

A New Approach to DCF Valuation - Company Valuation via Iterations

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DCF is the most respected method of company valuation. However, it does have a flaw related to the fact that the weights (share of debt and equity in total financing) that are used are based on book value. Technically, the following problem is encountered:

1. One has to know the cost of capital WACC (and both its components: cost of debt and cost of equity) in order to calculate the value of a company.
2. One has to know the capital structure, that is the value of debt and equity, in order to calculate the cost of capital (cost of equity or WACC).
3. One has to know the value of interest payments, which is the value of debt, in order to calculate cash flows.

We are dealing with a logical loop once again: *WACC* is still unknown, the value of the company cannot be calculated without *WACC*, so we don't know the value of equity either, which means we do not know the capital structure of the company, which we need to find the cost of capital (*WACC*). The problem may be overcome by using a technique based on iterations. It may seem technical, but as a matter of fact, it is a profound shift in the way the value can be found.

In case of a company represented by a perpetuity finding the company's value by solving a system of equations is quite viable. In a real-life case, however, when one has to deal with numerous parameters and time periods, a numerical solution seems to be the only feasible approach. It is a chain of formulae that becomes so integrated that the information between cash flows and cost of capital moves freely. Depending on whether debt or capital structure is given, loops will additionally run along columns (from *V* to *WACC*, and from *E* to *k*) and lines (from one year to another). The cost of capital "tracks" the capital structure and changes accordingly, while *CF* is a reflection of future profits and also the level of debt in the company. The valuation is recursive, going backwards in time. To conclude, calculating the value of a company without using iterations is tantamount to applying the wrong weights to *WACC* and leads to an inner contradiction.

In general, the recursive method of company evaluation overcomes a fundamental problem that is often ignored by many other methods: the fact that the cost of capital depends on the financial structure. It creates additional technical problems in form of a logical loop, but this was also remedied. Admittedly, there are also many simplifications: one is that we often use perpetuities as the last resort, and second is the assumption that the required rate of return is equal to the expected return (determined by cash flows). However, the latter does not seem far from true; an expected return that is higher than required would lead to a positive NPV, an opportunity which when confronted with competitive markets quickly ceases to exist.

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