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# Depreciation

BY G. H. NEWLOVE

Webster defines depreciation thus: "A fall of value; of money, a reduction or loss in exchange value or purchasing power, especially with reference to the face value. A lowering in estimation; disparagement." This popular-usage definition was too all-inclusive for quasi-technical usage, so accountants limited the definition to the following: Depreciation is the decline in cost value of fixed assets caused by wear and tear, inadequacy and obsolescence. This definition was fairly satisfactory until the recent fluctuations in the purchasing power of money. Then appraisers and public-utility rate experts developed the thought that depreciation should include the amortization of appreciation. At present, there is not only a difference of opinion as to whether depreciation is the amortization of the cost value, the reproduction new value, or the present market value of fixed assets, but there is also a variance of opinion as to whether the sum amortized is a reservation of profits, a sum of money, a provision for the replacement of fixed assets, a decline in exchange value, a decline in efficiency, a financial loss or an operating cost. Esquerré (*Accounting*) aptly says: "Depreciation is as difficult to define as its process is difficult to perceive."

The clearest-cut definition of depreciation, which is broad enough to be acceptable to most professional depreciationists, seems to be: Depreciation is the cost element caused by the decline in the number of useful service units in property. Having positively defined depreciation, the exact meaning of the term can best be seen by differentiating it from terms that are closely associated with it in common parlance.

*Depreciation not reservation of profits.* The idea that depreciation is something taken out of profits is not only misleading but dangerous. Published corporate reports and prospectuses are full of this misconception of depreciation. Playing upon the loose ideas concerning depreciation in the minds of the public, a company (capital stock \$100,000, annual depreciation \$25,000, profits before deducting depreciation \$40,000) will announce a net profit of \$40,000 available for depreciation and dividends. This half-truth makes the company appear to be earning 40 per

cent. when it really is making only 15 per cent. Or the same company (assume \$20,000 prospective issue of 5 per cent. bonds) will announce that the net earnings available for interest on these bonds and depreciation have been 4.0 times the interest on this bond issue. This half-truth conceals the fact that the true net profits were only 1.5 times the interest charges.

*Depreciation not sum of money.* The close association of the idea of depreciation and that of the replacement of the depreciated assets has sometimes caused depreciation to be spoken of as a replacement fund. This is absolutely incorrect because depreciation is the cost of service rendered, an expense rather than an asset. The two concepts must be differentiated because depreciation exists whether or not cash is set aside to replace the asset when it is scrapped.

*Depreciation not provision for replacement.* The idea of depreciation must not be confused with the general subject of property replacement. True, depreciation is one of the causes of replacement, but depreciation is a cost of operation entirely independent of the owners' financial policy regarding replacements. The owners of an apartment house suffer by depreciation even though they do not intend to replace the building when it is no longer usable. Few producers want their plants exactly replaced but all amortize their present equipment.

Depreciation is the amortization of present property and is not the acquisition of the future property. Whether the future property will cost more or less than the cost or present value of the present property does not necessarily affect the depreciation of the present property. Suppose that an asset was purchased in a period of constantly rising prices (cost 100, present value 120, replacement cost 135). It is open to question whether the annual depreciation charges should be based on the cost or present value, but it is illogical to use the replacement cost as the base. The decline in the number of service units in present property can not be valued in terms of the cost of buying future property. To amortize property at its replacement value can be logically defended only if the replacement value coincides with either the cost value or the present value. It is unfortunate that the advocates of basing depreciation on a valuation other than original cost do not speak of present reproduction (appraised) values instead of replacement costs. In misstating their basis they greatly weaken their position.

*Depreciation not financial loss.* The charge for depreciation is made because of service rendered by the property and not because of any financial policy. The charge for depreciation is, therefore, not a financial loss but is part of the overhead of the department in which the service is rendered.

*Depreciation not decline in efficiency.* The difference between depreciation and decline in efficiency can be clearly seen in the case of the famous "one-hoss shay" which maintained its efficiency but not the number of its prospective service units right up to its calamitous end. Depreciation is the decline in the number of useful service units; efficiency is the relative excellence of the performance of these service units. This distinction is vitally important because many producers believe that adequate repair programmes which maintain the efficiency of their plants enable them to ignore depreciation. It is well to remember Hatfield's (*Accounting*) apt words: "All machinery is on an irresistible march to the junk heap, and its progress, while it may be delayed, can not be prevented by repairs."

*Depreciation not decline in exchange value.* To speak of depreciation as "shrinkage in value due to wear and tear, etc." is unfortunate because so frequently appreciation more than equals depreciation. No one denies that the Hudson River is flowing to the ocean simply because at high tide more water is coming into the river bed than is going out of it. Similarly, no one can deny that a machine is marching to the junk heap simply because the vagaries of price levels may have caused a net rise in its market value. The result of the high tide is to increase the flow at ebb tide; the result of the appreciation is to increase the diminution of value in the subsequent periods.

Depreciation can not be offset by appreciation because (a) depreciation is an operating cost and appreciation is an unrealized profit, and (b) depreciation is a deduction for tax purposes and appreciation is not a taxable income.

*Depreciation not deterioration.* Depreciation, which is a financial result, must not be confused with deterioration, which is a physical condition. Deterioration is only one of the causes of the loss of service life or depreciation.

*Depreciation not obsolescence.* Depreciation, the financial result of the decline in the number of useful service units in property, is not synonymous with obsolescence, an economic process which causes depreciation by attacking the utility of the

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remaining service units in property. The classic example of obsolescence was the supplanting of the horse-cars by the power-driven street cars. Obsolescence does not cause loss of service life from a physical but from an economic point of view.

*Depreciation not inadequacy.* Inadequacy is an economic process which attacks the utility of the service units in property. The economic process, inadequacy, is one of the causes of the financial effect, depreciation. The most frequently seen examples of inadequacy are the supersessions of small water and gas mains by larger mains in rapidly growing urban communities. Inadequacy does not physically affect the mains but renders it an engineering economy to replace them.

*Depreciation not depletion.* Depletion is the physical diminution of property. Depletion reduces the physical life of property, depreciation the service life. The word depletion should be limited in accounting terminology to exhaustion in the extractive industries, oil and gas wells, timber trade and mines. Depletion through the exhaustion of the natural wealth may cause depreciation of property used in the extracting process. A saw-mill having a natural life of 50 years has a service life of 30 years if the standing timber will be cut in that time.

*Physical depreciation.* Physical depreciation is the cost element caused by deterioration. Deterioration causes depreciation by physically reducing the number of service units in property. The chief causes of physical depreciation are wear and tear from operation, action of time and of the elements, accidents, parasites, pollution of water, growths in water mains, electrolysis and crystallization.

*Functional depreciation.* Functional depreciation is the cost element caused by obsolescence, inadequacy and depletion. Functional depreciation is the reduction in the utility rather than the actual number of the service units in property. In the case of obsolescence, the utility is lessened by a new development whereby either the thing produced or the process of production is changed. In the case of inadequacy, the utility is lessened by a change in the demand made upon the property due either to considerations of engineering economy, or unforeseen developments, or abandonment of original financial policy. In the case of depletion, the utility is lessened by the exhaustion of the raw materials upon which the depreciating property was designed to perform its functions.

*Contingent depreciation.* Due to the accounting necessity of recording depreciation as a charge against current operations, a distinction must be made between depreciation that can be foreseen and depreciation that can not be foreseen. Drawing the distinction between contingent and predictable depreciation involves the use of the law of averages. For instance, a telephone company knows that during a normal winter the weight of snow and sleet will break down some of its poles. A reasonable estimate of such destruction should be included in the depreciation charge, but provision for the widespread destruction occasioned by an exceptionally severe sleet storm should be made directly from the surplus account and not through the depreciation charge. Similarly, the radio industry must expect a considerable loss due to obsolescence. This predictable loss can be included in the depreciation charge, but any additional provision for contingent depreciation should be made directly to the surplus account.

*Actual and theoretical depreciation.* Actual (sometimes called absolute) depreciation is a term sometimes used to denote the decrease in the sales value of a fixed asset from its condition new to its present state. If the asset is ready for the scrap heap, the actual depreciation would equal the total theoretical depreciation. The actual depreciation is not applicable to going-concern valuations where the supposition is that the asset will be used during its service life and not sold. Theoretical depreciation is the equitable amortization of the total cost element caused by the decline in the number of service units in property over the service life of the property.

*Amount to be amortized through depreciation.* Under ordinary conditions, depreciation in going concerns should amortize the cost less the scrap value of the fixed assets. Should the facilities have been procured at abnormal costs, they should be appraised. Obviously, either fixed assets valued at the high construction costs that prevailed during the world war, or fixed assets valued at purchase prices found in "forced" sales in bankruptcy proceedings prevent a balance-sheet from reflecting the true worth of the concern. Fluctuations in the appraised value of fixed assets occurring after purchase may be recorded only if the changes are sufficient to warrant a formal appraisal being made. The amount to be amortized through the reserve-for-depreciation account may, therefore, be either cost value less scrap value or appraised value less scrap value.

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*Amortized appreciation as a cost element.* Given the right conditions, amortized appreciation may be properly called a cost element. Assume a factory building which has appreciated. If the concern continues to use the building instead of selling it and moving to cheaper quarters because of reasons concerned only with the manufacturing processes, the amortized appreciation may, from a theoretical point of view, be properly classed among the cost elements. Usually amortized appreciation should be excluded as a cost element on the general grounds of expediency. The specific reasons for the exclusion are:

1. The reasons for the continued use of an appreciated asset are frequently complicated. These reasons are: (a) Difficulty of finding purchasers at appraised value; (b) cost of moving, and (c) advantage of present location from the viewpoints of sales, supply of labor, supply of material, transportation facilities, power, etc. Only a just portion of the amortized appreciation can be deemed a cost element in such cases.

2. Including amortized appreciation as a cost element either increases the fixed charges if there is only one appraisal or increases the uncontrollable variable charges if there are numerous appraisals. Either increase violates the recent cost practice of stressing the variable cost elements that can be controlled by the management.

3. Including amortized appreciation as a cost element increases the difficulty of valuing the inventories of work in process, component parts and finished goods. The amortized appreciation charged to unfinished factory orders and to unsold product must be computed and deducted from the final inventories or it will be anticipated. The technique involved is practically identical with the handling of the "interest on investment" cost element included in the final inventories.