## Why Interest Expense is Added to FFCF

Net income is polluted since it subtracts interest expense which is related to financing cash flows. That's why interest expense is added back in the FFCF equation:

 $NI = (Rev - COGS - FC - Depr - IntExp).(1 - t_c)$ 

 $FFCF = NI + Depr - CapEx - \Delta NOWC + IntExp$ 

Note that the interest expense still affects FFCF due to taxes: the 'interest tax shield' effect. We'll discuss this later.

Dividends are not subtracted or added in the NI equation, therefore they are not added back or subtracted from the FFCF equation. They are entirely ignored since they are a financing cash flow.

## Interest Expense (IntExp)

Interest expense is calculated by accountants as the bond or loan price multiplied by the yield. This is called the 'effective interest method':

 $IntExp_1 = r_D.D_0$ 

**Important note**: interest expense is unrelated to coupon or interest payments, so even a 5 year zero-coupon bond will have an annual interest expense.

Firm free cash flow (FFCF) should not add or subtract cash flows to the investors who finance the assets because otherwise FFCF would be zero. This is an interesting and nonobvious point. From the balance sheet, we know that the debt holders and equity holders fund the firm's assets:

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Assets = Debt + Equity
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## **FFCF** = **DebtCF** + **EquityFCF**

All of the FFCF generated by the assets is paid to the debtholders as (DebtCF) and equity holders (EFCF). So if we subtract all payments to debt and equity holders, there will be no FFCF left!

Equity dividends and buybacks, as well as debt interest and principal, should be ignored from FFCF. Though sometimes we include their tax effects in the FFCF or WACC required return.