Depreciations

As soon as there is investment, it will have to be written off. From begin book value it has a lifetime until the carrying-over to the residual value. Except for normal depreciation there are possibly also backlog depreciations. There is a lot of dispute about these backlog depreciations in particular. In the textbooks about thirty characteristic depreciation methods have been described, the so-called accounting methods. Not flexible. Rigid. The rigid accounting depreciation methods including linear method of depreciation, the method of constant annuities and the method of a fixed percentage of the book value, they do not follow the actual values but only artificial figures. Unreliable. Too good to be true. They are not only determined by the chosen method, but for each method they depend on the arbitrarily chosen lifespan, which is simply not known in advance. It is all inter-dependent. An integral inspection method is required: investments, amortization and profit determination.

It is believed however that "the life of a sustainably production asset is optimal, if the unit cost of the produced products are minimal: this is the time when the marginal cost equals marginal revenue (Bulte, Dijksma, Van der Wal, 1995, p. 489)." Besides adherents of this there are also opponents who say that the determination of the useful life of a sustainable means of production is not only the cost but "also the revenue of the products produced must be considered (Bulte, Dijksma, Van der Wal, 1995, p. 501)." Also, there is the theory of Terborgh according to which it would not revolve around the question "at what time precisely should it be carried out in advance, but whether or not these will be replaced or not must be done at current point in time, somewhere in future (Bulte, Dijksma, Van der Wal, 1995, p. 508)."

In addition to depreciation and interest costs, there are complementary costs. Furthermore, there is the concept of acquisition, there is a certain trend in production in several years and possibly also yield or selling prices are relevant. We ask ourselves what we can calculate purely, based on which conclusions can be drawn.

1 The minimum cost method

Depreciation and interest costs are so divided over the years (to be calculated for different periods) with high costs in periods of high profit capacity and low costs in periods of low profit capacity. The usefulness usually decreases over time. After all, fewer units produced (due to more maintenance, more failure) lower quality (because of wear on the machine) and another machine can become better and / or cheaper. The economic life is usually shorter and at most as long as the technical life. The question is, how long?
The economic life cycle can be determined by trial and error, on the assumption that only costs are decisive. That is to say that sale proceeds are not dependent on production using this machine.

Indeed, it is certainly preferable to use the 'trial and error' way as described in Section 6.6 in Business Economics VI Groundbreaking (ISBN 9789463236409) Hardcover and ISBN 9781086355635 Paperback and Kindle edition e-book, and expressly not via the mad formulas for this problem, in many outdated books. Also Bulte, Dijksma Van der Wal in their book 'Management Accounting' indulge in fiddling with formulas.

2 A Commentary on Terborgh's Theory

Profit margins were previously excluded because they were irrelevant in respect to the decision about when to replace the sustainable means of production. If and as soon as it is relevant, i.e. when the profit in any period depends on whether old(er) or new(er) machines are used, this or another machine is used, then the above cost consideration is not (anymore) adequate. In principle, the full reality must always be looked at. Only when parts of reality do not matter, are decision-independent, may they be disregarded. If it does not influence the decision-making then it is wise to leave it out indeed. A sound decision is further evident time-independent in the sense that no other decision at a later date is possible as long as nothing in the original data set is changed. As soon as something is changed, there is a new decision-making situation. The old decision must at least be reconsidered and may no longer apply. In practice, a decision about the economic life cycle is probably a provisional one and Terborgh is right in pointing to a final decision about decommissioning at the *current* time, assuming that we will always know more later on. However, if later in time the original set of data on which the old decision is based still applies, then a good decision will irrevocably remain a good decision.

The theory, or at least the so-called shortened model of Terborgh, has been called "rather weak (Bulte, Dijksma, Van der Wal, 1995, p. 510)" and the elaboration by Bulte, Dijksma, Van der Wal in their example 19.5 on the said page 510 is incomplete, because it lacks the correct depreciation and interest costs! They talk about a net profit in each of the years and the outcome is a useful life of 4 years. But for 4 years, a cost price (to be calculated in the above 'trial and error' manner) of $ 23.31 applies. And the maximum life of six years, the cost price is still $ 21.57. Nota bene higher than the given sales price of $ 17.50. There must be a mistake here. It should also be noted that if the interest costs and depreciation (all value differences) are not calculated correctly, nothing will ever come out right.

3 The CWW method

As far as is known, around 1940 the method of the maximum present value of profits (the CWW method) was advocated. Then supporters and opponents of this method and the method of the minimum cost attacked each other, and Terborgh also did not give good help. The CWW method aims: "to maximize the difference between on the one hand the amount of investment and on the other hand, the sum of the present value of the differences between the sales prices (receipts), and the complementary charges (expenses), increased by the present value of the relevant residual value (Bulte, Dijksma, Van der Wal, 1995, p. 501)." Bulte, Dijksma, Van der Wal give on p. 503 an example for which the same data apply as worked out in terms of cost with additional data by now "the sales price of the product which the machine generates in the several years of the technical life is as follows:

year 1:	$ 25
year 2:	$ 22
year 3:	$ 20
year 4:	$ 18
year 5:	$ 15

Asked
Calculate the economic useful life of the machine (Bulte, Dijksma, Van der Wal, 1995, p. 503)." Bulte, Dijksma, Van der Wal calculate the present value of the profit (CWW) with a useful life of 1, 2, 3, 4 and 5 years respectively. Probably the CWW is higher as longer working with the

machine as long as the sales price rises above the cost, and so long as there is a profit margin. Extra profit is added and when discounted it always gives something extra. Here for all five years. In that case, the CWW is probably the highest with a useful life of 5 years. "Conclusion: the economic useful life calculated according to the CWW method is 5 years in this example (and this is a different useful life than with the MGK method) (Bulte, Dijksma, Van der Wal, 1995, p. 504)." The MGK method means the minimal cost method, in this exercise resulting in an economic useful life of four years.
Bulte, Dijksma, Van der Wal compare apples to oranges in their presentation. They compare two investment projects having UNEQUAL life cycles directly. When selling prices have also been taken into consideration, then in any given case, the method by Bulte, Dijksma, Van der Wal described CWW is totally unusable. That method is a farce. Authors Van Halem and Van der Pol also uncritically present the CWW method and incorrectly speak of minimum average costs when looking for the aforementioned minimum costs per unit of product, see Van Halem and Van der Pol, 1989, p. 132 and further. MGK method: Minimal Average Cost! Where referred to as a correct calculation of the interest costs, that is a total misnomer.

Standard prices of the working-units of tangible fixed assets are, amongst other quantities, required input data in order to establish minimum product prices. However, this important data is not calculated exactly – if calculated in conformity with outdated textbooks in use worldwide – it is consistently too low. That is completely wrong. As is immediately apparent from the necessary audit calculation, determination of NPV of the cash flows at sales price s identical to SUC (Standard Unit Cost). **The NPV then turns out to be NEGATIVE!**

The calculation of the economic life cycle, as it is done in the so-called best way to date, must be followed up by 'the NEW algorithm' presented in the above-mentioned book Business Economics VI Groundbreaking.

Full reality must be faced, integrally. An investment in a sustainable means of production is not so much about the past but above all the future is of interest. Is a certain cost price or sales price (still) feasible? Are the numbers still correct? Or have there been changes in data that are needed that should lead to corrections of the (true) book value? It is not the life that has passed which is important, but the life that is still waiting.

Anyone who works with impure cost prices (from unproven figures setups) has so-called made visible what are in fact invisible profit margins; whoever does that, is pulling wool over our eyes.