

The relationship between the return to levered equity K_E and the debt-equity ratio D/E

To match perfectly the results from the classic FCF WACC, the APV approach, and the CFE method, the general formulation for K_E is as follows:

$$K_E = K_{U_n} + (K_{U_n} - K_D) * (D/E) - (K_{U_n} - K_{TS}) * (V^{TS}/E) \quad (1.1)$$

$$= K_{U_n} + (K_{U_n} - K_D) * (D - V^{TS})/E + (K_{TS} - K_D) * (V^{TS}/E) \quad (1.2)$$

It is generally assumed (incorrectly) that if the debt-equity ratio D/E is constant, then the return to levered equity K_E is also constant.

An examination of the general formulation suggests K_E will be constant only if both D/E and V^{TS}/E are constant.

For example, if we assume that the value of K_{TS} is equal to K_D , then the K_E will be constant if and only if the effective debt-equity ratio is constant. Thus, the target for the firm must be the effective debt-equity ratio, rather than the standard debt-equity ratio. **It is extremely unlikely that the effective debt-equity ratio will be constant.** Consequently, it is extremely unlikely that the effective debt-equity ratio will be constant, if the specification of the value of K_{TS} is equal to K_D .

For a given debt-equity ratio D/E , the only value of K_{TS} for which the value of the return to levered equity K_E is constant occurs when we specify that the value of K_{TS} is equal to the unlevered equity return K_{U_n} .

For any value of K_{TS} that is different from K_{U_n} , it is not possible for the value of K_E to be constant, given the assumption that the regular standard debt-equity ratio is constant.

Request to the reader

To improve the quality of the content and the exposition, we encourage communications from the readers. We welcome critical and constructive comments that point out mistakes, falsehoods, obscurities, slopping thinking and questionable assertions.

We encourage all readers to contact the authors with feedback, ideas and suggestions that will assist us in improving this simple example. We will do our best to respond to all your correspondence with us in a timely fashion. We thank you in advance for your contributions. Upon receiving an email request, the authors would be most delighted to share the file for the numerical illustration.