



Measurement, Yardsticks, and Commensurability

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Measurement, Yardsticks, and Commensurability

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Measurement

Trade-offs presume commensurability. You cannot know if trade-offs are desirable until you measure everything by the same yardstick. Applied economics is necessarily quantitative: it gives numerical answers, and criteria for numerical answers, to questions of how much, when, and where. (It also helps answer other questions like what, why and how, but it can't answer qualitative questions without help from other disciplines.)

Yardsticks¹

Commensurability presumes a common standard of value. Our basic measures are dollars, which give rates of exchange between apples and oranges; and interest rates, which give rates of exchange between dates.² That implies rejecting other proposed yardsticks, like energy, alleged "requirements," fixed standards, tax minimization, foreign exchange earnings, materials flow, food production, and other alternative values that are constantly thrown up as better yardsticks. Managers are constantly arbitrating among competing fundamentalists, each of whom overvalues his special bag and derogates others. You cannot arbitrate without an objective yardstick.

Money and interest rates are better-balanced standards than the others suggested. They have their weaknesses, however, and are often abused, which is why rival measures are always being advanced. We should listen respectfully to the heretics, and ask ourselves what abuse of our system is leading them to waste their time advancing indefensible ideas. It happens with every crisis or readjustment.

For example, the proposed energy standard was a panicky response of well-meaning people to underpricing and subsidizing of energy, in the 1970s. There were two dramatic oil price shocks then. They could see we were wasting energy prodigally, even as we were told it was running low, and was controlled by foreigners in bed

¹Theorists like to say "numeraires," which is as classy as supercalifragilisticexpialidocious, indubitably, but only means what yardstick means.

²Given time we would also look at transportation costs, which give rates of exchange between places; and transactions costs, giving rates of exchange between owners.

with some fabulously rich Americans, who were organizing to dominate or strangle us by abusing their monopoly. They could see something was terribly wrong.

Their fault was not to think out their proposed alternative very well. The greater fault lay with entrenched economists who reacted like high priests, put the concerned citizens down as amateur bunglers, made light of the energy crisis, mismeasured and understated the rise of real energy costs, cocksurely forecast the imminent collapse of OPEC, and smugly ridiculed every mistake and flyspeck in the amateur's writings.

Conservation was a response to use of too-high discount rates, and the irresponsibility and greed of rapists of our Mother Earth, and exploiters of their fellow Americans. Environmentalism is a response to neo-classical economists' terrible fallacy of ignoring the value of raw land, especially non-tenured lands and resources. It took people like Rachel Carson and Barry Commoner, non-economists, to sound the alarm in the 1960s and 1970s. Entrenched economists, enthralled by the GNP as a sole measure of welfare, ridiculed them, too. The profession alienated a lot of good people in these episodes, and rode for a fall.

As we proceed using money and interest rates as our basic measures, let us not repeat those mistakes of false pride that some past economists made, and others still make today. Our measures are good, and we can defend them, but they are not perfect, and they are capable of being abused. So never tune out their critics, either.

Present and future goods

The interest rate is the rate of exchange between values at different times. It makes them commensurable. "Measurement is Science", according to some. Money makes apples and oranges commensurable, as you all know. But we have to supplement the dollar measure with interest rates, in order to make future apples commensurable with present apples. We will see that the present apple is worth a lot more.

To use the interest rate as a rate of exchange between present goods and far future goods, we must understand compounding. The basic relationship is the compounding factor (CF):

$$F/P = (1+i)^n \quad (1)$$

where F is Future point value, P is Present point value, i is the yearly interest rate, and n is the number of years. If $i=.072$, money doubles about every 10 years. What if $n=60$? The $CF \approx 64$. Check it out on your calculator.

Discounting: is it showing contempt for the future?

The corollary of the above is that a value of \$64 expected 60 years in the future is only worth \$1 today. If that future value is something you esteem highly, like basic food for the poor, or natural beauty, or our energy supply, and the present value is thought of in terms of something trivial, flighty, vulgar or superfluous, like whooping it up at a night club, that trade-off may offend you. It does offend many conservationists and humanitarians.

However, it is simply a logical extension of consumer sovereignty in the time dimension. Projecting consumer sovereignty in time does not create consumer follies, it simply dramatizes them. In a market system we accept the folly of some to allow freedom for all, and because we know that one man's meat is another man's poison. When we don't like the results of consumer sovereignty we modify it through regulation, subsidy, or taxation, all of which are all around us. It is not a good idea to get them mixed up with compounding and discounting, however.

"Discounting" is an unfortunate term: it suggests we are sacrificing the future. In Managerial Economics we see discounting as part of the system in which we are managing resources through time for the greatest economic return. The word "discounting" focuses on half the story, where we sacrifice large future values in order to gain smaller present values. However, the idea is that by investing these smaller present values along the fastest growth path we will end up with more in the future than if we had not discounted the lesser future value. Thus, "discounting" the future does not mean spiting the future. It means discounting certain lesser future values in order to secure other, greater ones. Discounting is part of a process of allocating a given capital stock to its fastest growth path into the future.

What really does spite the future is dissaving and disinvesting, i.e. consuming out of capital. These should not be associated with discounting, however. It is actually just the opposite. If we did not discount, it would mean interest rates were zero. Think what that would have to mean. If interest rates were zero, you could borrow to consume without limit. However high your

debts, they would cost you nothing and you would repay them forever by borrowing again at no cost. There would be no incentive to save, or even to work. The higher is the interest rate, the higher is the incentive to save, and to increase the aggregate capital stock for the future. Thus discounting, fully understood, is what keeps us from spiting the future. To think of it as sacrificing the future is to get it exactly backwards.

Let us proceed with clear consciences, therefore, to use interest and discount rates, and the compounding and discount factors, as intertemporal rates of exchange.