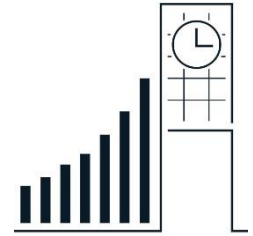# Revenue Build & Time Value of Money
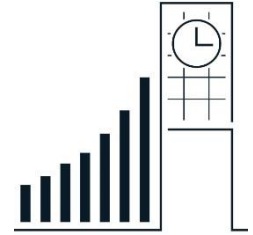
Fall 2023

AGENDA

- ▶ Importance
- ▶ Methods
- ▶ Top Down
- ▶ Bottoms Up
- ▶ Sanity Checking
  - ◦ Management Guidance
  - ◦ Analyst Estimates
- ▶ Enterprise value (EV)
  - ◦ Defining enterprise value
  - ◦ Enterprise value and equity value
  - ◦ Calculating enterprise value
- ▶ Time value of money (TVM)
  - ◦ TVM introduction
 - ◦ TVM calculation
- ▶ Deliverable

REVENUE BUILD

IMPORTANCE

- Investors pay heightened attention to how fast a firm's revenue is growing
- Revenue and revenue growth are indicators of a firm's ability to win customers in its industry
  - Ex. Uber vs. Lyft, Chegg vs. CourseHero
- Indicates breadth of customer relationships and product acceptance
- Growth is a major factor in selection of multiples
  - EV/Revenue, EV/EBIT, EV/EBITDA
- Other assumptions are tied to revenue

BUSINESS
Apple's Stock Drops on Revenue Warning
Shares of suppliers including Micron Technology, Cirrus Logic and Lumentum also took hits

Customers visit an Apple store in Beijing Thursday. "Lower than anticipated iPhone revenue, primarily in Greater China, accounts for all of our revenue shortfall," Apple CEO Tim Cook said on Wednesday. PHOTO: NG HAN GUAN/ASSOCIATED PRESS

METHODS
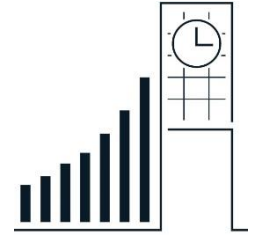
- Generic Growth Percentage
  - Slowly walk down growth over time to a sustainable number
  - Ex. Revenue will grow at 5.0% for the next five years
- Historical Growth
  - Keep consistent with last few years
- Top Down
- Bottoms Up
- Other
  - Backlog, long-term contracts, revenue by segment

TOP DOWN
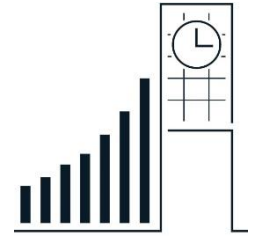
- Forecasts based off size of the total market, market growth, and market share
  - Effective for generic industries (ex. commodities, generic drugs)
- Understanding of key inputs into total market size and market growth
  - Supply and Demand
  - Price expansion or compression
  - Disruption, customer preferences
- Understanding of key inputs into market share
  - Historical market share
 - Key differentiators for a company's products

Provide an example of a company where you would utilize top down

TOP DOWN
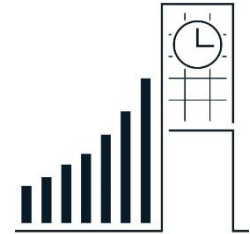
- ▶ Example of Company A in the uranium industry
  - ◦ Estimate demand based on global nuclear power plants
  - ◦ Estimate supply based on global uranium mines
  - ◦ Use surplus/(deficit) to inform estimate for uranium price
 - ◦ No significant differentiator → keep market share consistent with prior years

(In lb. of Uranium)	2016	2017	2018	2019E	2020E
Demand	145,595,000	158,007,000	146,927,000	164,843,847	155,549,000
Total Supply	218,062,057	200,950,131	204,778,205	207,939,392	196,316,000
Surplus/(Deficit)	72,467,057	42,943,131	57,851,205	43,095,545	40,767,000
Average Selling Price	$48.35	$47.53	$45.19	$46.00	$46.00
Company A Market Share	22.5%	21.5%	22.1%	22.0%	22.0%
Company A Sales Volume	$1,585,880,000	$1,611,267,000	$1,464,156,000	$1,669,098,300	$1,574,984,913

BOTTOMS UP
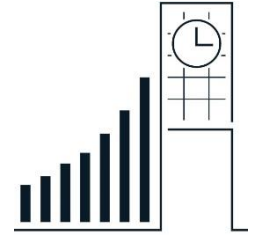
- Estimating a company's future performance from the growth of individual products or services sold
- Steps of bottoms up analysis include
  1. Projecting the number of orders or purchases (sales volumes)
  2. Estimate product/service prices
  3. Calculate the company's estimated revenue by multiplying sales volume by price
- Look at historical growth, management guidance and what the industry growth drivers of demand for their products/services are
  - Store count, personal income growth, expansion into emerging markets, etc.

REVENUE BUILD

BOTTOMS UP
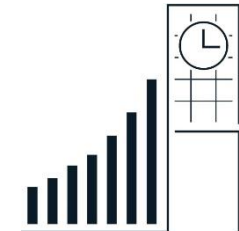
▸ Example of Restaurant Co. and Technology Co.

Restaurant Co.										
		2017		**2018**		**2019E**		**2020E**		**2021E**
Existing restaraunts		100		120		138		154		168
New restaraunts		20		18		16		14		12
Total restaurants		120		138		154		168		180
Revenue per restaurant	$	100.0	$	105.0	$	109.2	$	112.5	$	114.7
Revenue growth per restauramt				*5.0%*		*4.0%*		*3.0%*		*2.0%*
Total revenue	$	12,000.0	$	14,490.0	$	16,816.8	$	18,900.0	$	20,646.0
Revenue growth				*20.8%*		*16.1%*		*12.4%*		*9.2%*

| Technology Co.										
		2017		**2018**		**2019E**		**2020E**		**2021E**
iPhone unit price	$	100.0	$	102.0	$	104.0	$	106.0	$	107.0
iPhones sold		100		110		120		130		140
iPhone revenue	$	10,000.0	$	11,220.0	$	12,480.0	$	13,780.0	$	14,980.0
iPad unit price	$	500.0	$	525.0	$	550.0	$	575.0	$	600.0
iPads sold		20		22		24		26		28
iPad revenue	$	10,000.0	$	11,550.0	$	13,200.0	$	14,950.0	$	16,800.0
Apple Watch unit price	$	300.0	$	310.0	$	320.0	$	330.0	$	340.0
Apple Watches sold		10		12		14		16		18
Apple Watch revenue	$	3,000.0	$	3,720.0	$	4,480.0	$	5,280.0	$	6,120.0
Total revenue	$	23,000.0	$	26,490.0	$	30,160.0	$	34,010.0	$	37,900.0
Revenue growth				*15.2%*		*13.9%*		*12.8%*		*11.4%*

REVENUE BUILD

SANITY CHECKING
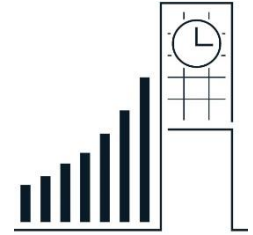
- Compare against management team guidance
  - Can be found in earnings calls, company's investor relations
- Compare against analyst estimates
  - Can be found on Bloomberg, WSJ, Yahoo Finance
- Compare against competitors
  - Example: Canadian Pacific (a leading railroad provider) vs. Canadian National, Norfolk Southern, CSX, etc.
- Look at CAGR over the projection period
- Compare against historical growth
  - Teams should be able to point to a significant catalyst if there are drastic changes in projected growth compared to the norm
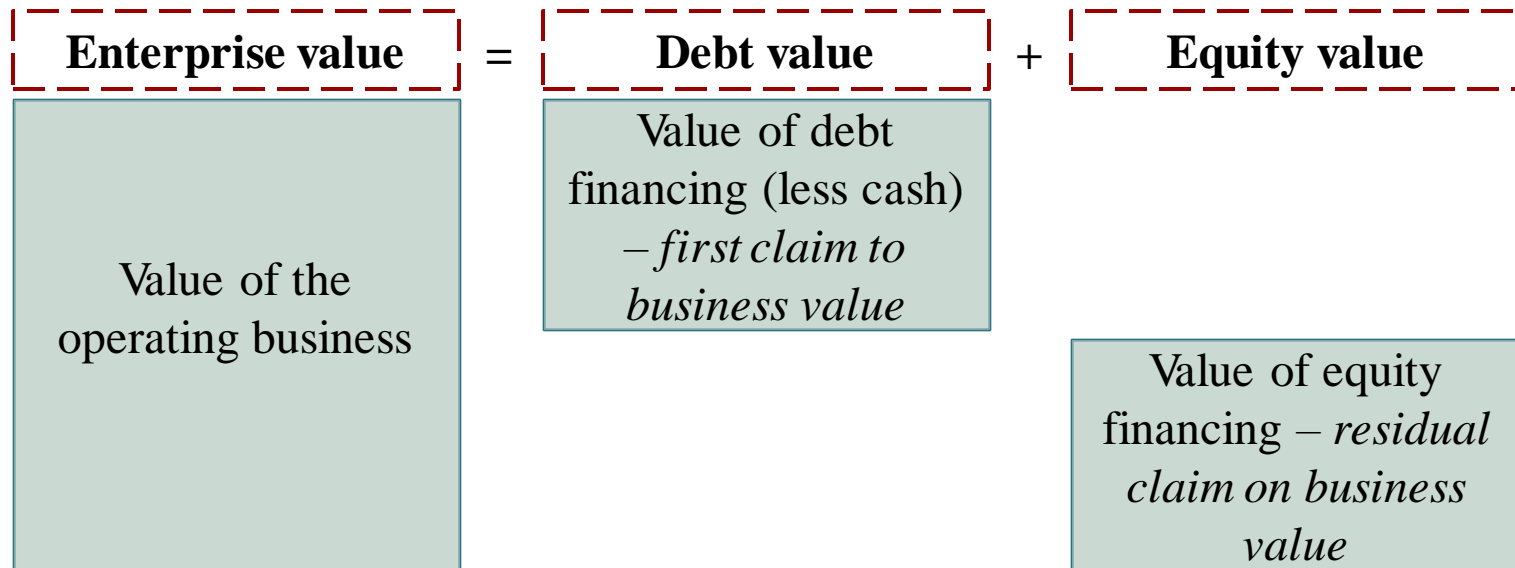
ENTERPRISE VALUE

- Enterprise value (EV)
  - Represents the total value that a business is worth to all providers of financing
  - EV = Common Equity + Net Debt + Non-controlling interest + 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
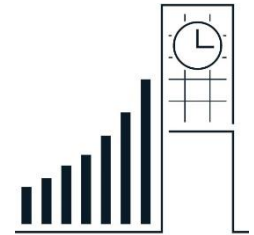- Could also include Unfunded Liabilities i.e. Pension Obligations

Enterprise Value (EV)
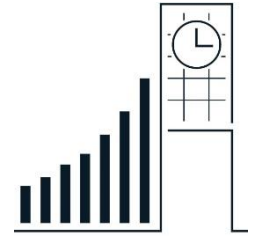
▸ Buying a share in a business grants you ownership of the **equity**, not the **enterprise**

▸ EV represents the value of the **entire firm's** operating assets available to **all suppliers of capital** to the firm

Enterprise value	=	Debt value	+	Equity value

| Value of the operating business	Value of debt financing (less cash) – *first claim to business value*	Value of equity financing – *residual claim on business value*

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

$10,000

$1,000 $1,000 $1,000 $1,000 $1,000 $1,000 $1,000 $1,000 $1,000 $1,000
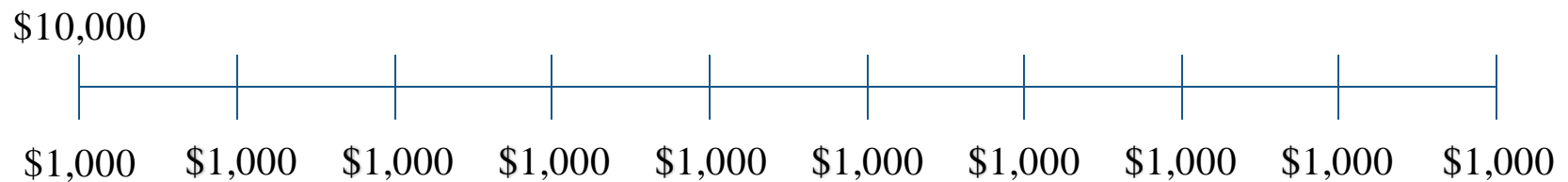
Would you rather receive one dollar today or one dollar in a year?

TIME VALUE OF MONEY
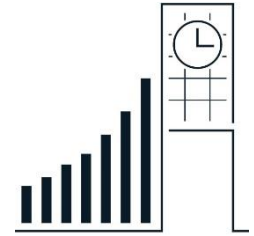
▸ Present Value vs. Future Value

  ◦ Present value represents what you would pay today for a future cash flow

    • $PV = \dfrac{CF}{(1+r)^t}$

  ◦ 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)
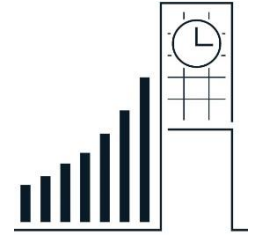
What would you pay today for a $150 payment in one year?
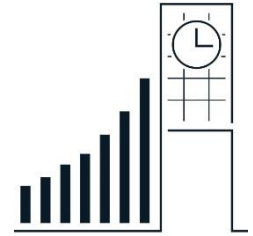
ESTIMATING WACC

▸ 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

Why is the cost of debt tax-effected?

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
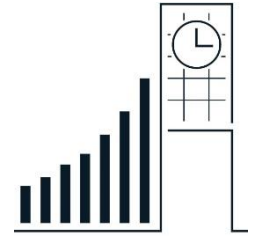
▸ For cost of equity, use Capital Asset Pricing Model
  - Calculate beta; the slope of the line of best fit for the target's returns regressed against the returns of the S&P 500
  - Use long-term treasury yield for risk-free rate (10-year T-bill)
  - Calculate equity risk premium; return of the S&P 500 in excess of the risk-free rate
    • Good estimate 4.0% to 7.0%

▸ $K_e = R_f + \beta(R_m - R_f)$

▸ $Equity\ Risk\ Premium = (R_m - R_f)$
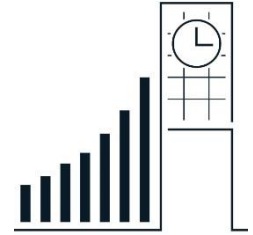
Estimating Cost of Equity (ExampleCo)
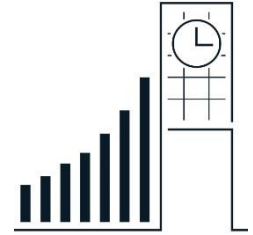
- $K_e = R_f + \beta\left(R_m - R_f\right)$
- ***Equity Risk Premium*** $= \left(R_m - R_f\right)$
- $R_f = 3.0\%$ (10-year T-bill)
- Equity Risk Premium $= 5.5\%$
- β $= 1.2$
- $K_e = 9.6\%$

ADDITION TO DELIVERABLE 3
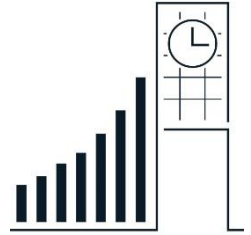
- Construct a revenue build for five years for PayPal
- Due on Sunday, October 8th at 11:59 PM
  - This deliverable is **mandatory**
  - Deliverable should be done completely in excel
- Email it to bingfinancesociety@gmail.com
  - Subject line must be: Team [number] – Deliverable 3

QUESTIONS?

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