Discounted Cash Flow Methodology – About WACC

In applying the Discounted Cash Flow (DCF) valuation approach, future Unlevered Free Cash Flows (UFCFs) are discounted to estimate a firm´s Enterprise Value (EV). In the course of this process, the Weighted Average Cash Flow (WACC) is used as a discount factor.

The WACC is a concept to simulate a required average <u>rate of return</u> to compensate a firm´s entirety of financial sponsors and investors. It is used to discount future expected UFCFs to derive at a firm´s EV, representing the value of its entire business operations.

In its basic form, the WACC is composed of the blended expected returns for both, the providers of equity capital – Cost of Equity (CoE) – as well as those of debt capital – Cost of Debt (CoD). However, as in the DCF approach UFCFs are used, the WACC should reflect the respective after-tax returns: This is in particular relevant in regards to the CoD, which need to be adjusted for the tax shield benefits due to the fact that interest-related expenses are tax deductible. Therefore, this adjustment gives the actual cash costs of debt.

Further, it is important to note that the WACC does not necessarily reflect the firm´s current capital structure as per its latest balance sheet: Instead, the WACC should represent a firm´s long-term viable and stable capital structure. Therefore, the WACC is assumed to remain constant over the entire lifetime of the company. – Deviating from this principle could make sense, though, if a firm´s capital structure is expected to change significantly short- / medium-term, such as when currently in distress or under restructuring.

Nevertheless, as the DCF approach reaches far out, actually into the eternal future, which is reflected in the terminal value, setting a long-term steady and stable WACC with care is utmost relevant: First, already minor changes in the WACC have a significant impact on the value of the EV. Second, numerous (also long-term) risk factors are accumulating in the WACC.

Among others, a WACC should therefore also incorporate assumptions with a focus on long-term debt rates, instead of current ones. Whereby nominal rates of return are to be applied – driven by both, real rates and expected inflation -, as expected UFCFs are usually also expressed in nominal terms.

The weighting of the CoE and CoD in the WACC has to be according to respective market values (and not book values) of equity and debt: This is because only market values reflect the full and appropriate economic claim as well as exposure of each type of financing.

Two aspects are particularly relevant in identifying a firm´s appropriate WACC: First, if an equity beta factor is publicly available for the firm to be valued and if the target capital structure is not expected to change going forward, then this beta can be applied for calculating the CoE. However, if such factor is not readily available – and therefore has to be derived from selected peer companies –, or if the capital structure is expected to change significantly, then the beta factor applied will have to reflect the future expected and stable capital structure. In this case, the current equity beta factor used would have to be adjusted: In a first step, it would have to be de-levered (i.e. transformed into an unlevered beta, or asset beta) and subsequently re-levered again.

Finally, a different future expected capital structure than the current one may also have an impact on the default spreads and consequently on the CoD. This would have to be accounted for as well.

$$\text{EQUITY VALUE} = \sum \frac{\text{UFCFS}}{(1 + \text{WACC})} - \text{NET DEBT}$$

$$\text{WACC} = \frac{\text{MVE}}{\text{MVE} + \text{MVD}} \times \text{COE} + \frac{\text{MVD}}{\text{MVE} + \text{MVD}} \times \text{CoD}(1-t)$$

$$\text{COE} = \text{RFR} + \beta \times \text{MRP}$$

$$\beta = \beta_{\text{UNLEVERED}} \times \left[1 + (1-t) \times \frac{\text{MVD}}{\text{MVE}} \right]$$
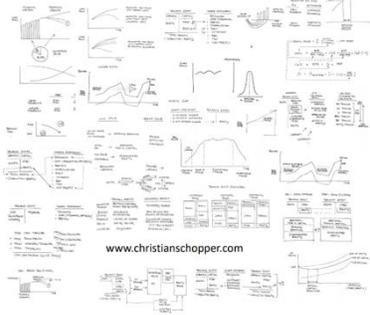
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