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The dollar of changing value—the "rubber" dollar of the vernacular—is, of course, no new thing. In the past, however, whatever changes have been experienced have come about more or less gradually and for the most part have escaped the notice of all but exponents of the dismal science of economics. Today prepensive and controlled changes in the value of the dollar bring sequelæ that give even the man in the street something whereon to ponder.

All accounting phenomena are expressed (in this country) in terms of the dollar. Assets, liabilities, profits, losses and other operating results are all so evaluated. Marked fluctuations in the value of the common measuring unit can and must produce dislocations as acute as would be produced by similar fluctuations in our standard weights and linear measures. The question is of more than academic interest in a land blessed with the income tax, for the cost of merchandise, investments and property may be measured by the value of the gold for which they were acquired and the selling price by the value of something indefinite—which, in at least one instance, has been quaintly termed "boloney."

A profit is simply the difference between two magnitudes, the cost and the selling price. It is an axiom of all measurement that the difference between two magnitudes can be correctly expressed only if the same measuring unit be applied to both. From this is derived an important corollary, namely: If two magnitudes are measured by different units having a known relationship, (a) the difference between the magnitudes may be expressed in terms of either unit and (b) the ratio of the difference to either magnitude may be computed. If fifty yards of cloth are purchased and thirty meters of it are sold, the size of the remnant is indeterminate unless the relationship between the yard and the meter be known. Given this relationship the size of the remnant may be expressed either in yards or meters, or it may be stated as a percentage of either the original piece or the part sold.

Similarly, if a piece of property is paid for in dollars of one value and sold for dollars of another value, the profit is indeterminate unless the relationship between the two values be known. The fact that the two units are both termed "dollars" simply makes confusion worse confounded. If the relationship between the two values is known, the absolute percentage of profit or loss on the transaction can be computed and the extent of the profit or loss may be expressed in terms of either unit. It is, of course, better expressed in terms of the selling unit, for that is the current one.

The method of computing the profit or loss is not difficult, provided one does not mind a little figuring. The principles are those underlying any sort of measurement with a varying unit and are best displayed through analogy with measurements of length —or weight—or volume.

I have a foot-rule. The correctness of its length has been tested by comparison with known standards. This I shall call my basic or absolute foot. I wish to ascertain the height of a little boy. I place him against a wall and measure. Exactly four feet.

Years pass and the boy becomes a youth. My foot-rule kicks about the premises and through various accidents loses two of its "absolute" inches—it is now one-sixth less in absolute length than formerly. However, stamped in the center of it are still the words "One foot." I believe what I read. It may be boloney to you but the old rule is still one foot to me. I place the lad against the wall and measure him once more. He is six of my "foot"-rules high. Quite a lad—according to my measurements he has gained two "feet," a 50 per cent. increase.

Once you start a thing it gets to be a habit. The youth becomes a man and for no reason at all the urge to measure him again comes over me. Now my little rule has again suffered through the years—another "absolute" inch is gone and it is, in fact, only three quarters as long as it was in its pristine state. However, it still bears the inscription "One foot" and that is enough for me. Again I measure. What a man! Eight feet, as I live. The subject, then, has doubled in size since first we did a-measuring go and has added a third to his stature since the last gauging!

Of course these astounding increases lie partly in the realm of fancy. But how may we eliminate the fancy and ascertain the absolute increases if we know how much the measuring unit has decreased? It is really very simple—there is a neat little formula that will turn the trick. Let $r$ represent the real increase stated as a fraction or percentage of the basic unit, $a$ the apparent increase similarly stated, and $v$ the change in the measuring unit. Then,

$$r=(1\pm a)(1\pm v)-1$$

The sign $\pm$ is read "plus or minus" and means that the values of $a$ and $v$ are added when increases and subtracted when decreases. Now to interpret our dubious measurements.

When the second measurement was taken, there was an apparent increase of one-half (from four feet to six "feet") and the measuring unit had decreased one-sixth. Consequently, $a=+\frac{1}{2}$ and $v=-\frac{1}{6}$. Substituting these factors in our formula we have

$$r=\frac{3}{2}\times\frac{5}{6}-1$$
$$=\frac{1}{4}$$

The real or absolute increase was therefore only one-fourth instead of one-half, or from four absolute feet to five absolute feet.

Take the third measurement and compare it with the first. The apparent increase is 100 per cent. (or 1) and the decrease in the measuring unit is one-fourth. Then

$$r=2\times\frac{3}{4}-1$$
$$=\frac{1}{2}$$

The real or absolute increase in this case, evidently, has been from four feet to six feet.

Now compare the third measurement with the second. In both cases the measuring units are false, but we can still obtain the absolute increase. There is an apparent increase of one-third (from six "feet" to eight "feet") and a decrease of one-tenth in the measuring unit (from ten absolute inches to nine absolute inches). Consequently,

$$r=\frac{4}{3}\times\frac{9}{10}-1$$
$$=\frac{1}{5}$$

The absolute increase in height between the second and third measurements is then one-fifth instead of one-third, or from five feet to six feet.

Now perhaps we don't like to refer one false unit to another but insist that each be referred to a known base—in this case the absolute foot. Our formula expands slightly and we have

$$r=(1\pm p)\frac{1\pm v_2}{1\pm v_1}-1 \text{ or } r=\frac{(1\pm p)(1\pm v_2)}{1\pm v_1}-1$$

Here $v_1$ is the change from the absolute in the first false measuring unit and $v_2$ the corresponding change in the second. Then $a=+\frac{1}{3}$, $v_1=-\frac{1}{6}$, and $v_2=-\frac{1}{4}$ and we have

$$r=\frac{\frac{4}{3}\times\frac{3}{4}}{\frac{5}{6}}-1$$

$$=\frac{1}{5}$$

This is, of course, the same result as that obtained above. The latter formula is used where some established basis is used for reference—the absolute foot in the foregoing illustrations or the 1926 value of the dollar, for example. The relations between apparent and absolute changes illustrated above obtain for all measuring units, whether of length, weight, volume, temperature or value. Let us try a few cases in which value is involved.

You bought a piece of land back in 1923, we'll say, when dollars were dollars and women were glad of it. You paid $20,000 for it. Today you sell it for $30,000, or at a profit of 50 per cent. (this sounds like a bed-time story, but never mind). It dawns on you that the good old dollar is worth now only about two-thirds what it used to rate. Have you really made a profit—or have you? Trot out the formula

$$r=\frac{3}{2}\times\frac{2}{3}-1$$

$$=0$$

The answer? You haven't made a trace of a profit—you've exactly broken even!

Try again. You paid \$24,000 for a piece of property along about 1923, and let us say that the value of the dollar was then about one-eighth greater than the value of the 1930 dollar which we shall use for a basic value. You sell the property tomorrow for \$30,000 (an apparent profit of 25 per cent.) with the dollar down 40 per cent. from its 1930 value. Where do you stand?

$$r=\frac{1.25\times .60}{1.125}-1$$
$$=-.33\frac{1}{3}$$

Profit? Nay, you have lost one-third of your stake and you don't even know it. Your cost was equal to 27,000 of the 1930 dollars and your selling price to 18,000 of the same unit. But will Uncle Sam make you pay an income tax on the apparent profit of \$6,000? Ask something hard!

One more—this time we'll say that you make a little something. You bought some securities in 1930 for \$10,000 and sell them in 1934 for \$21,000 with the dollar worth (let us say) half as much as in 1930. Have you really made a profit of 110 per cent.? Let us see.

$$r=2.10\times .50-1$$
$$=.05$$

Instead of a 110 per cent. profit you have made only a 5 per cent. profit! This is equivalent to 500 of the 1930 dollars. But your income tax will be based on 1934 dollars. What amount of such dollars should you equitably report as profit (forget the law for the moment)? Here is another little formula

$$P=S-\frac{C}{1\pm v}$$

Here $P$ stands for the profit, $S$ for the selling price, $C$ for the cost, and $v$ (as before) for the change in the value of the measuring unit. Then in this case

$$P=21{,}000-\frac{10{,}000}{.50}$$
$$=21{,}000-20{,}000$$
$$=1{,}000$$

The real profit expressed in dollars as of the date of the sale, is therefore $1,000 and not the $11,000 you will report in your tax return. This is readily seen, for it takes 20,000 of the 1934 dollars to equal the 10,000 1930 dollars exchanged for the securities, and the real profit expressed in 1934 dollars is the difference between $21,000 and $20,000.

When the dollars of both the selling price and the cost are referred to a common base, the formula given above may be rewritten as follows:

$$P = S - P\frac{1 \pm v_c}{1 \pm v_s}$$

Here $v_c$ represents the change in the value of the cost dollars and $v_s$ the change in the value of the selling dollars. Using the illustration given above, in which a piece of property was bought in 1923 for $24,000 with the dollar one-eighth above the basic 1930 value and sold at the present time for $30,000 with the dollar 40 per cent. below its 1930 value, we may compute the profit in dollars of current value as follows:

$$\begin{aligned} P &= 30{,}000 - 24{,}000\frac{1.125}{.60} \\ &= 30{,}000 - 45{,}000 \\ &= -15{,}000 \end{aligned}$$

Instead of an apparent profit of 6,000 "dollars" there is a real loss equivalent in amount to 15,000 of the current dollars.

The implication plain in the foregoing is that the rubber dollar —if contracted too greatly—will bring confiscation of capital in the guise of the income tax unless the laws imposing such taxes are correspondingly modified. This last, however, is not likely, for the consequences of tampering with the measuring unit, the dollar, are infinite in number and can scarcely be compensated in any general scheme of income taxation. It will be an insidious confiscation, for the victim will have his life-blood sucked from him while the doctors tell him he is steadily improving. He must ultimately realize that his capital is being drained away, but how or when or by whom will not immediately be evident.

Should the dollar be stabilized at approximately 60 per cent. of its former gold value, it is certain that general "dollar" values must ultimately conform to this diminution, and the real profits or losses on items purchased under the gold standard and sold under the new standard will not be discernible to a casual scrutiny.

The following table gives the relationship between the apparent and the real on this basis (plus signs indicate profits and minus signs losses):

| Apparent | Real |
|---|---|
| +100% | +20% |
| + 90 | +14 |
| + 80 | + 8 |
| + 70 | + 2 |
| + 60 | − 4 |
| + 50 | −10 |
| + 40 | −16 |
| + 30 | −22 |
| + 20 | −28 |
| + 10 | −34 |
| 0 | −40 |
| − 10 | −46 |
| − 20 | −52 |
| − 30 | −58 |
| − 40 | −64 |

An apparent profit of 66⅔ per cent. is actually neither a gain nor a loss; any lesser apparent profit is really a loss.

To leave as we came—through the door of analogy—let us say that you are a farmer. Some legislation has been enacted taxing you in kind for any increase during a year in the grain you have in storage. At the beginning of the year you had 1,000 bushels in a bin that has not since been touched. The assessor comes. "Where is your bushel measure?" he asks. You give it to him, but he saws a third off the measure before going to work. "Ah," he says finally, "I find 1,500 bushels here. That is an increase of 500, and as the tax is 20 per cent. I'll just take 100 bushels with me." So he drives away with 100 of the short "bushels"—or about 67 of the original bushels. Sadly you contemplate the remaining 933 bushels. You haven't had any increase upon which a tax should be levied—you have been thimble-rigged.

There is much more than theory involved in the foregoing. Simple as the illustrations are (and they have been chosen for their simplicity) they are exact parallels of the fictitious profits that will be reflected upon any decided decline in the value of the dollar. If such profits are to be the basis for the assessment of income taxes, the result will be capital confiscation—exactly as in the grain illustration above. The cardinal principle of all measurement is that increases and decreases (or profits and losses) can be correctly determined only when the same measuring unit is applied throughout—and this fact can not in equity be ignored.

The lender who receives low-value dollars in place of the gold dollars advanced a borrower suffers a real and actual loss, concealed though it may be by the appearance of an equal exchange. Perhaps some objector will think that merchandising transactions involving quick turn-overs or short-term loans are exempt. Not so. An illustration would be too lengthy to give, in extenso, here, but over a period of time the capital loss is the same in character if not always in absolute amount. That is, with a declining dollar, a given amount of capital employed in a number of short-term transactions might not suffer precisely the same diminution as the same amount invested without change for a long term, but the results will usually be approximately the same. And the effect on the victim may be even more deleterious in the long run.