Balance Sheet Depreciation and Imputed Depreciation with Changes in Useful Life

$n_a := 10$ Initital forecast of useful life

$n_n := 5$ Changed forecast of useful life

$t_a := 1 .. n_a$ Time of depreciation according to initial useful life

$t_n := 1 .. n_n$ Time of depreciation according to changed useful life

$w := 4$ Time of first changed depreciation (the value must be an integer, ranging from 2 to n_a)

$CA_0 := 100000$ Initial investment

$R_n := 0$ Residual value at the end of useful life

$D_a(t_a) := \frac{CA_0 - R_n}{n_a}$ Initial depreciation pattern for balance sheet depreciation and for imputed depreciation

$D_n(t_n) := \frac{CA_0 - R_n}{n_n}$ Depreciation pattern that would have been correct from the onset

$CA_{wa} := CA_0 - \sum_{t_a = 1}^{w-1} D_a(t_a)$ Carrying amount before the first changed depreciation is made

$CA_{wa} = 70000.00$

$t_r := w .. n_n$ Time of changed depreciation

Balance sheet depreciation:

The carrying amount before the change is distributed over the remaining useful life.

$D_{rB}(t_r) := \frac{CA_{wa} - R_n}{n_n - w + 1}$ Changed pattern of balance sheet depreciation for the remaining useful life

$t := 1 .. n_n$ Final points in time for balance sheet depreciation and for imputed depreciation

$D_B(t) := wenn(t < w, D_a(t), D_{rB}(t))$ Final pattern of balance sheet depreciation

Imputed depreciation:

The aim of imputed interest is to charge each period correctly. If this has not been done in the past, it is at least done for the future, beginning with the first changed depreciation. In order to do this, contrary to financial accounting, in cost accounting no impairment loss or reversal of impairment loss is taken into account. Any extraordinary change in book values must be blamed to the past, when the forecast of useful life was wrong. But the past is normally left untouched in cost accounting, if there is no special interest to see the corrected data. Anyway, since cost accountig is a matter of short term, all decisions based on the false forecast of useful life should have been made already, and they can only be corrected in the future.

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Thus, the depreciation charge, which would have been correct from the onset, is the depreciation charge for the rest of the useful life:

$D_K(t) := \text{wenn}\left(t < w, D_a(t), D_n(t)\right)$ Final pattern of imputed depreciation

In total:

t_a =
1
2
3
4
5
6
7
8
9
10

$D_a(t_a)$ =
10000.00
10000.00
10000.00
10000.00
10000.00
10000.00
10000.00
10000.00
10000.00
10000.00

t =
1
2
3
4
5

$D_n(t_n)$ =
20000.00
20000.00
20000.00
20000.00
20000.00

$D_B(t)$ =
10000.00
10000.00
10000.00
35000.00
35000.00

$D_K(t)$ =
10000.00
10000.00
10000.00
20000.00
20000.00