Federal Reserve Bank of Cleveland

Bad Standards

by Michael F. Bryan

The Congress shall have power…To coin Money, regulate the Value thereof, and of foreign Coin, and fix the standard of Weights and Measures.

—Constitution of the United States
Article 1, Section 8

Perhaps the most difficult idea for students of money to grasp is that a dollar, as it is understood today, has no *intrinsic* value. By itself, it is worthless. The dollar is only a measure of value, defined entirely by its purchasing power, or what another person is willing to give you for it. It is a fiat standard of value.

Other nations use other scales. In France, value is measured by "francs," in England, "pounds," in Mexico, "pesos," and so on. These are *all* arbitrary measures.

In this *Economic Commentary,* I examine the dollar as a standard measure of value. This is a useful exercise primarily because it helps us understand the problems created by inflationary periods, when that standard is not fixed. By considering examples from other, seemingly unrelated, measurement standards—bad standards—we come to see that the essential attribute of any measure is the clarity of information it conveys. This understanding illuminates the central problem with inflation: It distorts a nation's measure of value.

The Usefulness and Pitfalls of Arbitrary Measurement Standards

The high cost of living did not represent that the average man was worse off; it merely represented that the yardstick, in terms of which wealth and income was measured, had decreased.

—Irving Fisher (1922)

Every decision requires information. If I'm not sure whether I would be more comfortable with or without a jacket, I check the weather report, which might say that it's raining. This information is useful to my decision. And it is nonsubjective—either it's raining or it's not. But many of our decisions are based on subjective judgments, and that greatly complicates our ability to get information from others. If, for example, a weather reporter informs me that the temperature is "cool"—a subjective measurement—can I make a good decision about whether to wear a jacket? Perhaps. But only if I'm confident that the reporter and I judge "coolness" the same way.

An alternative method of transmitting information on temperature is to use an arbitrary, but standardized, unit like "degrees." If the reporter says it's 57 degrees outside, that is a standardized measurement which clearly tells me the coolness level, as long as I understand what is meant by a degree.

But even this measurement can create informational distortions if there is a misunderstanding about what "degree" represents. Consider again a temperature report of 57 degrees. It is likely that most of our readers presumed a Fahrenheit scale, since a majority live in areas where this is the standard used to measure

The measurement standards that we take for granted today, such as for weight, length, time, and temperature, were not always so exact. Over the years, we have come to appreciate the importance of maintaining consistent standards in our measurement of these and other subjective phenomena. Why, then, do we not demand the same rigorous adherence to a standard when it comes to our measure of value—the dollar? We should.

temperature. Yet readers who use the Celsius scale would probably have concluded that 57 degrees is hot. (In fact, very hot. Fifty-seven degrees Celsius—or 134 degrees Fahrenheit—is the highest temperature ever recorded in the United States.)

Confusion over a measurement standard can occur just as easily when the standard is variable. Many nations measure length in terms of the yard, the foot, and the inch. Today, there is general uniformity regarding the lengths that these units represent.[1] But this has not always been the case. In England, where these measures originated, the foot is thought to have been defined by the length of the ruling monarch's foot. Similar measurements defined the yard and the inch.[2]

Inches, feet, and yards are also commonly used in America, but through at least the mid-nineteenth century, these measures often varied between the states. In 1821, John Adams reported that measures of volume and weight at U.S. customhouses differed by as much as

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20 and 25 percent, respectively! In 1830, a more exhaustive report commissioned by Congress found that what constituted two pounds was 2½ percent heavier in Philadelphia than in Baltimore, and a yard was 1.1 percent longer in Providence than in Philadelphia.

Among the standards established by Congress, the nation's standard of value—the dollar—has received the greatest attention and has been the subject of a virulent debate. In fact, the measurement of a dollar was the country's first officially determined standard.[3] Between 1792 and 1873, a dollar was defined as 24.75 grains of gold or 371.25 grains of silver. And from 1878 to 1968, a dollar was defined only in terms of gold, in what has come to be known as a "gold standard."

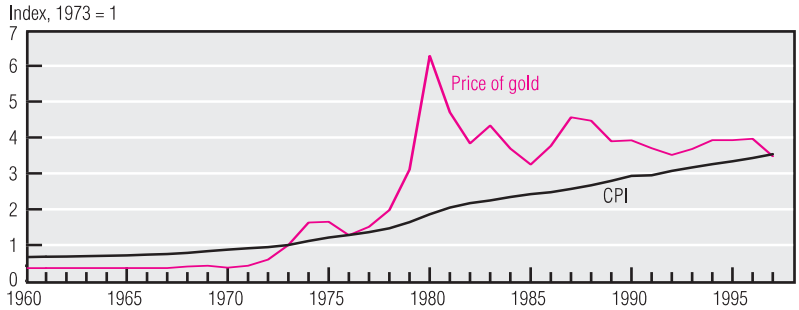
But as a measure of quantity, such as the natural foot, fathom, or handful, which is continually varying in its own quantity, can never be an accurate measure of the quantity of other things; so a commodity which is itself continually varying in its own value, can never be an accurate measure of the value of other commodities.

—Adam Smith (1776)

Metallic weights as measures of value are not without drawbacks. Chief among these is that the intrinsic value of a metal changes with supply and demand conditions in its market. When the market for a metal changes, the economy's measure of value is also altered.

Imagine that the dollar is defined by a specific amount of gold, and that for whatever reason—either the demand for gold rises or its supply falls—gold becomes a more intrinsically valuable commodity. All dollar-denominated transactions and contracts are now more expensive. People who had previously entered into contracts agreeing to repay with a specified number of dollars will find that the agreement has become less attractive, to the great benefit of the lenders. Moreover, retailers will need to adjust the dollar prices of their goods and services downward. Although the intrinsic value of these items has not changed, the intrinsic value of a dollar has.

FIGURE 1 GOLD PRICES AND THE CPI



SOURCES: U.S. Department of Labor, Bureau of Labor Statistics; Data Resources, Inc.; and Samuel Montagu & Company, *Annual Bullion Review*, various issues.

Figure 1 shows the price of gold and the price of consumer retail goods (as measured by the Consumer Price Index [CPI]) since 1960. Note that between 1960 and 1968, the dollar price of gold was an unwavering $35 per ounce. Indeed, gold *defined* the dollar, so it could not change *relative* to the dollar. After 1973, however, the price of gold swung dramatically relative to the average price of retail goods and services. If the United States had been on a gold standard between 1973 and 1996, we would likely have experienced no inflation in the price of goods and services (all else equal), since the price of gold relative to the CPI is nearly the same today as it was 24 years ago. But the price level may have been much more volatile, because the price of gold relative to other goods and services fluctuated by 300 percent between 1973 and 1996, with an average absolute change of 18 percent per year![4]

We can appreciate the needlessness—indeed, the absurdity—of these fluctuations by imagining such swings in other weights and measures. What if we measured a foot as the height on a barometer?[5] As weather conditions shifted, so too would the foot, altering with it all contracts and agreements that specified a particular number of feet. And there would be no agreement between parties on different sides of a weather front as to the length this measure constituted. Obviously, these changes would be a source of great—and entirely unnecessary—disruption in our lives.

A commodity money standard will always be subject to the supply and demand conditions in its market. A fiat money without intrinsic value need not be affected by such uncertainty because its standard is chosen arbitrarily.

And yet you cannot have a measure of weights that have no weight, nor a standard of measure without length. How, then, can you have a uniform standard of value without value?

—Mr. Clarkson Nott Potter
(attorney arguing in support of the negative),
Supreme Court decision of 1871
affirming the Greenback as legal tender

The idea that a fiat money can measure value, without having any intrinsic worth, is difficult to comprehend because we are used to thinking about the dollar as a valuable thing. However, because the intrinsic value of any commodity we choose to define a dollar will fluctuate with the supply and demand conditions in its market, a *completely* arbitrary system for measuring value offers the potential for a more efficient standard than do commodity-based monies.

The merits of a pure fiat versus a commodity money standard depend entirely on the nature of the institution setting and maintaining that standard—the monetary authority. By controlling the supply of fiat money (relative to its demand), monetary policymakers can set or vary the standard as they see fit. But this ability to set the standard of value arbitrarily offers a central bank not only the potential for enhancing economic efficiency, but also the power to corrupt it. As a consequence, there have been many calls for policymakers to fix the standard, not in terms of a particular amount of gold or some other precious commodity, but in terms of its purchasing power.

Is it not absurd to have a dollar also a unit in weight, when it is not intended to measure weight, but is intended to measure purchasing power. It is used in commerce in buying and selling, by debtor and creditor for lending and repaying; and we propose that the repayment shall be just. What does that mean? It does not mean that you shall return a given weight of gold or a given weight of anything; it means that you shall return to the lender something that is a just equivalent. Value is involved in there, and value is statistically increased by an index number average purchasing power.

—Irving Fisher (1922)

Rules versus Discretion in Maintaining a Standard

Arbitrary scales are essential tools for measuring various phenomena. They help us judge, among other things, temperature, time, space, weight, height, and, of course, value. It is on such measurements that a great many decisions are based. But the combination of the important role these measures play in the formulation of decisions, and their arbitrary determination, provides a clear incentive for their manipulation. This is the obvious risk that a fiat money standard faces.

"Ah! That accounts for it," said the Hatter. "Now, if you only kept on good terms with [Time], he'd do almost anything you liked with the clock. For instance, suppose it were nine o'clock in the morning, just time to begin lessons: you'd only have to whisper a hint to Time, and round goes the clock in a twinkling! Half-past one, time for dinner!"

—Lewis Carroll (1872)
Through the Looking Glass

Consider the following historical example involving the measurement of time, another important, but entirely arbitrary, standard. The Julian calendar—the basis for the one most of us use today—is a relatively modern contrivance, introduced around 47 B.C. Prior to that time, much of the world operated on a Roman lunar calendar, which had a major flaw: The lunar cycle lasts only 29.5 days, which means that over a period of 12 months, there aren't enough days to keep the calendar in sync with the seasons. Indeed, the early Roman calendar had only 355 days. Left on its own, it gradually rotated around the seasons, so that, for example, in some years June would occur during the summer, while in others it would be a winter month. In a culture where harvests, holidays, and other seasonal events determine the pattern of people's lives, such an asynchronous calendar is not very practical.

The somewhat predictable solution was to periodically insert an "intercalary" month. For a time, the intercalary period was introduced every other year between February 23 and 24. But the timing (and duration) of this period occurred at the discretion of the pontifices, members of an official board that met in secret to pray and confer with the gods and to observe the moon, along with others signs from Mount Olympus. The intercalary period often lapsed, and there were occasions when the calendar was as much as four months out of sync with the seasons. In the end, the pontifices are believed to have adjusted the calendar at will, and it has been suggested that through their manipulations, they were able to influence a wide variety of political and economic events. Ancient Roman authors insinuated that calendar adjustments were rife with negligence, impropriety, corruption, and politics. (Modern scholars appear to be more forgiving of the pontifices' motives, however, and it is conceivable that their manipulations presumed some social good.)[6]

Apparently, the pontifices were not bound to announce the onset of an intercalary period until the last moment, making commitments based on the calendar extremely difficult. If a general was given an order to commence an attack on, say, March 5, no one was ever sure when that day would occur. In fact, it was not uncommon for Roman quaestors (public fiscal authorities) to redate their official records *after* the fact, since at the time of a transaction's occurrence, the date may not have been clear.[7]

Of course, it was not only public officials who found the discretionary nature of the calendar problematic. It has been suggested that debt finance was common in Roman society, and the imprecise calendar introduced substantial uncertainty into the terms of contracts. Examples are reported in which debt arrangements were calculated on two terms, one being *si intercalctum erit* ("if a day or month will be intercalated into the calendar"). Is this substantively different from the countless modern contracts that include inflation clauses?

Protecting the Standard

Those people who prefer a continually upward moving to a stationary price level forcibly remind one of those who purposely keep their watches a little fast so as to be more certain of catching their trains. But to achieve their purpose they must not be conscious or remain conscious of the fact that their watches are fast.

—Knut Wicksell (1936)

What value of the dollar is the right one? As with temperature, length, or time, any arbitrary scale will do: It really doesn't matter what the purchasing power of a dollar is. What is essential in a measure of value—indeed, what is essential in any measure of subjective phenomena—is that it can be counted on to convey accurate and consistent information. Only then can commitments based on that standard be made.

It is often said that by allowing the purchasing power of the dollar to fluctuate, the Federal Reserve can improve the national welfare. That is, a little inflation may actually have some benefits. When we conceive of the dollar as a measure of value, however, such claims are hard to justify, since we could just as easily imagine the state attempting to boost the nation's welfare by varying measures of length, weight, or any of the other arbitrary gauges through which information is transmitted.

The Federal Reserve is a safeguard of an arbitrary standard—a crucially important standard—on which millions of people base their financial decisions. To ensure that decisions involving value are as clear and as accurate as possible, the central bank must provide stability to that standard.

When we allow the purchasing power of the dollar to change—that is, when we tolerate inflation—we are causing the nation's measure of value to shrink. Perhaps for a time, inflation will make some people better off at the expense of others. But in the end, we all lose a valuable commodity: the ability to make clear decisions based on an invariant standard of value.

Footnotes

1. Actually, small differences still exist. For example, the British foot is 1/400,000 shorter than the U.S. foot.

2. Although new royal houses occasionally brought with them new weights and measures, "official" measures may not have changed very often. However, practical considerations did exert an influence. For example, while an official brass bar was used to gauge the standard inch in Norman England, this measure was also defined as three barleycorns, presumably a more accessible—but more variable—standard for common use.

3. The accuracy of this measure seems to have been the motivation for the first legal standard of weight in the United States, aimed specifically at standardizing coinage. In 1828, Congress enacted the following: ... *[F]or the purpose of securing a due conformity in the weight of coins of the United States—the brass troy point weight procured by the minister of the United States at London in the year one thousand eight hundred and twenty-seven, for the use of the mint and now in the custody of the Mint at Philadelphia, shall be the standard troy pound of the Mint of the United States, conformably to which the coinage thereof shall be regulated.*

4. Of course, some of this volatility would have been reduced had there been a more stable general price level over the period.

5. This example comes from Irving Fisher, testimony before the Committee on Banking and Currency, U.S. House of Representatives, H.R. 11788, December 18–21, 1922.

6. See A.K. Michels, *The Calendar of the Roman Republic*, Princeton, N.J.: Princeton University Press, 1967, p. 168.

7. Indeed, some authors suggest that Caesar's experience with this nuisance in Gaul and elsewhere may have played the deciding role in his abandonment of the lunar calendar.

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