Depreciation

Depreciation is a way of spreading the cost of an item over its useful life. This is primarily a way of calculating taxation and business profitability; the actual cash is paid out when the item is purchased. There are two types of depreciation, 'straight line' and 'accelerated' depreciation. Two common approaches to accelerated depreciation used around the world are the 'declining balance' method and the 'sum-of-the-years'-digits' method.

Which of the options is used is used depends on the relevant legal and taxation regime in force in the country where the asset is located (or taxed).

Straight line depreciation

The calculation of 'straight line' depreciation is very simple:

($ purchase price – $ disposal value)/years,

where
- Years = the expected life of the asset (actual or set by legislation*)
- Disposal value = the likely sale price at the end of the assets useful life.

* For small items, this is often standardised to a 5 year life and equates to 20% depreciation per annum.

Accelerated depreciation - Declining Balance

The declining balance method allows a firm to take a percentage of the depreciation amount greater than the straight-line amount. This allows a greater amount of the asset's depreciation to be claimed in the early years and correspondingly lower amounts in later years. This method more accurately models the actual value of many assets (eg, vehicles) where the re-sale value drops significantly in the early years.
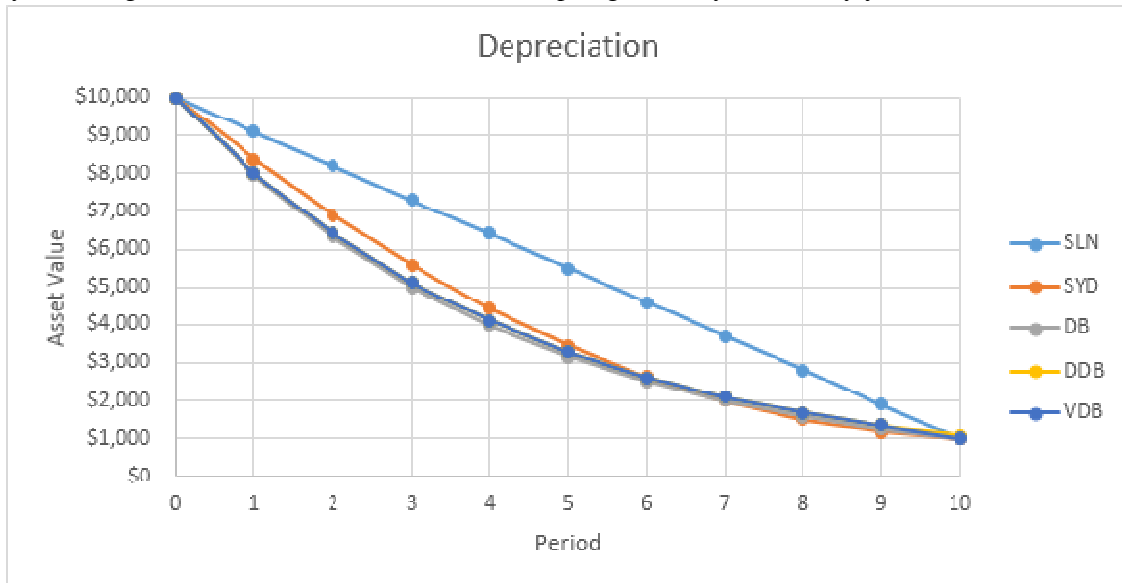
SLN = Straight Line, SYD = Sum of the Year's Digits, DB = Declining Balance.

The general principle applied to all variants of this approach is:

- In year 1, the depreciation amount is the purchase price multiplied by the depreciation percentage.

- At the end of year 1, the residual value is the purchase price minus the depreciation amount.

- During subsequent years, the residual book value of the asset is multiplied by the same percentage to calculate that year's depreciation costs and a revised residual value calculated.

- As each year's depreciation amount is subtracted from the cost of the asset, the resulting balance in the asset's book value declines and the depreciation amount decreases as the years pass.

Two commonly used variations of the declining balance method include the 200% declining balance or *double declining* balance, and the 150% declining balance. The annual depreciation rate of the asset is calculated by multiplying the straight-line rate by the declining balance percentage figure to get the accelerated rate. If an asset is expected to last 5 years, straight line depreciation would reduce its value by 20% per annum based on the original price. Using the 'double declining' option 40% of the assets value would be depreciated in the first year, and 40% of the residual value in the second year, etc.

Accelerated depreciation - Sum-of-the-years'-digits

In the sum-of-the-years'-digits method, the annual depreciation charges are computed by multiplying a decreasing fraction by the asset's original cost (less salvage value). The fraction's denominator is the sum of the digits that represent each year of the asset's expected economic life. For example, for an asset with an expected 5-year lifetime:

- The sum-of-the-years'-digits are: 5 + 4 + 3 + 2 + 1, or 15.

- The numerator of the fraction for the first year is the highest digit – in this case 5/15. The second year's numerator is the next highest digit – in this case – 4/15 – and so on.

Conclusion

Although all of the methods yield the same book value at the end of an asset's economic life, the book value of the asset declines more rapidly under the accelerated depreciation methods compared with the straight-line method.

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