

## FIN-511 Chapter 6

- Major Topics:
- Break-even Analysis
  - Sales level to reach target level of EBIT
- Leverage Analysis
  - DOL, DFL, DCL

## Break-Even Analysis

- **Variable costs:** expected to change at the same rate as sales
- **Fixed cost:** Costs that are constant, regardless of the sales level (over a relevant range)
- **Break-even point:** level of sales (units or dollars) which cause profits to be equal to zero
- **Operating break-even point:** unit sales required for EBIT to be equal to zero
 
$$Q(P-V) - F = \text{EBIT} \Rightarrow Q^* = F / (P-V) \quad (\text{units})$$
 where P - V is the contribution margin per unit  
 and  $\$BE = F / [(P-V)/P] = F / CM\% \quad (\text{dollars})$

## Leverage Analysis

- **Business Risk:** variability of EBIT with respect to sales - measured by DOL
  - Higher leverage (DOL) means changes in sales create even larger changes in EBIT
  - $DOL = \% \Delta \text{EBIT} / \% \Delta \text{Sales}$
  - $DOL = Q(P - V) / Q(P - V) - F$
  - $DOL = (\text{Sales} - \text{Variable Costs}) / \text{EBIT}$

## Leverage Analysis

- **Financial Risk:** variability of EPS with respect to EBIT - measured by DFL
  - Higher leverage (DFL) means changes in EBIT create even larger changes in EPS
  - Caused by fixed financing costs: interest expense and preferred dividends (PD)
  - $DFL = \% \Delta \text{EPS} / \% \Delta \text{EBIT}$
  - $DFL = \text{EBIT} / [\text{EBT} - \text{PD} / (1 - t)] \quad (t = \text{tax rate})$

## Leverage Analysis

- **Total Risk:** variability of EPS with respect to Sales - measured by DCL (or DTL)
  - Higher leverage (DCL) means changes in Sales create even larger changes in EPS
  - Caused by combination of fixed costs and fixed financing costs
  - $DCL = \% \Delta \text{EPS} / \% \Delta \text{Sales}$
  - $DCL = DOL \times DFL$

## • Goal Seek:

- Goal seek is a simple version of Solver, a linear program. This is a "what-if" tool that allows you to see what value a particular value needs to be to end up with a specific result in another variable.
- For example, what level of sales do you have to achieve to make net income exactly zero?
- Go to Tools, Goal Seek and then fill in the simple dialogue box
- Set cell: (this is the cell that you want to be a certain value)
- To value: (this is the value that you want the set cell to end up)
- By changing cell: (this is the cell that Goal Seek will change that will make the Set cell end up with the correct Set value, linked by formulas)

- **Assignment:**

- Do all of the work in the chapter, final result should look like Exhibit 6-4 and Fig. 6-3, also include all 5 years in the Income Statement (Ex. 6-4)
- Format exactly like in the text.
- Remember Columns/Rows/Gridlines
- Each person will turn in one set of information: print out of spreadsheet and print out of cell formulas
- Work is individual.
- Due at the beginning of class