
Ideal Money

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Distinguished Guest Lecture

Ideal Money

John F. Nash, Jr.*

Money can be recognized as a technological development comparable to the wheel and of similar antiquity. Among the more recent developments in the technology that facilitates transfers of utility (in the sense of game theory) are systems like those of EZ Pass, by means of which vehicles traversing toll bridges or toll highways can pay their toll fees without stopping for the attention of human personnel manning the toll booths. In this lecture, I present remarks about the history of monetary systems and about issues of comparative quality or merit, along with a specific proposal about how a system or systems of “ideal money” might be established and employed. In addition, I criticize the Keynesian psychology in relation to the history of the influence of Keynesians on the practical characteristics of national currencies.

1. Introduction

The special commodity, or medium, that we call money has a long and interesting history, and since we are so dependent on our use of it and so much controlled and motivated by the wish to have more of it or not to lose what we have, we may become irrational in thinking about it and fail to be able to reason about it like we do about a technology, such as radio, to be used more or less efficiently. Therefore, I wish to present the argument that various interests and groups, notably including Keynesian economists, have sold to the public as a quasi doctrine that teaches, in effect, that “less is more” or that (in other words) “bad money is better than good money.” Here we may recall the classic ancient economics saying called *Gresham's law*: “The bad money drives out the good.” This saying of Gresham's is of interest here mainly because it illustrates the old, or “classical,” concept of *bad money*, which is not in line with the thinking of Keynesian economists.

2. Money, Utility, and Game Theory

In the sort of game theory that is studied and applied by economists, the concept of *utility* is very fundamental and essential. Von Neumann and Morgenstern (1953) give a notably good and thorough treatment of utility in their book on game theory and economic behavior. The concept of (mathematical) utility does indeed predate the book of Von Neumann and Morgen-

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stern. For example, as a concept, mathematical utility can be traced back to a paper published in 1886 in Pisa by G. B. Antonelli (Antonelli 1971).

When one studies what are called *cooperative games*, which, in economic terms, include mergers and acquisitions or cartel formation, it is found to be appropriate and is standard to classify these games into two basic groups: games with transferable utility (type 1) and games without transferable utility (type 2). In the world of practical realities, it is money that typically brings into existence games of type 1 rather than games of type 2; money is the “lubricant” that enables the efficient transfer of utility. Moreover, in general, if games can be transformed from type 2 to type 1, there is a gain, on average, for all of the players in terms of whatever the expected outcome might be.

However, money’s function in generally facilitating the transfer of utility would seem to be performed as well by the currency of Thailand as by that of Switzerland. One can ask the question, How do “good money” and “bad money” differ, if at all, with regard to the valuable function of facilitating utility transfer? But if we consider contracts with a relatively long time axis, then the difference can be seen clearly.

Consider a society in which the money in use is subject to a rapid and unpredictable rate of inflation such that money worth 100 now might be worth between 50 and 10 by a year from now. Who would want to lend money for the term of a year? In this context, we can see how the quality of a money standard can strongly influence areas of the economy involving financing with longer-term credits.

Keynesians

The thinking of J. M. Keynes was actually multidimensional, and consequently there are quite different varieties of persons at the present time who follow, in one way or another, some of the thinking of Keynes. Of course, some of his thinking was scientifically accurate and thus not disputable. For example, an early book written by Keynes (1921) was the mathematical text *A Treatise on Probability*.

The label *Keynesian* is convenient, but to be safe, we should define this term to constitute a party that can be criticized and contrasted with other parties. Thus, let us define *Keynesian* to be descriptive of a school of thought that originated at the time of the devaluations of the pound and the dollar in the early 1930s. Then, more specifically, a Keynesian would favor the existence of a manipulative state establishment of central bank and treasury that would continuously seek to achieve “economic welfare” objectives with comparatively little regard for the long-term reputation of the national currency and its associated effects on the reputation of financial enterprises domestic to the state.

And, indeed, a very famous saying of Keynes’s was “. . . in the long run we will all be dead. . . .”

3. Historical Observations

The history of the gold standard is rather interesting. It can be traced back to 1717, when Isaac Newton, as “Master of the Mint” in London, set a standard quantum of gold to correspond to the currency called the *pound sterling*. In 1931, this standard finally failed to be supported

any longer, and this happened at a time when the London government had shifted to the left politically and at a time of global economic stresses.

The U.S. dollar had itself been imitatively put on a fixed relation to gold, like various other currencies at various times. That relation was not supported after 1933, similarly to the case for the British pound. Another similarly linked currency was the Swiss franc. In its case, the original standard relation to gold was discontinued in 1936.

In later times, viewed retrospectively, it could be said that there were times and places where it perhaps seemed as if there were a gold standard but there really wasn't. In 1971, there came, under the presidency of Nixon, the final complete disavowal of the concept of a linkage between the U.S. dollar and gold. This development naturally also marked the beginning of a period of strong inflation in terms of dollar prices.

Central Banks as "Pardoners" and as Printers of Money

A *debt pardoner* is an agency or authority that can pardon the "sins" of the overindebted or of those who otherwise would go bankrupt. Banks can thus sometimes be saved from failing. The government of a country that issues the locally accepted currency also thus pardons its own "sins."

If the euro currency becomes established, then Rome and Paris will no longer be able to play the same roles as pardoners as they have in the past. National pardoners will become ineffective within the area of the euro unless they secede from the euro currency bloc. Instead, pardoning will depend on the actions of a sort of "Holy Roman Emperor" in Frankfurt, which would be able to generally pardon all of the debt-sinners of the euro-money bloc.

The British and the Euro

The inhabitants of the United Kingdom, having in the past had the best and most dominant of all currencies, as well as the biggest colonial empire, may feel so reluctant to accept the comedown that agreeing to the rule of a (collective) Holy Roman Emperor in Frankfurt would entail that they will decline to accept membership in the euro-money bloc. Technically, it would be possible for them to arrange to have a money of their own whose quality would be at least equal to that of the euro. (Presumably, this would be the Swiss strategy.)

Ideal Money

The euro-money prospect opens up many interesting potentialities with regard to games of alignment. In general, membership in a social club is desirable only if there are nonmembers. A good alliance can be reduced to an absurdity if it becomes too broadly inclusive. However, a global money standard could have a value similar to that of standard measures such as those of the metric system.

There is tremendous value in simply having prices quoted conveniently. With a euro-money standard, a manufacturer in Spain can give information simply to prospective customers in France or Germany. These conditions would be comparable to conditions in the United States, where items can be ordered from catalogs and shipped interstate with only the complication of the state retail sales taxes sometimes being involved.

4. States without Sin

It was observed that the states of Luxembourg, Andorra, Liechtenstein, San Marino, Monaco, and Vatican City have been constitutionally without sin in the sense of the defaulting of bankrupts, and they have also not themselves pardoned any money debtors. This is simply because they have not printed any money for which they would also determine the value. Each of these states would either issue a currency with a value defined by the value of the currency issued by some larger state or simply not issue any currency. Outside of Europe, Panama and Liberia can be named as examples of states in the same category.

Economics and Money Quality

How does the traditional quality of a state's currency correlate with that state's typical level of economic advancement and the standard of living? The correlation seems to be positive, since Switzerland has a notably high standard of prosperity and notably "good" money, and, of course, the whole spectrum of prosperity and money quality of states must be studied for a scientific conclusion.

How Could "Good" Money Become a Standard?

The historical fact seems to be that the gold standard was, in its time, a basis that favored the prosperity of the United Kingdom and of other states, like the United States and Switzerland, that adopted the concept of the standard. Nowadays, however, few would propose a return to the actual use of simply the metal gold as a standard, for the following reasons. (i) The cost of mining gold effectively does depend on the technology. Recent cyanide leaching techniques have made it possible again to profitably mine gold at formerly abandoned sites in the U.S. so that it is now a big producer. However, the unpredictability of the cost is a negative factor. (ii) The location of potential gold-mining locations may not be "politically appealing," so it would seem undesirable to make a political choice to enhance the economic importance of those particular areas. (iii) There is some negative psychology about gold such that even if it were the most logical choice after all, the unpopularity of the idea could be very obstructive.

But, a modern alternative is possible, one that would provide a good standard independent of state pardoners. This idea occurred to me fairly recently.

However, the possibilities with regard to actually establishing a norm of money systems that could qualify as "ideal" are dependent on the political circumstances of the world. If the world had in fact become a single empire with a central government, then what is now international trade, with shipping on the oceans through areas considered the property of no state, would be replaced by the equivalent of domestic commerce within the United States. This development would profoundly modify the circumstances relevant to the establishment of "good" or "bad" systems of money. What I have to suggest is not appropriate for the world empire context.

It can also be remarked that "bad" money, or the inverse of "good" or "ideal" money, is basically a consequence of deficiencies on the part of governments and politicians of a sort relating to morals, virtue, or ethics. Thus, the phenomena of "bad" money are essentially understandable via Machiavellian studies.

We of Terra could be taught how to have ideal monetary systems if wise and benevolent

extraterrestrials were to take us in hand and administer our national money systems analogously to how the British recently administered the currency of Hong Kong.

5. Natural Comparisons of Value

In most states with an advanced economy, the authorities prepare statistics that are comparable to the U.S. consumer price index (CPI). (In the United States this statistic goes back to when the dollar was indeed a gold standard currency.) As inflation has become more of a standard and expected phenomenon, the CPI has been used and interpreted as the most realistic and practical measure of the actual rate of inflation. When it is at the 2–3% level, it is currently fashionable for all economic and financial commentators to say that “inflation is not a problem” or “inflation is under control.” This, of course, involves a sort of psychology. Over the current expected human lifetime of 70 years, the value of one unit of currency at the time of a person’s birth would exceed four units of its value at the time of that person’s expiration.

A Nonpolitical Value Standard

A possible nonpolitical basis for a value standard that could be used for money would be a good industrial consumption price index (ICPI) statistic. This statistic could be calculated from the international prices of commodities such as copper, silver, tungsten, and so forth that are used in industrial activities.

Here we can return to the understanding that money has the practical value of creating games for traders. These are games with transferable utility, but if the money were not available, the game of the traders would be a game without transferable utility and thus naturally a game with less efficiency with regard to the possibilities for the participants to maximize their combined gains.

If we then consider which commodities would be optimally suitable for providing a basis for a means of transferring utility, and if we specifically consider the possibility that the trading partners may be located in different nations and perhaps on different continents, then the suitability of such commodities with regard to the ideal function of facilitating utility transfer depends on the extent to which such a commodity seems to have a value independent of its geographical location.

Clearly, in terms of this geographical perspective, gold has historically been optimal, largely because the labor cost of moving it over great distances is so small relative to the value of what is being transported. Thus, gold formed a very efficiently movable medium for the transportation of a value exchangeable for other values, ultimately deriving, in one way or another, from human labor (with the achievements of warriors here also being viewed as involving labor). However, right now platinum would be even better than gold, because it has more value per unit of weight.

Crude petroleum could also be used for barter transactions, and in view of the present state of the global economy it would seem a proper component of an index of prices of internationally traded commodities that enter into the costs of industrial consumption. We can see that times could change, especially if a “miracle energy source” were found, and thus if a good ICPI is constructed, it should not be expected to be valid as initially defined for all eternity. It would instead be appropriate for it to be regularly readjusted depending on how the patterns of inter-

national trade would actually evolve. Here, evidently, politicians in control of the authority behind standards *could* corrupt the continuity of a good standard, but depending on how things were fundamentally arranged, the probabilities of serious damage through political corruption might become as small as the probabilities that the values of the standard meter and kilogram will be corrupted through the actions of politicians. Moreover, commodities with easily and reliably calculable prices are most suitable, and relatively stable prices are very desirable. Another basic cost that could be used would be a standard transportation cost, the cost of shipping a unit quantity of something over long international distances.

Hence, it seems that such an ICPI could be calculated in an essentially scientific fashion after some practical initial choices were made. Moreover, this standard, as a basis for the standardization of the value of the international money unit, would remove the political roles of the “grand pardoners,” the state authorities that can forgive the debts of debtors, including, in particular, those of themselves. (The national debt of a state can, in principle, be trivialized by a sufficient amount of inflation.)

Euro, Frankfurt, Standard

If such an objective and nonpolitical standard were used in the Frankfurt of a euro-money system, then there would not be a “Holy Roman Emperor” (although of a collective structure) with the power to pardon or not pardon the debt-sins of all European debtors (of the zone) in general. Thus, there would be nothing to argue about, such as whether or not those most desirous of Keynesian pardoning should be favored with a general pardoning of past debts by the fiat of inflation.

Refined Indices

If the technical problem of designing an index of prices to serve as a basis for a money of standard value is considered in a more elaborate fashion, it seems that it is possible to define the sort of index that would vary smoothly and yet would also vary in an appropriate way over longer periods. Here, the apparent problem is that the prices of certain commodities that would be ideally suited to the measurement of long-term changes in the costs of industrial production may tend naturally to be volatile in their variations depending on business cycles. Moreover, the prices of other commodities, services, and so forth might tend to vary much more gradually or smoothly but not be reliable in terms of long-term considerations for one reason or another.

For example, the prices of copper and nickel might very well represent, over long periods, the actual costs of industrial production, while the prices of silver and gold might tend to vary comparatively much more smoothly than those of the baser metals. It is possible to construct a price index based on moving averages that would have the smoothness of the prices of the gold and silver and yet, over longer periods, would basically follow the values of the baser metals. This index could be constructed by computing a moving average of the index for the base metals computed by pricing them modulo the index of the precious metals.

In actual application, it would not be a matter of base and precious metals but rather of a variety of commodities that would be selected for their suitability in one sense or another. Also, for the index formed on the basis of things with naturally smoothly varying prices, it seems that it would be intrinsically quite feasible to make use of costs of services, energy, or prices that depend on the national location of the definition of the commodity, service, or asset being

priced. Hence, by using this approach, the temptation to include things that would otherwise seem inappropriate just to obtain stability or smoothness can be avoided.

Of course, the fundamental principle remains that if a political basis existed for changes in a standard index, it is not unlikely that a form of corruption would appear. This issue is comparable to the issue raised recently in the United States when certain interests wished to devalue the original CPI computed by the Labor Department so as to have more federal budget money available to reduce taxes or for other purposes, with Social Security beneficiaries receiving less.

Practical Considerations concerning Long-Term Value Trends and the Safe-Deposit Box Singularity

There is a problem for the issuer of a currency, whether in coinage, paper, or electronic form, that if this currency (or money) is too good, then it could be exploited by all sorts of parties and interests that might simply wish to safely deposit a store of wealth or even to conservatively invest some assets for future good value. (The word *good* is used here in terms of comparative value trends, as in *good investments*.) Then, under extreme conditions the currency issued by one state could be exploited by parties not of that state as a sort of “safe-deposit box” on which they would not need to pay any rental fees or fees like those paid to the managers of mutual funds for investment.

But, simply to improve the conditions under which agreements regarding long-term lending and borrowing would be made, a money would be more or less equivalently good if it had a completely steady and constant rate of inflation. Then this inflation rate could be added to all lending and borrowing contracts. Hence, the problem of a money that would be too good is avoidable. However, this has not been known as a problem in the past history of money. In fact, there is a natural character of the sort of material things to which money standards have been related that makes them naturally tend not to provide “too good” a channel for investment. It has simply not been profitable in the past for any economic parties to use any variety of money as a channel for investment, although, of course, there has been much currency speculation, which is a different thing. Of course, the issuer of a currency also needs to be properly prepared for the possibility of speculation on the part of interests domiciled in foreign states, etc., etc.

Natural Value Trends

The long-term trend of the value of any index of prices will depend, sometimes predictably, on the choice of the composition of that index. It is a coincidental fact that the inherent nature of mining and mining technology makes it possible for the prices of certain commodities that are produced as a result of the devotion of labor and capital to the effort of mining to increase less (or decrease more) than might be expected. There is a “dimension paradox”: Agricultural products are produced by using the two-dimensional resource of the earth’s surface, so the “disappearing frontier” creates a limitation. In contrast, some mining, particularly for elemental metals, can essentially be done in three dimensions, although, of course, there are increasing costs for deep digging. So, really there is lots and lots of gold, silver, platinum, tungsten, and so forth out there and more can be found by digging deeper.

Thus an index can be chosen so that its value does not rise, say, like that of a typical Rembrandt or like the ratio of the human population to the total surface area of the earth. If

the value trend of a currency is such that a natural interest rate is not negative, then it is not an unattractive task for a central currency authority to mint or print the physical currency that would circulate. Then, the issuer of currency would be partially in the position of a borrower not paying interest on borrowed money.

6. Author's Note

The above text originally derives from my outline for the lectures given at various specific locations of the European School of Economics in Italy in October 1997. Subsequent to that time, after consulting with some of the economics faculty at Princeton, I learned of the work and publications of Friedrich von Hayek. I must say that my thinking is apparently quite parallel to his thinking with regard to money and particularly with regard to the nontypical viewpoint regarding the functions of the authorities that in recent times have been the sources of currencies (earlier coinage).

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