling precipitously, the gold/silver ratio almost reaching 40 by the turn of the century. The silver lobby woke up and started crying 'bloody murder', bitterly denouncing 'the crime of 1873'. During the 1896 Presidential election campaign the Democratic candidate, William Jennings Bryan, in his famous 'cross of gold' speech on the stump, pledged to return the country to a bimetallic monetary standard. He failed to understand, as did most other observers, that demonetization was the effect rather than the cause of the collapse in silver's value.

With the demise of bimetallism in the 1870's the ability of the government to benefit a minority at the expense of the majority was greatly curtailed -- albeit not for long. Hijacking gold on its way from the mines to the mints by the central banks opened up new possibilities for credit manipulation, making it easy for governments to defraud the unsuspecting majority in favor of a minority.

In our days the deception that governments can create value and wealth out of thin air, through a judicious monetization of their own credit, is an article of faith at virtually all chanceries and universities. The opposing view, represented by this essay, that credit manipulation cannot create but can indeed destroy capital, and so it cannot lead to prosperity but can ultimately pauperize the entire society through credit collapse, as it did during the Great Depression, appears to be but "a lonely cry in the wilderness" (*Isaiah*, xl: 3).

A short course on demonetization

Quantity theorists widely predicted that the demonetization of gold would seriously undermine gold's exchange value. (A representative of this view is the first quotation from Mises on *p* 3 above.) They argued that the removal of the lion's share of the demand could not help but make gold cheaper. As a reinforcement of this argument, quantity theorists were fond of recalling the episode of silver demonetization in the last century. They claimed that demonetization had caused the prolonged decline in the price of silver that has been continuing ever since.

It is not known whether these views had any influence on the thinking of the decision-makers who 'demonetized' gold in 1971. Be that as it may, the idea that dishonoring promises to pay gold would somehow cause the dishonored paper to go to a premium in

gold is preposterous. It is true that insolvent bankers have in the past often tried to promote their discredited paper (sometimes using such extreme measures as the threat of the death penalty, as did John Law of Lauriston in France) -- to no avail. Logic and history prove that dishonored promises to pay always and everywhere go to a discount -- never to a premium. Indeed, this is exactly what happened after gold was 'demonetized' word-wide in 1971.

In less than a decade the U.S. dollar went to a 90 per cent discount in terms of gold. The discount is fully commensurate with the 90 per cent loss in purchasing power that the dollar has suffered during the same period. Even though the discount on the dollar fluctuates, the hope that it would ever disappear is a forlorn one. The disarray in the nation's budgetary and trade accounts suggest that currency depreciation is likely to continue, if not to accelerate. The only way to stop the rot would be to adopt a credible plan to resume gold redeemability of the dollar -- but no party has so far mustered the political courage to propose it.

The comparison between the demonetization of silver in 1873 and the so-called demonetization of gold a century later is disingenuous. In fact, the use of the word 'demonetization' in connection with the latter is quite inappropriate: it is but a euphemism for debt-abatement or partial debt-repudiation inflicted upon the foreign creditors of the United States of America. In 1971 these creditors were deprived of a valuable property right to a fixed amount of gold, or to the dollar equivalent thereof.

This unilateral and capricious act has done nothing to benefit the citizens or the government of the U.S. On the contrary, the debt abatement had one predictable consequence: harsher terms on future borrowings, as measured by the higher and unpredictable rate of interest at which the government and the people of the U.S. can borrow at home and abroad.

It is true that the burden of the debtors who had contracted debt *prior* to the abatement was lightened. But insofar as they were the same people and the same government on whom the burden of the harsher terms on further borrowings fell for the indefinite future, there were no beneficiaries -- only losers. In particular, the big loser was the American taxpayer. The international credit of the United States government, which had been the envy of the world for over a century, was grievously damaged -- as manifested by the unprecedented interest rates the Treasury was forced to pay upon its obligations after the debt abatement.

The stubborn insistence the credit of the U.S. has not been damaged in the demonetization exercise of 1971 is the centerpiece of mainstream economic orthodoxy. Yet this is a world of crime and punishment and no one, not even the government of the mightiest nation on earth can exempt itself from the consequences, which are numerous. America's industry has lost its international competitiveness. Due to the high rates of interest a large segment of America's park of capital goods has become submarginal, as producers were either unwilling or unable to maintain it or to replace it by more up-to-date equipment.

As capital became submarginal, so did the producers using it. They were forced to sell their businesses at a loss, and to invest the remnants of their former wealth in high-yield Treasury bonds. This is a textbook-case showing that a government can only harm itself by harming its own taxpayers. Printing high coupon-rates on its bonds the U.S. government turned former producers of wealth into coupon-clippers. The world is witnessing the progressive de-industrialization of America, as a large segment of the producers find themselves unable to compete with those capricious coupon-rates the government high-handedly prints on its bonds. At the same time, the main competitors of American industry in Japan and Germany are the beneficiaries of a low interest-rate structure, made possible by those countries' more stable currencies.

While the so-called demonetization of gold was a farce staged by the U.S. government in order to cover up its own insolvency, the demonetization of silver a hundred years earlier was a genuine market-phenomenon. Government action in demonetizing silver amounted to little more than a belated acknowledgement of a *fait accompli*.

There was no dishonoring of promises to pay. There was no deterioration in the public credit, no destruction of private capital. On the contrary, by virtue of its cooperating with market forces, the government greatly enhanced its credit. The United States was well on its way to become the world's greatest creditor nation. One hundred years later the government, in demonetizing gold, was moving against market forces, and the credit of the U.S. government suffered its greatest setback in the history of the nation.

The deterioration of the credit of the United States still continues, with unforeseeable consequences. This is not generally acknowledged by financial writers at home and abroad. But one palpable and indisputable consequence of the 'demonetization' of gold was that, in a few short years, the U.S. has turned itself from the world's greatest creditor into the world's greatest debtor nation. The United States was forced to borrow enormous sums abroad at exorbitant rates of interest. The gross mismanagement of credit has created enormous problems for which there are no painless solutions.

The dual nature of money

The evolution of a dual monetary standard involving both silver and gold was no accident. In every treatise on money, in one form or another the proposition is advanced that money (whatever else it may be) is a transmitter of value through space and time. Thus the concept of money is directly linked to these two absolute categories of human thought. The space/time dichotomy explains the dualistic nature of money -- explicitly observable throughout the ages, right up to the demise of bimetallism.

In its first capacity money must be able to transfer value through space, over great distances, with the smallest possible loss. In antiquity, cattle were especially suitable for this purpose, and became money. In its second capacity money must be able to transfer value through time with the smallest possible loss. Cattle-money was scarcely suitable for this second task.

This explains the emergence of another kind of money, suitable for hoarding and dishoarding with the greatest ease, in order to facilitate the transfer of value over time. Originally this other kind of money was salt. Not only was it less perishable than other marketable goods, but salt was also the most important agent of food preservation. As the threat of periodic food shortages loomed large in antiquity, the agent of food preservation was destined to have a monetary role.

To people of the antique world it appeared natural that two vastly different commodities answered their money-needs, and they took the coexistence of cattle-money and salt-money for granted. Our linguistic heritage clearly reflects this fact. The English adjective *pecuniary* and noun *salary* were derived from the Latin words *pecus* (cattle) and *sal* (salt). Even though gold and silver which later replaced cattle and salt were far more similar to one another, the dual nature of money persisted throughout the ages.

Only towards the end of the 19th century did advances in metallurgy make it possible that one monetary metal, gold, could answer both money-needs of man better than any other commodity. This was the development that made it possible to produce or recover gold in molar quantities economically. The practical outcome was the recognition that the best monetary system was gold monometallism.

As Bruno Moll put it in his book *La Moneda*, "gold is that form of possession which is of the highest elevation above time and space". The dualism of monetary systems is the central theme of this essay, as we explore the two sources of man's need for money. The first, man's need to transfer value over space, was used by Carl Menger to build his theory of value on it. The second, man's need to transfer value over time (or as we shall more specifically describe it, man's need to convert income into wealth and wealth into income) is used here to build a new theory of interest on it.

The Janus-face of marketability

In developing his theory of value, Menger described the origin of money in terms of the evolution marketability. But as the ancient Italian god Janus (in whose honor the first month of the year is named) marketability has two faces. The first is marketability in the small -- or hoardability. The second is marketability in the large -- or salability. The latter is synonymous with Menger's term *Absatzfähigkeit*, the cornerstone of his theory of value. Hoardability has not been independently analyzed before. In isolating this concept I propose to lay a new cornerstone for the theory of interest.

A commodity is more *marketable in the large* (or more *salable*) than another if the bid/asked spread increases more slowly for the former than for the latter, as each is brought to the market in ever larger quantities. For example, perishable or seasonal goods show the lowest, durable goods or goods for all seasons show the highest degree of salability. It is easy to see how cattle became the most salable commodity in antiquity. People had superb confidence that there could never develop a situation in which there was a disturbing surplus of cattle.

Long before anything like that could happen, owners would drive their herds to regions where there was a shortage of cattle. The cost of transporting the unit of value represented by cattle over great distances was lower than that of transporting the same value represented by anything else, due to the self-mobility of cattle. This fact, too, is preserved in our linguistic heritage. A herd is also known as a *drove* of cattle, and a herdsman as a *drover* (both are derived from the verb *to drive*). Thus mobility or, better still, portability is an important aspect of salability. The more portable a commodity is, the more easily it can seek out havens where it is in greater demand.

The term salability refers to the quality of a good which allows very large quantities of it to be sold during the shortest period of time with minimal losses -- which explains how the term earns its name. Among the most salable goods we find the precious stones and metals. A long historical process promoted gold to become the most salable of all goods. For gold, the spread between the asked and bid prices is virtually independent of the quantity for which it is quoted. It only depends on the cost of shipping gold to the nearest gold center. Under the gold standard the spread is constant, and is equal to the difference between the gold points. By contrast, for all other goods, different spreads are quoted for different quantities, and the larger the quantity, the wider the spread.

Thus the gold standard is seen as the product of a market process in search for the most salable commodity. Some authors deliberately confuse the issue insisting that the constant spread of gold is due to institutional factors, i.e., the statutory requirement that the central bank should stand ready to buy at the lower, and to sell at the upper gold point unlimited quantities of gold. Once again, this is a confusion of cause and effect. In reality, institutional constraints would sooner or later break down, and the commodity with less than perfect salability would be demonetized by the market, if the authorities tried to promote it to be the monetary standard -- as indeed happened to silver in the 19th century, to copper in medieval times, and to iron in antiquity.

It is common knowledge that, although they have a high degree of marketability in the large, precious stones have poor marketability in the small. The process of cutting up a large stone into a number of smaller pieces often results in a permanent loss of value. (This is just another illustration of the paradox that the value of a parcel is not necessarily the same as the sum total of the values forming part of that parcel.) Even for precious metals whose subdivision into smaller parts is fully reversible, marketability in the small cannot be taken for granted. A penetrating example due to a 19th century traveller is cited by Menger in the *Grundsätze*:

When a person goes to the market in Burma, he must take along a piece of silver, a hammer, a chisel, a balance, and the necessary weights. 'How much are those pots?' he asks. 'Show me your money', answers the merchant and after inspecting it, he quotes a price at this or that weight. The buyer then asks the merchant for a small anvil and belabors his piece of silver with his hammer until he thinks he has found the correct weight. Then he weighs it on his own balance, since that of the merchant is not to be trusted, and adds or takes away silver until the weight is right. Of course, a good deal of silver is lost in the process as chips fall to the ground. Therefore the buyer prefers not to

buy the exact quantity he desires, but one equivalent to the piece of silver he has just broken off. (*Principles of Economics, op. cit., p281.*)

A commodity is more *marketable in the small* (or more *hoardable*) than another if the bid/asked spread increases more slowly for the former than for the latter, as each is brought to the market in ever smaller quantity. The term 'hoardability' refers to the quality of goods which allows large stores to be built up piecemeal through hoarding, or to be drawn down through dishoarding, with minimal exchange losses. It is this property that matters most when individuals are trying to convert income into wealth, or wealth into income. They succeed best if they employ the most hoardable commodity.

It is easy to see how salt became the most hoardable commodity in antiquity. People were confident that exorbitant surpluses of hoardable foodstuff would never develop. Everybody who could afford it would hoard it. People would recall the Biblical teaching that the seven fat years would always be followed by seven lean ones.

For the stronger reason, people were supremely confident that their hoards of salt -- this foremost agent of food preservation -- would not lose its value, whatever the fortune may hold in store. In antiquity it was not possible to transfer value over time with smaller losses than those involved in hoarding salt.

Other examples of commodities that have been highly hoardable at one time or another throughout history are: grains, tobacco, sugar, spirits. It is interesting to note that there has been heavy government involvement in the production and trade of all these. Thus we see that an historical process, similar to the one making gold most salable, has promoted silver to become most hoardable. Gold was the money used for paying princely ransoms and for buying territories (such as Louisiana and Alaska), and silver was the money used by people of small means for accumulating capital (Maundy money).

Why bimetallism failed

As long as the necessary technology was lacking, gold could not challenge silver's position as the most hoardable commodity. The cost of producing or recovering a small fraction of the unit of value represented by gold could involve expensive molar processes. The recovery of the same small fraction of the unit of value represented by silver incurred no such extra cost as the amounts involved were not molar, thanks to the lower specific value of silver. However, by the second half of the 19th century, with the progress of metallurgy, the cost of molar processes was lowered and commercial dealings in gold on the molar scale became economically feasible. Thereafter gold could effectively challenge and ultimately displace silver as the most hoardable commodity. The demonetization of silver by the market was a logical consequence.

To see clearly why it was gold, and not silver, that was destined to win the race for hegemony we have to consider the specific values of the monetary metals, and their relation to the spreads between the export/import points. Gold has a high and silver a low specific value, implying that the unit of value as represented by gold is lighter than the

same as represented by silver (in fact, 15 times lighter if we assume that the gold/silver bimetallic ratio is 15).

We have seen that the gold export (import) point is the melted value of the standard coin above (below) which it becomes profitable to export (import) gold. The meaning of the silver export (import) point is analogous. Clearly, the spread between the gold export/import points depends on the cost of shipping the unit of value as represented by gold to the nearest gold center abroad. The same is true, *mutatis mutandis*, for the spread between the silver export/import points. But shipping costs depend on the weight of the shipment. As the weight of the unit of value as represented by gold is relatively small, the spread between the gold export/import points will be relatively small. (It was approximately 1 percent of value between New York and London in the heyday of bimetalism, while the spread between the silver export/import points was 15 percent of value.)

For example, assume that the statutory gold price is \$20 per Troy ounce, and the upper and lower gold points are at \$20.20 and \$19.80, respectively. Assuming further that the official bimetallic ratio is 15, the statutory silver price will be approximately \$1.33 per Troy ounce (20 divided by 15). Let us calculate the gold and silver export/import spreads. The cost of shipping the unit of value, \$1, as represented by gold is 1 cent (because the cost of shipping 1 ounce of gold is \$20 -- \$19.80 = twenty cents; this we have to divide by 20 as the standard gold dollar weighs 1/20 of one ounce).

The melted value of the standard gold dollar may therefore fluctuate between 99 cents and \$1.01 before it will induce a corrective movement of gold. The gold export/import spread is 2 cents. But the same unit of value, \$1, as represented by silver, is 15 times heavier, so the cost of its shipping will be 15 cents, or 15 times the cost of shipping the standard gold dollar. The melted value of the standard silver dollar may therefore fluctuate between 85 cents and \$1.15 before it will induce a corrective movement of silver. It follows that the silver export/import spread is 30 cents, or 15 times wider than the gold spread. We see that under bimetalism the export/import spread for the monetary metal of the higher specific value is narrower by a factor equal to the bimetallic ratio.

It is certainly true that under a monometallic monetary regime most large transactions will not involve shipment of the metal as long as the price of gold stays within the range between the gold points. Clearing is effected through the exchange of warehouse receipts. However, the case under bimetalism is different. Here the arbitrageur profits by actually shipping the undervalued metal out of, and the overvalued metal into, the country maintaining a rigid bimetallic ratio.

What this shows is that silver is inferior to gold as a standard of value. Those who park their wealth in silver stand to lose 15 times more than those who use gold for that purpose, due to variations in the market ratio between the silver and gold prices. The upshot is that people will gradually move out of silver and into gold. In due course the market will demonetize the metal with the lower specific value, in this case, silver. Gold monometallism was no accident: it was brought about by inexorable market forces. For

the first time ever in human history one commodity, gold, became the undisputed monetary metal, combining the characteristics of the most salable and the most hoardable assets.

Mene Tekel

But the distinctive property of gold, that it is the only remaining monetary metal around in the closing decade of the 20th century, should not blot out entirely the dualistic nature of money. In fact, it is monetary dualism that provides the only rational explanation for the occasional breakdown of the monetary system. During periods of great monetary disturbance, such as a hyperinflation, the distinction between the two kinds of marketability is most dramatically revived by the market.

For shorter or longer periods, the government may succeed in forcing the circulation of irredeemable bank notes, which may retain the characteristics of the most salable asset. Yet, at the same time, the government is patently unable to make these credit instruments the most hoardable asset. Although the fast-depreciating bank note is still usable in transmitting value through space, it suffers from a fatal paralysis when trying to transmit value through time. It is inevitable that, ultimately, gold should assert its position as the most hoardable asset. Nor is there anything governments can do to save their irredeemable paper from monetary destruction. Even if they succeed in banning the ownership of and trading in gold, a number of other commodities stand ready to step into the golden slippers to assume the role of the most hoardable asset.

The most conspicuous defect of the quantity theory of money is its utter failure in explaining the hyperinflationary episodes of history. Over-issue of the fiat currency certainly cannot be the cause of the malady. It has been convincingly demonstrated that (especially in the final phases) there was always a desperate *shortage* of the doomed currency. Hyperinflation has nothing to do with quantity it has everything to do with quality of money. *The true cause of hyperinflation is the inexorable human need for a most hoardable asset.* It is the relentless search for a reliable transmitter of value through time. Those who believe that the millennium of irredeemable currency has arrived must believe that governments have found a way to change human nature by legislative fiat.

Under the regime of irredeemable currency hyperinflation is inevitable -- unless gold is once more allowed to play its historical role that has been taken away from it through government coercion: the role of the most hoardable asset. The full implications of the inevitability of a breakdown in the regime of irredeemable currency are not yet clear to most people. Purveyors of goods and services are still willing to give up real value in exchange for irredeemable promises. This ignorance may, of course, help postpone the moment of truth. In the meantime, Lincoln's dictum should be remembered, according to which it may be possible to fool some people all the time, even to fool all the people some of the time; but it is not possible to fool all the people all of the time.

Certain monetary economists can see the writing on the wall *mene tekkel*: your days are numbered -- you have been weighed in the balance and found wanting (*Daniel v:26-28*)

announcing the verdict on the regime of irredeemable currencies. They propose a solution that would 'tie' the value of the currency to that of a basket of commodities. Some go as far as suggesting that -- *horrible dictu* -- even gold may be put into the basket. There is nothing new in these proposals. F.A. Hayek suggested it in 1943 in a paper entitled *Commodity Reserve Currency*. It is extremely doubtful that Hayek's scheme would work.

Let us disregard the utter naivete of the scheme in ignoring the cost of warehousing perishable goods, and ignoring the problem of quality-control. Let us consider the scheme in its simplest form known as symmetalism (originally proposed by the British economist Alfred Marshall a hundred years ago, but never tried in practice) whose unit of value is a basket consisting of a fixed amount of gold and a fixed amount of silver. Unlike bimetallism, this arrangement would let the prices of the monetary metals vary.

We now show that symmetalism, no less than bimetallism (which Milton Friedman called preferable to gold monometallism in his book *Money Mischief*) would be shipwrecked on the rock of gold's constant marginal utility. The market would stamp out symmetalism even faster than bimetallism, precisely because of the price flexibility the former affords. The gold/silver ratio would widen further for reasons already discussed. The profit opportunities offered by symmetalism would result in a relentless arbitrage out of silver and into gold. The arbitrageur would redeem his currency in gold and silver; then he would sell the silver and keep the gold. When the anticipated rise in the price of gold materialized, he would buy back his silver for less, and unwind his arbitrage by surrendering the same amount of gold and silver in exchange for symmetallic currency, showing a net profit in gold.

Let us note in passing that the scheme concocted at Maastricht (introducing yet another irredeemable monetary unit, the *Euro*, defined as a basket of irredeemable currencies) is doomed for the same reason. The currency that depreciates at the lowest rate, in this case the German mark, far from imparting strength to other currencies in the basket, would make them even weaker. Arbitrage would act as a centrifuge, separating the components of the basket, throwing away the soft and keeping only the hardest of hard currencies. (If marks, liras, etc. were no longer available for trading, then the object of arbitrage would be the central bank assets that had been used to balance liabilities in marks, liras, etc.) The authors of the Maastricht scheme turned the ancient wisdom -- that no chain can be stronger than its weakest link -- upside down. They have invented a chain that is as strong as its *strongest* link.

2. Towards a New Theory of Interest

The nature of interest is one of the great problems of humankind, as old as money itself. It has engaged the greatest minds, from Aristotle through the church fathers to Menger. The lack of a satisfactory solution to the problem has rocked empires, contributing to their destruction. This author hopes that his essay can make a modest contribution to the ultimate disposal of this great and vexed problem.

Part of the difficulty is in the way the question has traditionally been presented, namely: *what happens when a man with a need to borrow meets another with money to lend?* It has always been in this context that usury was condemned by both criminal and canon law. It has not occurred to the philosophers and moralists -- or, for that matter, to most economists -- that the nature of interest could be better grasped if the question was reformulated thus: *what happens when a man with income to spare but who is in need of wealth meets another with wealth to spare but who is in need of an income?*

The resulting exchanges provide a passage from direct to indirect conversion of wealth and income. Indirect conversion represents a great improvement in efficiency over direct conversion, interest being the manifestation of the market value of this improvement. Thus the proper setting for the study of interest is the indirect conversion of income into wealth (just as the proper setting for the study of price is the indirect exchange of goods). It now appears that condemnation of usury is akin to condemning a man for charging or paying the going price for bread.

Traditionally, interest is conceived as a steady income in perpetuity which is exchanged for the unit of wealth. It can be measured as a percentage of the unit of wealth accruing as income to its owner after the exchange. If the unit of wealth is one gold dollar, and it is exchanged for an income in perpetuity amounting to one gold cent per quarter, then the *rate* of interest is four percent per annum. Of course, an income in perpetuity is an abstraction, but it has great theoretical importance as the standard measuring interest. The mathematician has shown us exact formulas expressing the rate of interest involved in exchanges of wealth for income for a set period of time, as well as formulas expressing the rate of interest involved in exchanging present for future wealth, in terms of this standard -- making arbitrage between various credit markets possible.

I shall not pause here to give an iron-clad definition between "wealth" and "income". Suffice it to say that an inexorable need exists, second only to the need for food and shelter, urging man to convert income into wealth in order that later, when past his prime, he may convert his wealth back into income. As the comedy of King Midas and the tragedy of King Lear show, a most important difference exists between controlling wealth and controlling income, and the possibility of converting one into the other must not be taken for granted. Income is an ultimate end for man, insofar as without it he may have no other ultimate ends on earth. (If denied an income he, as King Midas, is in danger of starving to death.) Since wealth is an indispensable means to that end in the twilight years of his life, man's need for a reliable conversion mechanism is beyond doubt. (Without such he may, as King Lear, end up losing both his wealth and income.)

The theory of private property ought to take full account of the fact that conversion of income into wealth is the rational and characteristically human manifestation of the law of the biosphere whereby all living things can only survive and prosper by hoarding their substance. In the case of man this substance, as we have seen, is the most marketable commodity, gold, which is always in demand, whether it is offered in the largest or in the smallest practically realizable quantity -- since it can always be traded with the smallest possible exchange losses.

The chimaera of hoarding

Here we come to a paradox which utilitarian philosophy has failed to solve. An apparent contradiction exists between the needs of the individual and his society. There is a time in the life of every man when he wishes to draw on his savings accumulated earlier. Yet hoarding and dishoarding are widely considered as anti-social. They are unsettling as the former affects demand and the latter affects supply unfavorably, possibly at a time that is inopportune from the point of view of society. The utilitarian philosophers could not clarify how the market provides for the conflicting demands of society and its ageing members. Utilitarian philosophy has failed to solve the problem of hoarding and dishoarding.

In particular, it has failed to explode the arguments of Silvio Gesell, John Maynard Keynes and other inflationists, according to which the contractionist and deflationary pressures inherent in a metallic monetary system are the source of poverty and chronic economic distress, as they invite hoarding. At the same time these authors described the promised land of the inflationist paradise in glowing terms. There, the miracle of "turning the stone into bread" would be routinely performed by monetary technicians in the service of the government for the benefit of the people. In what follows I refute the inflationist argument in the spirit of utilitarian philosophy, hoping to remove an obstacle which has blocked the advancement of monetary science for a hundred years.

The invention of double-entry book-keeping in Italy of the *Trecento* was a momentous landmark in economic history. Göthe called it "one of the finest inventions of the human mind" (*Wilhelm Meister's Apprenticeship*). Double-entry book-keeping is of utmost economic importance, second only to the appearance of indirect exchange much earlier that had made direct exchange of goods obsolete. The new invention made the indirect accumulation of capital via the instrument of contract possible, thus making the direct accumulation of capital via hoarding obsolete. Previously, there was only one way for people to convert income into wealth or wealth into income outside of family bonds: hoarding and dishoarding. (For much of the Orient, which was slower in developing the institutional framework to protect contractual rights, it is still the only way.)

This immobilized large amounts of gold, and made capital accumulation an arduous and protracted process in which reward was far removed from effort, dampening incentive. The invention of double-entry book-keeping made possible a heretofore unprecedented increase in the efficiency of gold as the catalyst of capital accumulation. Gold's physical presence was no longer necessary in every conversion. From then on gold could act by proxy, as its role in the conversion has become residual.

Thanks to this breakthrough, partnerships could now be formed representing an exchange of income (of the junior partner) for wealth (of the senior partner). Later, with the gradual acceptance of 'sleeping' partners in the firm, it became possible to buy and sell shares in the enterprise as if they were fixed-income securities. Indeed, this they were in all but name, in order to avoid censure by canonical and secular authorities under the usury laws. It is clear that without double-entry book-keeping, balance sheets and income statements,

trade in shares would not have been possible, nor could a departing partner have been bought out. There would have been no precise and objective way of attaching value to the assets and liabilities of the firm short of liquidation.

The new development released huge amounts of gold from private hoards as people began to accumulate and carry wealth in the form of securities disguised as partnership equity. (By contrast, in the Orient, where the social and institutional arrangements were far more inimical to the individual and his freedom to choose, the demand for gold and silver for hoarding purposes continued unabated.) During the *Quattrocento* gold disgorged by the Occident flowed to the Orient to finance the trade in exotic goods. Myrrh, spices, silk and satin enjoyed exceptionally high marketability in the Occident where all the great banking houses engaged in financing this lucrative trade. The world was treated to the curious spectacle that the Occident was thriving while losing gold to the Orient, because it had learned how to get by with less. It had learned to exchange wealth and income.

This shows that gold is merely the whipping boy at the hand of the inflationists. Gold is not scarce (in fact, as measured by the stocks-to-flows ratio mentioned above, the monetary metal is more abundant than any other economic good) but it quickly goes into hiding at the moment inflationists gain the upper hand. There is no contradiction between the interests of society and its ageing members. Very little if any gold is needed to complete all the exchanges of income and wealth in the course of normal business, provided that the free choice of individuals is allowed to prevail. Only when government interference is feared or expected does the demand for gold become disturbing. The correct policy is 'hands off' -- let the market decide what is best for its participants.

Squaring the diagonal

The next advance came with the Reformation, during which the canonical and secular strictures on interest were eased, the definition of usury narrowed and, later, the prohibition against both repealed. Whereas the partnership contract had originally been designed with the concealment of interest in mind, then it became possible, for the first time in history, to openly engage in the exchange of income and wealth, with the payment of interest freely admitted, and the rate of interest explicitly quoted. The bond market was born as a result of these historical changes. The right to income reserved by the bondholder could now enjoy the same legal protection as the right to rent-charges enjoyed during the prohibition era. Thus, it remained for the Reformation to crown the great economic advances of the Renaissance, to free the exchange of income and wealth from its former fetters. For the first time in history, the rate of interest could manifest itself as a market phenomenon.

The analysis of the formation of interest rates is usually given in terms of a diagonal model featuring just two participants in the market: the supplier and the user of 'loanable funds'. This model is woefully inadequate, as it blots out the time element and the crucial process of capital formation, it ignores the principle of capitalizing income, and it confuses saving and investment. The present analysis will replace the diagonal model

first with a square, then a pentagonal and, finally, with a hexagonal model, in order to gain a more penetrating insight into the process of capital formation. First we take a look at the square model which has the merit of identifying the supply of and demand for wealth and income.

In considering the problem of converting income into wealth and wealth into income, we may isolate two fundamental needs: (1) the *annuitand's* need to convert income into future wealth; and (2) the *annuitant's* need to convert wealth into income. Typically, the annuitand is a young man who is looking forward to getting married. He tries to provide for the future needs of his family: for the education of his children, and for his and his wife's old age. By contrast, the annuitant is a man in his harvest years, looking forward to his twilight years with equanimity.

He has by now accumulated the wealth which he is ready to convert into a suitable income. If the annuitand (or the annuitant) is restricted to direct conversion, due to institutional restraints on the exchange of income for wealth (or wealth for income) then the optimum conversion is provided by gold hoarding (dishoarding). By definition of marketability in the small, no further improvement in efficiency is possible. However, if the institutional constraints on exchange are removed, then a whole new game comes into play and, indeed, further improvements become possible, for the benefit of all participants.

On the one hand, the annuitant's need is answered directly by the *entrepreneur* who is anxious to give up income in exchange for present wealth. The latter could profitably invest the former's wealth in his business which would then generate a greater income that he could afford to share. On the other hand, the annuitand's need is answered directly by the *inventor* ready to give up future wealth in exchange for an income. The latter is working on a new production process that may take several years to perfect before it can be put into place. In the meantime he has to maintain himself and has to defray the cost of his research and development (R&D).

The new tool or process the inventor is perfecting represents future wealth which he is willing to share with his partner, the annuitand, who puts the necessary income at his disposal in the interim. Both the entrepreneur and the inventor are engaged in the business of capital formation; the difference is seen in the method of amortization. The capital formed by the entrepreneur is scheduled to begin its amortization cycle immediately. There is a more-or-less prolonged waiting period before the capital formed by the inventor can start its amortization cycle.

The curse of unemployment

The amount of R&D capital being accumulated by the partnership of the annuitant and the inventor is the most critical indicator of the future shape and health of the economy. In the final analysis, this is what makes the difference between a progressive and a retrogressive economic system. The presence of chronic unemployment in the economy

indicates that inventors are being hampered by social or institutional arrangements in their efforts to form R&D capital.

From this perspective, the government-run compulsory social security and unemployment insurance schemes appear highly retrogressive. Apart from the dubiousness of the procedure whereby the government spends the net premium income on current consumption while letting future taxpayers shoulder the burden of disbursing the retired population, and of the procedure whereby the government pays able-bodied people for not working, there is also the sinister problem of depriving the inventor from his traditional source of financing. The inventor is condemned to idleness; at any rate, his efficiency is greatly reduced, and his talents are wasted. The government-sponsored 'safety nets' are retrogressive because they represent the dissipation of the annuitand's income and the annuitant's wealth, without any redeeming feature as to promoting capital accumulation, in particular, the accumulation of R&D capital.

This completes the description of the square model of the capital market, where the four corners of the square represent the annuitand, the inventor, the annuitant, and the entrepreneur. The two kinds of partnership that arise in this model correspond to the formation of (1) entrepreneurial capital, embodied in the partnership of the annuitant and the entrepreneur, and (2) R&D capital, embodied by the partnership of the annuitand and the inventor. Often these partnerships are concealed under family bonds.

The father is the annuitand (later, annuitant) and the sons the entrepreneur and the inventor. The family is the primitive social unit, providing the framework for the exchange of income and wealth among its members, as the need may arise. The square model of the capital market is a great conceptual improvement over the diagonal model; still, there is room for further improvement.

A short course on capital formation

Zero interest means direct conversion of income into wealth. As a total denial of incentives to exchange income and wealth, it forces the annuitand and the annuitant to revert to atavistic methods of conversion via hoarding and dishoarding the most hoardable commodity. At zero interest there will be no exchange, only conversion of income into wealth. The point is that the annuitand and the annuitant do have a choice. In the absence of incentives they will forgo exchange but will go ahead and make the conversion, as planned, through other means. The same choice, however, is not available to the entrepreneur and the inventor.

Unlike the annuitand and the annuitant, they are fully dependent on the agency of exchange and credit if they want to make the conversion. The square model of the capital market reveals that the exchange of income and wealth is inherently asymmetric. While the annuitand and the annuitant can still satisfy their need to convert if the exchange fails, the inventor and the entrepreneur cannot. For them it is: no exchange -- no conversion. The impairment of bargaining power brought out by the square model of the capital market will be assuaged as we pass to the pentagonal and hexagonal models. These

models describe the real world more faithfully. Yet it must be clear that the impairment can never be completely removed. The most important consequence of this asymmetry is that the rate of interest can be low, but will always remain positive.

The inventor and the entrepreneur can, of course, improve their bargaining position to some extent if they form a partnership whereby the former provides the income needed by the latter. As a result, they will be net long on future wealth, and net short on present wealth. In order for the partnership to be viable, they must find a third partner who is willing to provide the needed credit in exchanging present for future wealth.

This need has led to the rise of a new actor in the drama of human action. He is the *capitalist*, and his entry heralds the advent of the pentagonal model of the capital market. The rise of the capitalist is hereby explained not in terms of exploitation, but in terms of services which only a specialist can provide. These services are demanded by the partnership of the marginal inventor and the marginal entrepreneur. The marginal inventor (entrepreneur) is the one who has just missed his chance to form a partnership with the annuitand (annuitant). Without the services of the capitalist, marginal talent would be wasted. Thus capitalism is seen as a social system which allows individuals to specialize in the exchange of present wealth for future wealth, in order to enlarge the scope for entrepreneurial and inventive talent. Much of this talent was lost to society before the advent of capitalism.

The triangular partnership of the entrepreneur, the inventor, and the capitalist is the most potent and dynamic force in the economy which society has heretofore produced. Ludwig von Mises considers the individuals in this partnership the "most progressive elements in society", benefiting the nonprogressive majority in every possible way. The particular combination of talent, brain and will-power represented by the threesome heralds a new epoch of progress, far beyond the capabilities of individual talents if employed in isolation. There has been many an inventor since paleolithic times whose genius has been wasted.

The steam turbine was invented in the first century A.D. by Hero of Alexandria; the aeroplane in the fifteenth by Leonardo da Vinci. The efforts of pre-capitalistic inventors, for the most part, came to naught, due to lack of capital and entrepreneurship. The most ingenious technological inventions remain useless if the capital required for their utilization has not been or cannot be accumulated. Capitalism must be seen as the liberator of inventive talent, the creator of wealth and prosperity for the benefit of all. Its creative formula is: the trinity of the entrepreneur, the inventor, and the capitalist.

One cannot assess the merit of capitalism without explicitly recognizing the great and durable reduction in the rate of interest it has brought about. Indeed, the only valid way to bring down the rate of interest is to enhance the bargaining power of the inventor and entrepreneur *vis-à-vis* the annuitand and annuitant through encouraging the activities of the capitalist. If the capitalist is hampered in his activities, then the annuitand and the annuitant will enjoy unrestricted monopoly power and the rate of interest will be high. The capitalist is anxious to break this monopoly. As a result of his competition, the rate

of interest has been reduced from the extremely high levels prevailing in pre-capitalistic times to a low level which puts all *bona fide* inventors and entrepreneurs into business.

Even more remarkable is the fact that capitalism has accomplished the feat of reducing the rate of interest without harming the annuitant and the annuitant. Every member of society is a beneficiary of the lower rate of interest brought about by capitalism, through the great increase in the availability of consumer goods at affordable prices, not to mention the unprecedented increases in wage rates. Only with reference to capital accumulation can we explain the practically inexhaustible list of prodigious amenities, and previously unheard-of comfort and security, the high wage-structure, all benefiting the common man, which is due solely to the lowering of the rate of interest by rising capitalism.

Many of these great achievements have been frittered away since 1971, the year governments of the industrialized world declared irredeemable currency to be 'money'. This declaration is directly responsible for the steep rise and gyrations of interest rates during the past twenty-five years, a phenomenon that was previously unknown. The capricious increase in the level of interest rates has rendered a vast amount of capital and labor submarginal, caused unemployment, made capital maintenance inadequate and, ultimately, led to capital decumulation and destruction.

The Shylock-syndrome

The foregoing analysis of the phenomenon of interest in terms of exchanging income and wealth is far superior to the conventional analysis in terms of exchanging present for future goods. No one has ever exchanged an apple available today for 1 and 1/20 of an apple available a year from now (still less for 2 apples available 50 years from now); so the problem of exchanging present for future wealth does not arise out of any readily identifiable human need (except in the context of the activities of the capitalist in facilitating the exchange of wealth and income, as discussed above).

Other than this residual activity of the capitalist, the exchange of present and future wealth has no basis in reality. By contrast, the problem of exchanging income and wealth arises out of natural and universal human needs: the need for educating the young and the need of the elderly for an income. This exchange explains the phenomenon and the nature of interest in terms of the division of labor, that is, by reaching back to lasting fundamentals. Exploitation, or temptation to exploit one's economically weaker brethren is not involved. Nor is odium or envy. The needs and aspirations of market participants, from the annuitants to the capitalist, are harmonious and complementary.

There is no need to detest the capitalist and to depict him as Scrooge, any more than there is need to detest the heart surgeon and depict him as a butcher. They are both specialists, and their role can be understood only in the context of the need for their specialized services. The capitalist's role only emerges at the margin, after all natural partnerships between the entrepreneur and inventor have already been formed.

Further advance at this point would not be possible without the services of a specialist, specializing in arbitrage between present and future wealth. By contrast, if we look at the problem of exchanging present for future wealth in isolation, before long the image of Shylock and his pound of flesh is conjured up in the mind. Above all, it is this Shylock-syndrome that socialist movements have been able to exploit with such consummate skill, appealing to the authority of Aristotle. This view is nurtured by a dismally inadequate understanding of the division of labor. As it appears to the socialists, the contract between lender and borrower demands that the latter be a superman.

Only in uniting in himself the talents of the entrepreneur and the inventor can he meet the terms of his contract in full. How otherwise could he be expected to return a greatly enhanced wealth to his creditor at the end of the loan period, without ruining himself? Surely, the terms of his contract demanding a pound of flesh from any part of his body was designed with the extinction of his life in mind.

What the socialists' view disregards is that the capitalist is not dealing with one individual but with a partnership combining the talents and skills of two: the entrepreneur and the inventor. Had Aristotle understood the problem of converting income and wealth into one another, and its optimal solution via the agency of exchange, credit, and the division of labor, the wind would have been taken out of the sails of socialist agitation before it had a chance to cause so much mischief in the world.

Instant reward, instant penalty

Another merit of the pentagonal model is that it makes the process of capital accumulation transparent. If we disregard the primitive accumulation of capital by the artisan fashioning his own tools, a process that no longer plays an important role in the economy of the industrial world, then we shall find that capital can only be formed in one of three possible ways: through the formation of a partnership of (1) the annuitant and the entrepreneur, (2) the annuitant and the inventor, or (3) the entrepreneur, the inventor, and the capitalist.

Debt creation does not create capital *per se*; it only shifts risks implicit in previously existing partnerships, without necessarily producing new wealth. By contrast, the formation of capital in any one of the three combinations described here does in fact create new wealth. Furthermore, the pentagonal model establishes precedence and control among the five actors in the drama of human action. Thanks to the existence of these controls capitalism has become an instant reward/penalty system ensuring unparalleled efficiency. (This, incidentally, may be another reason it is hated so by the indolent.)

The priorities of capitalist society are not set by bureaucrats or by zealots with the power of disposal over the fruits of the savings of others, but by the savers themselves who stand to suffer losses if the project fails. Bureaucratic power under socialism means that mistakes can be heaped upon mistakes without corrections being made. Socialism lacks a feedback mechanism that alone can make timely corrections possible. The hierarchy of controls under capitalism runs along the following lines. The annuitant has veto power

over the plans of the capitalist; the annuitant in concert with the capitalist has veto power over the plans of the entrepreneur; the annuitand and the capitalist in concert with the entrepreneur have veto power over the plans of the inventor. The inventor has no veto power at all, but since there are more annuitands than annuitants under the conditions of positive population growth, capitalist society can employ even more inventive than entrepreneurial talent. The field is wide open for the inventor.

A dynamic society tends to put a premium on new ideas. It has natural built-in incentives for higher education and advanced studies, even in the absence of compulsory schooling and government-sponsored research. It is these dynamic forces, represented by net R&D capital formed by the annuitand and the inventor, which create educational facilities and equip laboratories. The government can hardly do more than formalize and standardize these. It certainly cannot guide their destinies -- that would be the prerogative of their progenitor, the pentagonal capital market. A government that pretends to do more, one that tries to dictate educational or research priorities, is far from being progressive. It is, in fact, retrogressive -- as the present analysis shows.

The welfare state as we know it...

The pentagonal model of the capital market explodes the myth of the welfare state. According to this myth the government can finance welfare projects by taxing away some of the profits of the capitalist. However, the activities of the capitalist are marginal, representing but the tip of the iceberg. The incomparably greater part of the capital that society needs in order to provide annuity income for the aged is furnished by less visible partnerships between the annuitant and entrepreneur, or the annuitand and the inventor.

Social security eliminates, or at least severely curtails, voluntary exchange of income for wealth, and thereby hampers capital accumulation. The welfare state confuses charity with entitlement, and its huge commitments in putting social security benefits on the basis of universality have no actuarially sound basis in finance. The making of these commitments puts the very people out of business whose savings alone can provide the wherewithal for the projected benefits. We cannot help but view the capitalist economy as an integrated welfare-machine: individuals voluntarily exchange goods against goods, goods against services, and income against wealth, increasing welfare at every turn.

In the process they form voluntary partnerships representing the creation of new wealth through the capitalization of income. The welfare state cannot invade one part of this machine, taking over its functions, and expect that the other parts will go on performing satisfactorily. This invasion means the forcible dissolution of partnerships, and the dissipation of their capital. The assets disappear, yet the corresponding liability in the consolidated balance sheet of the nation remains.

It will have to be balanced by printing government bonds, payable in irredeemable currency. As long as the purveyors of goods and services continue accepting irredeemable currency in exchange for real goods and services, the game of musical chairs can go on. But as the capital structure of the nation is seriously eroded, the

production of goods and services become more costly, and producers suffer losses. At one point they must raise prices or, if they can't, go out of business. Either way, the benefits promised by the welfare state are jeopardized by currency depreciation and destruction of capital. The welfare state must be seen against this background: it is an accomplice in the scheme of currency debasement and, more ominously, in the scheme to dissipate and destroy the nation's accumulated capital.

During the past year or so the leaders of several industrial nations have solemnly announced the end of the era of big governments with big deficits, and started talking about the need to down-size the welfare state. In view of the foregoing analysis, this is certainly a positive development.

However, these leaders have failed to make the necessary connection between the welfare state the promises of which are impossible to fulfill, and the regime of irredeemable currency that can make every promise appear credible that vote-buying politicians may care to make. The truth is that a meaningful review of the premises of the welfare state must of necessity include a review of the premises of the regime of irredeemable currency. Are our politicians ready for such a review?

The gold bond

Further division of labor saw the rise of a sixth participant, the *investment banker*, and the emergence of what we may figuratively call the hexagonal model of the capital market. Just as the rise of the capitalist was explained above in terms of the special services he was to provide to the marginal entrepreneur and the marginal inventor, so the rise of the investment banker is explained here in terms of the special services he is to provide to the marginal annuitant and the marginal annuitant.

The marginal annuitant (annuitant) is the one who has just missed his chance to form a partnership with the inventor (entrepreneur). Without the services of the investment banker much of the marginal resources of society would be wasted. No two annuities are alike, and trading them would be difficult or impossible in the absence of an instrument readily exchangeable for either. The success of the capital market depends on the availability of a versatile and standardized trading instrument which can be used as (1) the standard of capital values, and (2) the balancing item of liabilities on capital account.

This instrument is the gold bond. It evidences debt payable at maturity in gold, and provides an interest income till maturity, also payable in gold. The income is represented by the coupons attached to the bond. The gold bond is traded in a broadly based secondary market, and a sinking fund is established to make sure that its market value does not erode with time. It is incumbent on the issuer of the bond to do everything in his power to keep the market value of the bond stable, if need be, by retiring some of the outstanding issue prematurely.

It is the price of the gold bond that determines the rate of interest. As prices, the rate of interest is also an outcome of the market process. However, keep in mind that the bond

market is the epitome of a far larger and far more pervasive capital market encompassing every conceivable exchange of wealth for income, most of which is not readily visible. The investment banker's function is clearing and brokering: he matches the various and varied demands thrown upon the capital market from its five corners.

He enters into partnership with the annuitant, the annuitant, the entrepreneur, the inventor, and the capitalist, as the need may arise, through his specialized instruments of mortgage and annuity contracts. He balances the net liability or asset arising from this activity through his purchase or sale of the standardized instrument, the gold bond. In effect, the investment banker is doing arbitrage between the six corners of the capital market.

The hexagonal model of the capital market opens up a great increase in scope for the most successful combination of production: the triangle of the entrepreneur, the inventor, and the capitalist. From now on they can form their partnership even if unbeknownst to one another. The inventor need not waste time in seeking out a congenial entrepreneur, nor the entrepreneur in finding a suitable inventor.

If the invention is good, and the enterprise is sound, they could immediately start production on the most favorable terms through the good offices of the match-maker, the investment banker. Nor does the capitalist have to remain wedded to the same inventor and entrepreneur for the entire duration of the project. Through buying and selling gold bonds he can always go after the project that appears most promising to him. Thus the problem of forming optimal triangles is safely thrown onto the bond market.

The sterility of gold

Aristotle introduced the concept of natural law and concluded that taking and paying interest on borrowed money violated it. Gold and silver are, by nature, sterile. Any return to productive investment belongs to labor in full, no part of it ought to go to the lender of capital resources. The Church embraced the notion of natural law, and the usury doctrine became a Church doctrine. Roman Law was combined with the teachings of Aristotle to become Canon Law.

The prohibition on interest was designed to protect the debtor but, to the increasing embarrassment of the canonists, it had the exact opposite effect. It increased both the cost and the risk of doing business. After the *Code Napoleon*, adopted all over western Europe, had allowed the paying and taking of interest, the Church, too, decided to abandon the old usury doctrine. It was quietly buried in 1830, when the Sacred Penitentiary issued instructions to confessors not to disturb penitents who had lent or borrowed money at the legal rate of interest.

Recently, mainstream economic orthodoxy has revived the old doctrine of Aristotle about the sterility of gold. No textbook on economics that mentions gold at all fails to add that gold is a barren asset, incapable of producing a return. Holders of gold are portrayed as morons waiting for doomsday, unwilling or unable to do anything constructive for

society. This opinion is echoing Keynes who was the first economist suggesting that there was something bordering on the neurotic involved in the desire to hold a sterile asset. However, the neurosis is not on the receiving side of the anti-gold propaganda.

Rather, it is on the giving side. Governments have pangs of conscience with respect to their citizens and creditors, with whom they have broken faith on several counts. Instead of making a clean breast of it, they have made it incumbent upon the economic profession to develop new doctrines to cover up chicanery and duplicity, to justify fraudulent bankruptcies, retroactive laws, devaluations and debt abatements. Politicians and servile economists are still badmouthing gold as if it was a narcotic. They have triumphantly declared that gold is 'dead'. Yet the gold corpse still stirs, and it keeps haunting the house of cards built upon irredeemable promises.

The phrase 'sterility of gold' needs to be scrutinized. For Aristotle it meant that gold, unlike corn, cannot be sown in the soil in order to harvest more gold later. His condemnation of usury was dictated by what he conceived to be natural law. Mainstream economists mean something else by that phrase. They admit that even corn is sterile in the sense of Aristotle. To reap a harvest takes more than seed corn and soil. Capital in the form of fertilizers, tilling and harvesting tools must also be introduced, along with human labor, in order to make the seed corn productive. Seed corn is just one of the numerous factors of production, and only the full complement of all these factors can be considered productive.

And, since all these factors can be purchased with money, it is well-understood that money can be productive in the hands of the entrepreneurs. This fact is reflected by the willingness of banks to pay interest to depositors on money they pass along to producers. In this sense it is admissible to say that money is productive: it *can* earn a return. Mainstream economists do not deny that gold was productive, in this generalized sense, under the gold standard. But they insist that, with the advent of the new millennium, gold has forever lost its former productive power to the irredeemable bill of credit. Gold has become sterile again. It can earn no return -- only irredeemable bills of credit can.

It is important for us to realize that every word of the doctrine on the sterility of gold is an outright lie. Not only can the owner of gold earn a return in gold on his holdings even under the regime of irredeemable currency, but *gold is the only form of tangible wealth that can be lent out at interest and that is in constant demand as such*. There is a lively gold loan market in the world: gold is put out in loans and is borrowed at interest on a regular basis. It is used in financing great capital projects as well as trade -- in the same way (although not on the same scale) as it always did under the gold standard.

Under these loan contracts both principal and interest are payable in gold. Nor is this something new: gold lending has continued uninterrupted in countries where the necessary legal protection of contracts involving gold loans has not been abrogated. 'Demonetization' did not succeed in abolishing the lending and borrowing gold at interest, it only abolished the truth about it. Even students of economics are deliberately kept in the dark about the existence, functioning, and extent of these gold loan markets.

The reasons for this obscurantism are not hard to find. The rate of interest on gold loans is low and stable. The much higher and more volatile rates of interest payable on loans made in irredeemable currency could not stand comparison with it. Dissemination of truth could raise awkward questions about the legitimacy of the present monetary regime. People might inquire why they cannot have a monetary system that would automatically guarantee the lowest possible rate of interest.

3. The Redistribution of Losses

The gold bond is essential to the theory of interest presented in this essay. The formation of the rate of interest under a regime where interest is payable in irredeemable currency is an entirely different matter. The central bank's attempt to keep a lid on the rate of interest is doomed, as this effort incorporates the contradictory aims of monetary policy and interest-rate policy. Open market operations in bonds can indeed be used to lower the interest rates that are high due to currency depreciation.

The central bank goes into the open market and buys government bonds. As a result bond prices go up or, what is the same, interest rates go down. But the flipside of this is that now there is even more irredeemable currency in circulation. This cannot help but make the pace of currency depreciation increase. Yet it was the fast depreciation of the currency that was responsible for the high interest-rate structure in the first place. In other words, while the central bank is fighting a side-effect of the disease, it only makes the root cause more entrenched.

Furthermore, under the regime of irredeemable currency malevolent bond speculation overwhelms and strangles benign bond arbitrage. Recall that under the gold standard there was no bond speculation -- none whatever. There was only arbitrage between different maturities, keeping the yield curve in good shape.

The price of bonds, and with it the rate of interest, was remarkably stable, precluding profitable speculation. But when governments left the path of monetary and fiscal rectitude and started passing retroactive laws, declaring fraudulent bankruptcy, devaluing the currency under false pretenses, reneging on gold clauses enshrined in their bond obligations, and embracing the policy of debt abatement -- they threw the value of their outstanding bonds to the winds. The arbitrageurs responsible for maintaining stability in the bond market are gradually forced to vacate the field. Their place is being taken over by speculators who thrive in volatile markets. The entire character of the bond market and bond trading has changed beyond recognition.

The rational basis upon which bond values rest was overthrown when gold-redeemability of the currency was abolished. The fanatic denial of this fact is central to mainstream economic orthodoxy. Nevertheless, the disappearance of predictable arbitrage and the advent of unpredictable speculation make for violent and increasing fluctuations in the rate of interest, throwing the capital markets into a turmoil.

No longer does the propensity to save regulate the availability of long-term credit through the mechanism of the interest-rate structure. The regime of irredeemable currency is characterized by a chronic paucity of savings -- regardless how high the rate of interest may go. Savers are not blind to the fact that their savings, denominated as they must be in a depreciating currency, are continually and systematically plundered. Their protector against plunder, the gold coin, has been ousted from the system.

But the savers are not entirely defenseless, and they can fight back. They could consume their savings before further depreciation takes its toll. More ominously, they can extend their consumption beyond the limits set by existing savings, if they plunge into debt in an effort to turn a bad situation, created by the depreciating currency, to advantage. It can hardly be doubted that a lot of this is occurring in the world today.

Crossing the wires at the traffic light

The regime of irredeemable currency creates a disharmony between individual and society, where harmony has reigned before. Through a false incentive system, this regime inhibits capital accumulation and, ultimately, it promotes capital consumption. The need to convert income into wealth is overtaken by the need to protect oneself against plunder.

The propensity to save is corrupted by the false view that savings can be substituted by debt. While there are natural limits to debt-creation under a gold standard, all such limits have been thrown to the winds under the regime of irredeemable currency. The volume of total debt increases exponentially as interest paid on the old debt is immediately converted into new debt. The mechanism to liquidate debt has been dismantled. Debt can no longer be liquidated, and at maturity it is dumped into the lap of the government.

As for the government, there is simply no way to retire its debt. Redeeming a government bond in irredeemable currency merely replaces interest-bearing debt by non-interest-bearing debt (that is, by a less desirable form of debt, making the debt-pyramid even more unstable). In the meantime total debt is increasing exponentially, following the law of compound interest. The inordinate growth of the Debt Behemoth and the ongoing capital destruction inevitably lead to a credit collapse.

The forcible removal of gold from the heart of the credit system in 1971 was ill-advised. It brought about a radical change in the character of the bond market. It drove out the arbitrageur, and invited in the bond speculator. The regime of irredeemable currency crosses the wires at the traffic light. It sends the red signal to producers when the green signal is intended. High interest rates beget even higher interest rates, as speculators keep betting on lower currency and bond values.

Threatened by ever higher interest rates, producers are confronted with endless capital losses. This is a regime of hot money jumping around nervously from place to place, seeing no safety anywhere, but going from places that seem unsafe to places that, for the moment, seem less unsafe. This is a regime under which men are afraid to make long-term plans, or to grant long-term commitments. This is a regime that encourages farmers

to eat the seed corn, the dairy-man to slaughter the milch-cow for the meat, and the orchard owner to cut down his fruit trees for firewood. This is a regime of junk bonds.

The degeneration of the bond market into a casino where gamblers run riot pronounces a most devastating verdict on the regime of irredeemable currency. Previously all owners of capital, including the speculators, were subjected to the same discipline, and were constrained in their activities by a market process making them servants of the general public.

If they correctly anticipated changes caused by the uncertain future, speculators would reap profits. But if they failed to do this, then they would suffer losses and, unless they mended their ways in time, they would lose their capital to others who were better at serving the public. Now, under a new dispensation granted by the regime of irredeemable currency, speculators can be self-serving without the obligation to promote the general welfare. They grow fat on the sweat and blood of the public. All they need to do in order to make a killing is to out-guess government bureaucrats whose job it is to manipulate currency and bond values.

The dance of the derivatives

In the economic literature it is customary to make a distinction between stabilizing and destabilizing speculation. The distinction is spurious. All legitimate speculation is stabilizing, if by 'legitimate' we understand speculation addressing risks inherent in nature (e.g., weather, natural disasters, etc.) By abuse of language, the word 'speculation' nowadays is applied to market activity that addresses risks presented not by nature but by arbitrary government action. However, a word already exists in the dictionary to describe this kind of activity, namely, gambling.

Properly understood, under the regime of irredeemable currency participation in foreign exchange and bond markets (including derivative markets in futures and options) is not speculation but gambling. The risks involved have been artificially created by arbitrary measures. Just as increased participation at the roulette table cannot reduce the risks of betting (and can often increase them) increased 'speculation' in the bond markets cannot reduce price fluctuations (but is more likely to increase them).

Under a gold standard speculation in grains is economically justified by the existence of future uncertainties presented by nature. In the case of an unexpected crop failure or bumper crop the price disturbance is minimized by the presence of a speculative supply or demand. No such justification for bond speculation can be offered. All the risks are wholly artificial and cannot be reduced by inviting speculative participation.

On the contrary, price-swings are likely to increase along with increased participation. This is a case of pure gambling. The linguistic innovation of calling it 'speculation' will not change its nature. Government economists suggest that the derivative markets in interest-rate futures have the same salutary effect on interest rates as future markets in grains have on grain prices. There is not the slightest evidence to support this claim.

The effort to smooth out interest-rate fluctuations under the regime of irredeemable currency by creating more opportunities for bond speculation and for trading derivatives in interest-rate futures is doomed. Opening ever more derivative markets will backfire. More gambling creates more uncertainty, not less. The regime of irredeemable currency is characterized by insufficient capital accumulation or maintenance and, ultimately, by capital destruction. It cannot be rescued by legalizing gambling.

The 'Dance of the Derivatives' of 1994-95 gave a foretaste of what is to come. Banks, commission houses, pension funds, and even municipal governments are known to have gambled and to have suffered grievous losses, some irreparable. Observers blamed the debacle on inept or dishonest traders. A more adroit analysis would, however, show that disaster had to strike in any case. The same thing would have happened even if traders had been meticulously following the traditional methods of hedging and arbitrage.

The truth is that the old rules no longer apply. Once the sheet anchor of gold has been removed, the character of the game has changed beyond recognition. Previously gold acted as the policeman keeping speculators in line. Because of the presence of gold in the system, the speculators could gang up in order to bid up commodity prices, or to drive down foreign exchange rates and bond values, only at their own peril. Their bidding would immediately be confronted with relentless arbitrage, exacting a heavy penalty for reckless bidding. Arbitrageurs could count on gold, the policeman of the system, in resisting recklessness in speculation.

But with the policeman fired and no replacement commissioned, speculators can gang up with impunity, induce and ride price trends unilaterally, until they are ready to make a killing. Speculation has become malignant. Speculators ran up the price of sugar to 75 cents a pound and that of crude oil to \$42 a barrel -- and made money all the way up. They drove down the price of a \$1,000 Treasury bond to \$500 and the yen-price of the U.S. dollar to 78 -- and made money all the way down. And they made a killing when they sold sugar at 75 cents, crude oil at \$42; and when they bought Treasury bonds at \$500, the U.S. dollars at 78 yens.

During these episodes arbitrageurs have been conspicuous only by their absence. They are intimidated in the absence of the police, and are gradually withdrawing their services. When the last arbitrageur abandons the market, the speculators will have a field day. They will bid commodity prices up to the sky, and drive currencies and bonds to the ground. Without the guarantees of the gold standard, no arbitrageur will be able to oppose the speculators when the bull-run in commodities and the bear-run in securities start in earnest.

Sweeping losses under the rug

The term 'redistributive society', as it is used by both its protagonists and antagonists, refers to the redistribution of wealth and income -- after they have been produced. More ominously, a movement to redistribute future losses is afoot. If successful, losses will be perpetuated and passed on to society. The scheme will allow the indolent, the inefficient,

the inept, and the consistent loss-maker to continue in business indefinitely at the expense of the industrious, the efficient, and the profit-conscious.

But if the distinction between profit and loss is obliterated, society's internal communication system may be falsified. Ultimately, production would be thrown into confusion. The leitmotif of our chrysophobic age can be described as a parade of the loss-makers. The profit-conscious must be cowed into submission. The gold standard is anathema to the lobby of the loss-makers, as gold puts profit and loss into the sharpest focus, separating the adept from the inept, the industrious from the indolent. The lobby wants a system under which distinction between profit and loss becomes fuzzy, inefficiency can be covered up, and ineptitude entrenched.

What is true for firms is also true for governments. The post-war monetary system is a creature of the victors, in particular, of the U.S. and the British governments. Its thinly veiled purpose is to accommodate indolence and ineptitude in international trade. Its authors have openly advocated a monetary system that gladly tolerates deficits, and unhesitatingly penalizes surpluses on current account. In practice the vanquished, especially the German and the Japanese governments, were forced to make their central banks a dumping ground for an endless stream of unwanted paper issued by the victors. The 'unlimited demand' thereby created for U.S. Treasury issues makes the illusion in the public mind that the millennium of irredeemable currency has indeed arrived at the long last.

We should be well-advised not to fall victim to this hoax. We should not be misled by the docility of the German and Japanese governments in playing faultlessly their preassigned role in the farce. They have absorbed losses counted in trillions, without ever saying "ouch". The Japanese started accumulating irredeemable paper when it cost them 360 yens to buy one dollar -- as opposed to the 1995 low of 78 yens to the dollar. The corresponding figure for the Germans is 4 1/2 marks to the dollar initially -- as opposed to the 1995 low of 1 1/3 marks to the dollar.

The Germans and the Japanese are still sitting on mountains of paper losses that nobody is reporting, still less willing to discuss. Yet it is the destiny of paper losses that sooner or later they must be realized. Could it be that the collapse of the stock market in Japan earlier in the decade, the present banking crisis there, and the recent weakening of the German financial structure, are signs of the beginning of the end? Losses are a stubborn thing. They refuse to go out of existence, no matter how docile the victims of the redistribution of losses may be. This is a dangerous game of deception that governments can continue playing only at their own peril.

4. Whither Gold?

Gold in the monetary system makes for stability and efficiency. One cannot disparage either of these virtues any more than one can disparage motherhood. A low and stable interest-rate structure, in particular, cannot be achieved without making credit gold-bonded. This elementary truth is now in the public domain, even though our universities

have been somewhat tardy in accepting it. But the U.S. Congress would be well within its constitutional authority if it provided monetary leadership in the world. It is possible that a majority of members in that body will come to realize that, in order to be master in their own house, they must get hold of the wildcard in the pack. If they want to control the budget deficit, they must regain control over the cost of debt servicing -- the very wildcard they haven't got. In order to get hold of the wildcard, Congress must once more make the public debt gold-bonded.

As debt payable in irredeemable promises is being phased out, and gold-bonded debt is being phased in, the interest-rate structure will be stabilized at the lowest level compatible with the state of the economy. Only then can a meaningful program of deficit and debt reduction be implemented. As long as the wildcard is out, a collapse in the bond market will remain a constant threat, as sky-rocketing interest rates can frustrate any plan for deficit reduction.

The expertise in how to execute the transition exists within the Halls of Congress. In 1989 Representative William E. Dannemeyer of California (now in retirement) pioneered a scheme of deficit reduction based on the idea of turning short-term/high-cost debt by long-term/low-cost debt. The miracle of turning water into wine can be accomplished by making the debt gold-bonded. Presently Senator Bennett of Utah is championing a similar plan. With the aid of gold the Debt Behemoth could be reined in -- provided the political will and statesmanship is there.

How to cork the genie in the bottle

Why is gold relevant to-day? Clemenceau's saying that "war is too important to leave to the generals" may be paraphrased as "interest rates are too important to leave to the central bankers". The genie of interest rates has been let out of the bottle and nobody, not even Aladdin Greenspan, can tame it. There is too much destruction and uncertainty in the world caused by gyrating interest rates. It is time to put the genie back into the bottle, and cork it.

This is where gold comes in. Only a golden cork will do. The genie has learned how to sneak through corks made of paper. We don't even have a coherent theory of interest without reference to gold. Under the regime of irredeemable currency interest is merely bribe-money, trying to persuade reluctant holders of irredeemable promises to hang on awhile longer. The maturity structure of the U.S. public debt is contracting. Clearly this process cannot continue indefinitely. The size of the bribe expected increases with the amount of the fast-maturing debt.

Gold cannot be wished away from the credit system. It is there, like it or not. Gold is the only conceivable standard of borrowing. The lowest rate of interest is available for gold-bonded debt -- and for no other. Loans payable in irredeemable currency carry progressively higher rates of interest. How high they go depends on public fear of currency depreciation.

Paradoxically, gold's importance is growing while its dispersal from official hoards and the mines continues apace. Dispersed gold represents latent power, far greater in scope than its nominal market value, as sound credit can be built only upon a gold base. When the dispersal of gold reaches a certain threshold (nobody knows where exactly this threshold is), a metamorphosis of money will take place. Gold will reclaim its throne as constitutional monarch in the monetary and credit system of the world.

Unfortunately, the transition may not be trouble-free. Procrastination in overdue monetary reform brings with it the danger of a credit collapse -- similar to that experienced under the Great Depression of 1929-39, causing widespread economic pain in the world. Educating public opinion to look at gold as a gift of Prometheus, rather than Pandora's box, after 75 years of vicious chrysofobic agitation and propaganda, presents us with a formidable task. Yet we must do what we can to disseminate the truth about gold.

The consequences of the alternative, a credit collapse engulfing the entire world, are too horrible to contemplate.

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