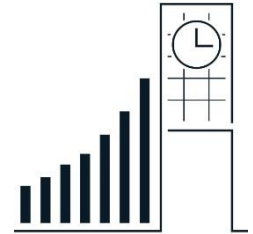


BASIC FINANCE & TIME

VALUE OF MONEY

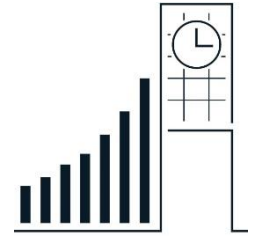
SPRING 2024

AGENDA

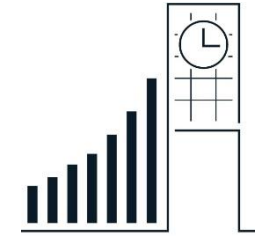


- ▶ Enterprise value (EV)
 - Defining enterprise value
 - Enterprise value and equity value
 - Calculating enterprise value
- ▶ Time value of money (TVM)
 - TVM introduction
 - TVM calculation

ENTERPRISE VALUE

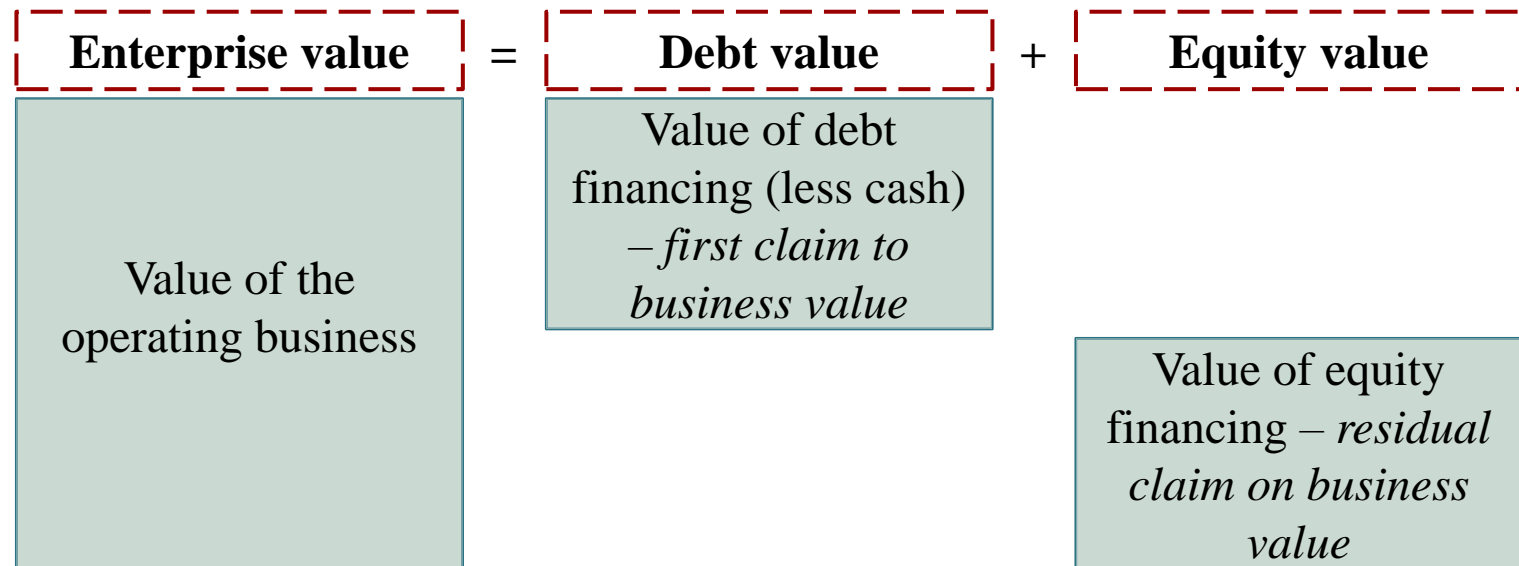


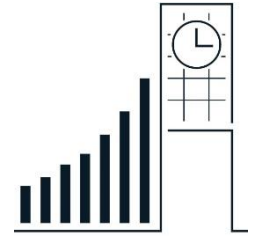
- ▶ Enterprise value (EV)
 - Represents the total value that a business is worth to all providers of financing
 - $EV = \text{Common Equity} + \text{Net Debt} + \text{Non-controlling interest} + \text{Preferred Equity}$
- ▶ Net Debt
 - Total debt minus cash and cash equivalents
 - The cash that an acquiring company receives is assumed to be used to pay down debt
- ▶ Non-controlling interest
 - A minority stake (<50%) in a business that is not held by the parent company
 - Since the stake isn't owned by the parent company it isn't reflected in the equity value and needs to be added back in
- ▶ Could also include Unfunded Liabilities i.e. Pension Obligations



ENTERPRISE VALUE (EV)

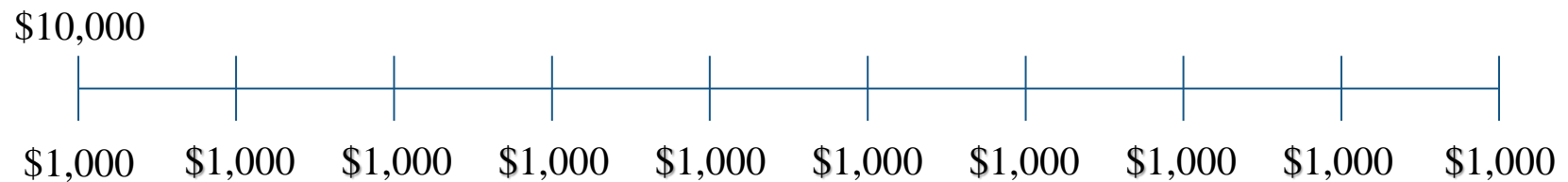
- ▶ Buying a share in a business grants you ownership of the **equity**, not the **enterprise**
- ▶ EV represents the value of the **entire firm's** operating assets available to **all suppliers of capital** to the firm





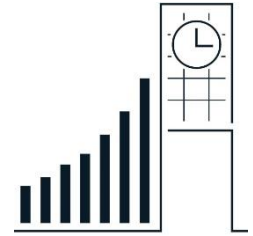
TIME VALUE OF MONEY

- ▶ A dollar today is worth more than a dollar tomorrow for two reasons:
 - Inflation erodes the purchasing of a dollar over time
 - Money you have today can be invested to produce returns
- ▶ Is a dollar received a year from now worth a dollar today?
- ▶ You won the lottery! Choose your prize:
 - \$10,000 dollars today or...
 - 10 \$1,000 dollar payments over the next 10 years



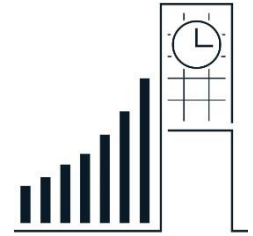
Would you rather receive one dollar today or one dollar in a year?

TIME VALUE OF MONEY



- ▶ Present Value vs. Future Value
 - Present value represents what you would pay today for a future cash flow
 - $PV = \frac{CF}{(1+r)^t}$
 - Future value represents what a current cash flow will be worth at time t in the future
 - $FV = CF(1 + r)^t$
- ▶ Discount Rate – the rate at which you expect to earn on the cash flow or investment
 - Weighted Average Cost of Capital (WACC) – The cost of financing a firm (the discount rate)

What would you pay today for a \$150 payment in one year?



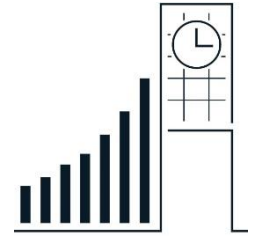
ESTIMATING WACC

▶ Weighted Average Cost of Capital

$$WACC = \frac{D}{E + D} \times K_D \times (1 - T) + \frac{E}{E + D} \times K_E$$

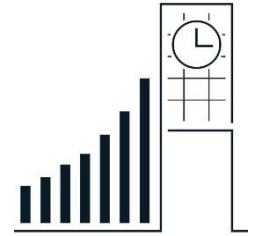
- Use market values of Debt & Equity, not book value
- Use costs of capital and capitalization ratios for the target company, not the combined company or acquirer
- T is the Tax Rate

ESTIMATING COST OF DEBT

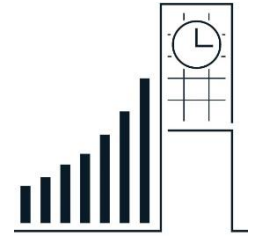


- ▶ Example Co. has a BB+ debt rating
- ▶ BB+ securities have a 200 basis point difference over treasuries (Google “[Damodaran credit spreads](#)”)
- ▶ $R_F = 3.0\%$ (10-year T-bill)
- ▶ $K_D = 5.0\%$
- ▶ Cost of debt is usually 4.0 - 4.5% below cost of equity
- ▶ Other option: Yield-to-maturity of outstanding debt
 - If there are multiple debt tranches, calculate the weighted average of the yields (i.e. to find weights, use ratio of market value of the tranche to the total market of debt)

ESTIMATING COST OF EQUITY



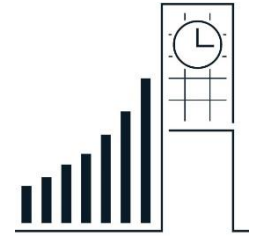
- ▶ For cost of equity, use Capital Asset Pricing Model
 - Calculate beta; the slope of the line of best fit for the target's returns regressed against the returns of the S&P 500
 - Learn how to calculate beta [here](#)
 - Use long-term treasury yield for risk-free rate (10-year T-bill)
 - Calculate equity risk premium; return of the S&P 500 in excess of the risk-free rate
 - Good estimate 4.0% to 7.0%
- ▶ $K_e = R_f + \beta(R_m - R_f)$
- ▶ ***Equity Risk Premium*** = $(R_m - R_f)$



ESTIMATING COST OF EQUITY (EXAMPLECO)

- ▶ $K_e = R_f + \beta(R_m - R_f)$
- ▶ **Equity Risk Premium** = $(R_m - R_f)$
- ▶ $R_f = 3.0\%$ (10-year T-bill)
- ▶ Equity Risk Premium = 5.5%
- ▶ $\beta = 1.2$
- ▶ $K_e = 9.6\%$

QUESTIONS?



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