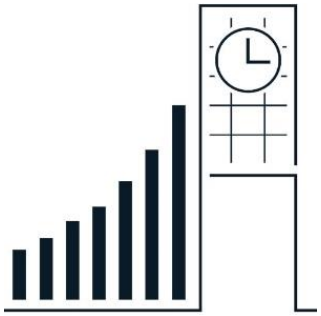
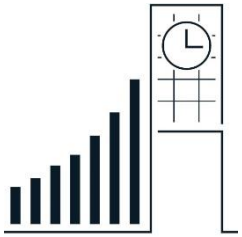


Discounted Cash Flow Workshop

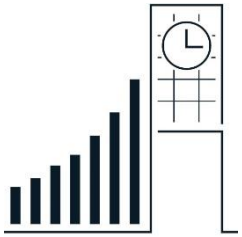
Spring 2024

Agenda



- Enterprise value v. equity value
- Forecasting and discounting free cash flows to the firm (FCFF)
- Calculating weighted average cost of capital (WACC)
  - Cost of equity
  - Cost of debt
- Calculating the terminal value of the firm
  - Gordon growth v. multiples method
- Arriving at enterprise value
  - Moving from enterprise value to equity value per share

Enterprise Value vs. Equity Value



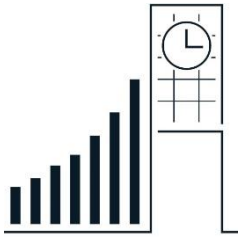
- Enterprise Value: the total market value of the firm's assets available to all capital suppliers
  - The market value of the firm's assets is equal to the PV of all claims to all claimants (debtholders and equity holders)
- Enterprise Value = Equity Value + Debt – Cash + Minority Interest + Preferred Stock + Other Unfunded Liabilities
- Equity Value: residual value available to stockholders
  - Market Capitalization is one way to measure equity value

Discounted Cash Flow

5 Steps to a DCF:

1. Project 3 – 10 years of Free Cash Flows to the Firm (FCFF)
2. Arrive at Terminal Value (TV) using Exit Multiples Method or Gordon Growth Model
3. Discount FCFF and TV to present using WACC to arrive at Enterprise Value (EV)
4. Move from EV to Equity Value
5. Divide Equity Value by Diluted Shares Outstanding to arrive at equity value per share

Step 1: Project FCFF

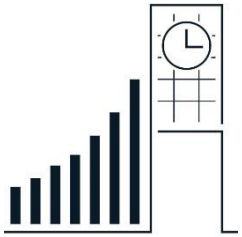


- $\text{FCFF} = EBIT \times (1 - t) + D\&A - CapEx - \Delta NWC$

- Start with tax affected EBIT
- Add back non-cash expenses from income statement
- Subtract out cash expenses not on income statement
- Subtract additions to net working capital
  - NWC = Current Assets (net of cash) – Current Liabilities (net of short-term interest bearing instruments)

More in-depth description of FCFF in Accounting 2 workshop

Estimating WACC

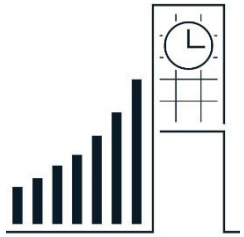


- Weighted Average Cost of Capital
- Required return for all investors in business, consummate with the risk of the business

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

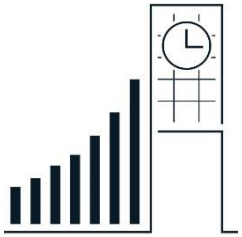
  - Use market values of Equity & Debt, not book value
  - Use costs of capital and capitalization ratios for the target company, not the combined company or acquirer
  - T is the Tax Rate

Estimating Cost of Equity Capital



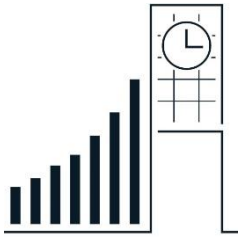
- For cost of equity, use Capital Asset Pricing Model
  - Calculate beta; the slope of the line of best fit for the target's returns regressed against the returns of the S&P 500
  - Use long-term treasury yield for risk-free rate (10-year T-bill)
  - Calculate equity risk premium; return of the S&P 500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

Estimating Cost of Equity Capital (ExampleCo)



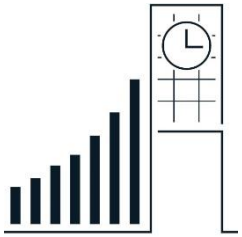
- $\boldsymbol{K_e} = R_f + \beta(R_m - R_f)$
- $\boldsymbol{Equity\ Risk\ Premium} = (R_m - R_f)$
- $R_f = 5.6\%$ (10-year T-bill)
- Equity Risk Premium $= 7.0\%$
- $\beta = 0.85$
- $K_e = 11.6\%$

Estimating Cost of Debt



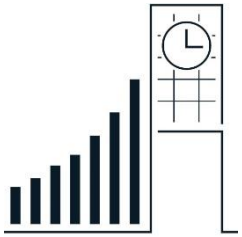
- Damodaran credit spread method
- Example Co. has a AAA debt rating
- AAA securities have a 75 basis point difference over treasuries
- R_F = 5.6% (10-year T-bill)
- K_D = 6.35%
- Cost of debt is ~4.0 - 4.5% below cost of equity
- Other option:
  - Yield-to-maturity of outstanding debt
  - If there are multiple debt tranches, calculate the weighted average of the yields; use ratio of MV of the issuance to the total MV of debt as weight

Step 2: Terminal Value



- Multiples Method (finding multiples to use is next workshop)
  - Apply multiple to terminal year metric (revenue, EBITDA, etc.)
    - EV / Revenue
    - EV / EBITDA
- Gordon Growth Model
  - $TV = \frac{FCFF_n \times (1+g)}{(WACC - g)}$
    - n = years in DCF (should be FCFF from last projection year)
    - g = perpetual growth rate
      - Often the long-term GDP growth rate

Step 3: Discount FCFF



- Discount all future cash flows and the terminal value back to the present to get Enterprise Value
- $PV = \sum_{i=i}^{n} \frac{FCFF_i}{(1+WACC)^i} + \frac{TV_n}{(1+WACC)^n}$

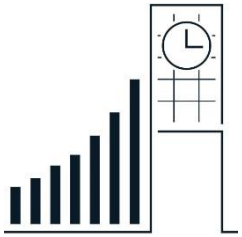
Step 4: EV & Equity Value

- Enterprise Value = Equity Value + Debt – Cash + Minority Interest + Preferred Stock + Other Unfunded Liabilities

- Minority Interest (non-controlling interest) is the portion of a subsidiary corporation's stock that is not owned by the parent corporation
- Debt means interest bearing liabilities, not all liabilities
- Other Unfunded Liabilities include things like **unfunded** pension plans

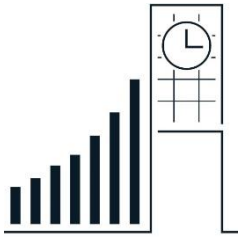
Would you include accounts payable in your debt portion of EV? Why?

Step 5: Share Price



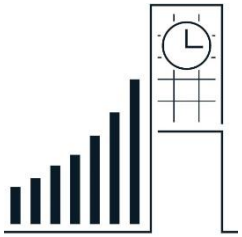
- Used Diluted Shares Outstanding because options will vest in a change of control
- Arrive at Diluted Shares Outstanding through Treasury Stock Method (TSM)
  - Use employee stock option proceeds to repurchase as many shares as possible to fight dilutive effects
  - Ex. If 10 options outstanding at a $20 exercise price, stock at a current price of $25, what is the dilutive effect
- Divide Equity Value by Diluted Shares Outstanding to get share price

Deliverable 2



- Calculate WACC
  - Calculate cost of debt
    - Credit spreads
    - YTM on debt
  - Calculate cost of equity
    - CAPM
      - Calculate market risk premium
      - Calculate beta
- Project out 3 – 10 years of FCFF (number of years based on how long it takes to arrive at a sustainable growth rate)
- Due on Monday, March 25th at 11:59 PM
  - This deliverable is **mandatory**
- Email it to bingfinancesociety@gmail.com
  - Subject line must be: Team [name/number] – Deliverable 2

QUESTIONS?



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