

TIM 80 C Lecture 13 5/10/16

(1) Project Phase 3: cash flow analysis

(2) Financial Strategy: How Financing works

- capital structure
- a 1-year business cycle
- financial metrics

(1) Project Phase III -

Cash Flow Analysis

Teams need to estimate your expenses (negative cash flow) and your revenues (positive cash flows) for 3-5 years

Organize expenses by activity

(1) Product Development

- People (e.g., designers, engineers); how many? (e.g. 5-10) and salaries (e.g., \$50-100k)
- Equipment: software, desktops & laptops; servers, 3D printers, etc.)
- Facilities: 100-200 ft² per person @ \$25/sqft per month
- ⋮
- ⋮

(2) Product Manufacturing

- # of units
- Manufacturing cost per unit
- Transportation cost (shipping units)
- ⋮

view" or
"adview"

- (3) Marketing & Sales
 - People (sales people); how many; Salary (depends on product)
 - advertising campaigns: how many impressions, cost per impression (\$2-5 for 1000)

- (4) Management and Support
 - People (e.g., CEO, CFO, CTO); how many and salaries
 - legal
 - HR (hiring; firing; workplace issues)
 - ⋮

Estimate Revenue based on Business Goals, Market Strategy, Product Strategy

(1) Estimate the total (cumulative) target market size (\$) for 3-5 years

source: Market Strategy & Revenue Map

$n \triangleq$ number of years in the projection (3-5)

total market size = $\sum_{n=0}^{n-1} (\text{target market size} \times (1 + \text{growth rate})^n)$

(2) Forecast revenue for 3-5 years

Source: Business Goals (Market Share)

$$\text{revenue} = \text{total market } \overset{\text{size}}{\text{size}} \times \text{desired market share}$$

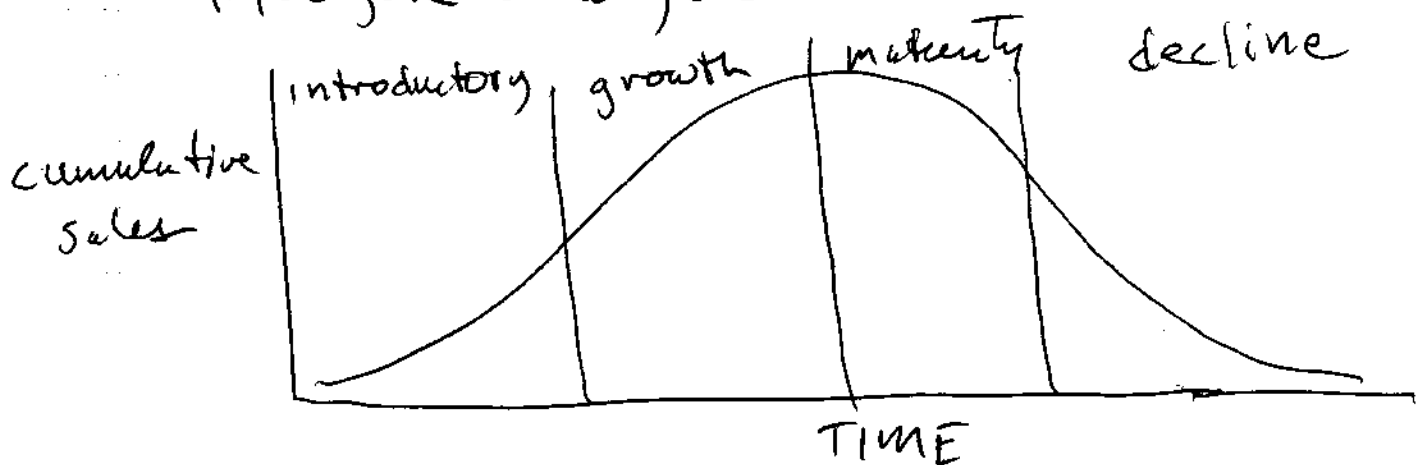
(3) Determine the Price per unit

Source: Product Strategy, Market Strategy (4 P's)

(4) Determine Sales Volume

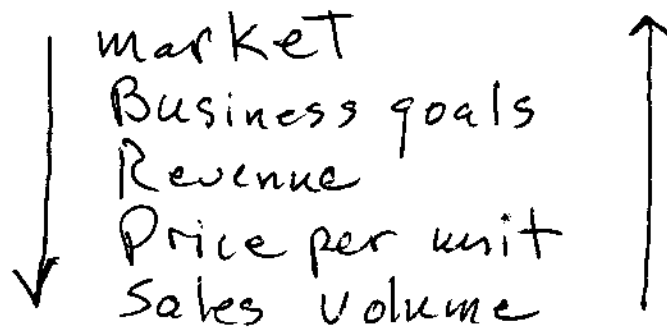
$$\text{sales volume} = \frac{\text{Revenue}}{\text{price per unit}}$$

For sales volume, use the product lifecycle analysis:



Suggestions:

- (1) Review the new handout on cash flow analysis
- (2) Use Excel to generate your cash flow model
- (3) Work "top-down" and "bottom up"



do 2-3 iterations

(2) Financial Strategy : Financing

Capital structure of a company refers to how the company is financed

Companies are financed from two sources

The company's owners
(shareholders)



cash contributed by shareholders is called equity capital

Financial institutions (e.g., banks) or individuals that lend money to the company (debt holders)



cash contributed by debt holders is called debt capital

The capital structure of a company is the debt-to-equity ratio:

$$\frac{\text{debt capital}}{\text{equity capital}}$$

A high debt/equity ratio \Rightarrow

more earning potential but more risk

- called "being leveraged"

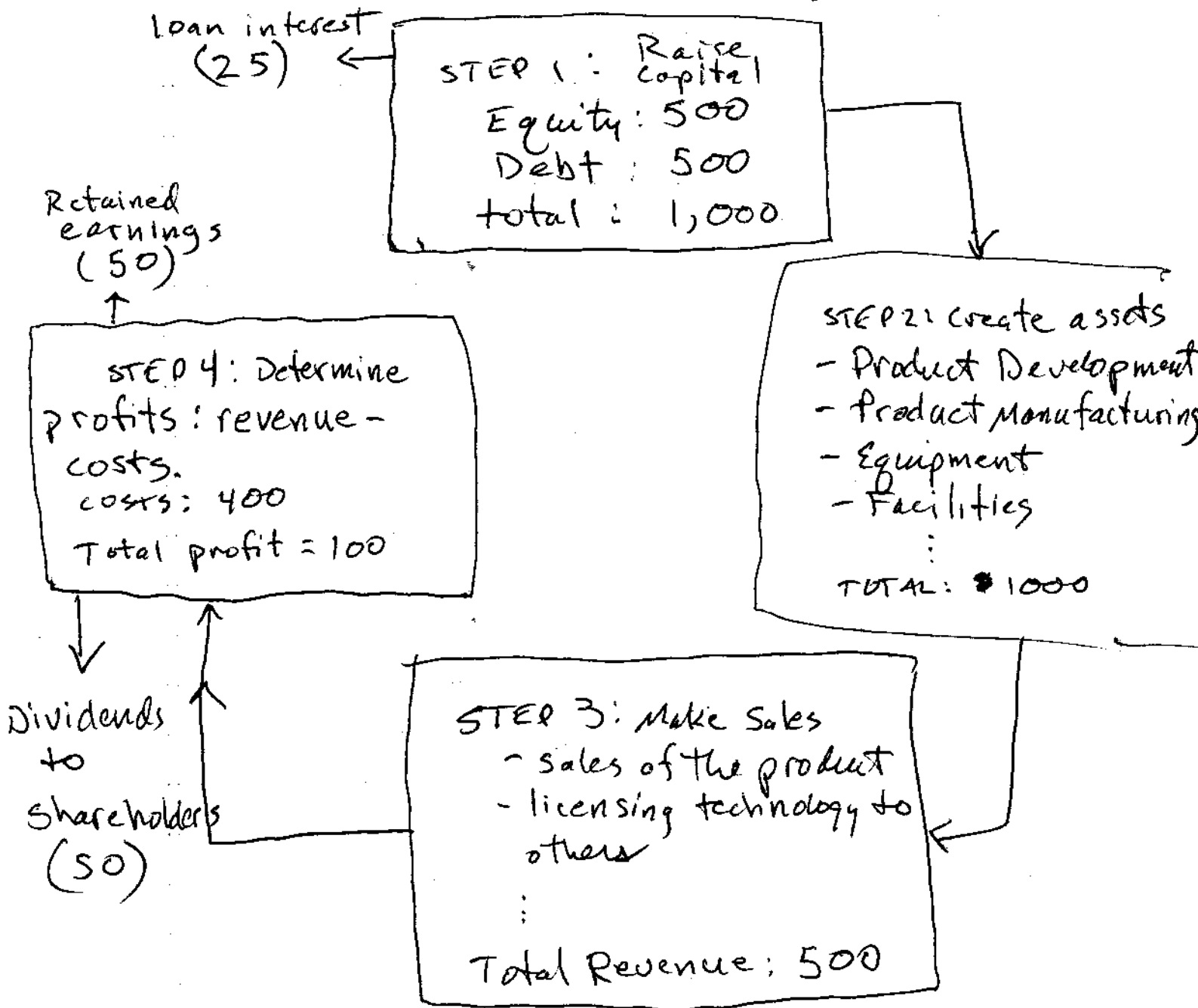
"Typical" D/E ratios depend on markets,

e.g. hardware companies \rightarrow software companies

why? ... inventory & machinery can be sold to cover debts.

A 1-year business cycle

Turning capital into profits
(all #'s in \$1,000s)



Financial Metrics for assessing a company

(1) Capital structure: $\frac{\text{debt}}{\text{equity}}$

Ex: $\frac{\$500K}{\$500K} = 1$

(2) Return on assets (ROA) = $\frac{\text{Revenue}}{\text{Assets}}$

Ex: $\frac{\$500K}{\$1,000K} = 0.5$ or 50%

(3) Profit Margin = $\frac{\text{Profit}}{\text{Revenue}}$

E.g.: $\frac{\$100K}{\$500K} = 20\%$
(Very good)

(4) Retention Rate = $\frac{\text{Retained Earnings}}{\text{Profit}}$

e.g.) $\frac{\$50K}{\$100K} = 50\%$

(5) Return on invested capital
ROIC

$$\frac{\text{Profit}}{\text{invested capital}}$$

e.g., $\frac{\$100\text{K}}{\$1,000\text{K}} = 10\%$ (very good)

(6) Return on Equity
(ROE)

$$\frac{\text{Profit}}{\text{Equity Capital}}$$

e.g., $\frac{\$100\text{K}}{\$500\text{K}} = 20\%$ (very good)

(7) Return on Debt $\frac{\text{Profit}}{\text{debt capital}}$

e.g. $\frac{\$100\text{K}}{\$500\text{K}} \approx 20\%$

(8) Equity cost : $\frac{\text{dividends}}{\text{equity capital}}$

e.g. $\frac{\$50\text{K}}{\$500\text{K}} = 10\%$

(9) Debt cost : $\frac{\text{interest payments}}{\text{debt capital}}$

e.g. $\frac{\$25\text{K}}{\$500\text{K}} = 5\%$

(10) Weighted average cost of capital

$$\text{WACC} : \left(\left(\frac{\text{equity capital}}{\text{invested capital}} \right) \times \text{equity cost}(\%) \right) + \left(\left(\frac{\text{debt capital}}{\text{invested capital}} \right) \times \text{debt cost}(\%) \right)$$

$$= \left(\frac{\$500\text{K}}{\$1000\text{K}} \times 10\% \right) + \left(\left(\frac{\$500\text{K}}{\$1000\text{K}} \right) \times 5\% \right) = 7.5\%$$