

## Lecture Note 6 (FCF)

Sunday, July 27, 2025 6:20 PM



Lecture  
Note 6 (F...

### Lecture Note 6

Free Cash Flow: → Freely Available Cash

- It is the cash flow available for distribution to investors after the company has made all the investments in fixed assets and working capital necessary to sustain ongoing operation.

$$\text{Incremental} \\ (\text{Rev.} - \text{Costs} - \text{Depreciation})$$

Calculating Free Cash Flow:

- Net Operating Profit After Taxes (NOPAT) =  $\text{EBIT} (1 - \text{Tax Rate})$

- NOPAT is the amount of profit a company would generate

if it had no debt and held no financial assets → "Unlevered net income"

Net Operating Assets  
sum

- Net investment in fixed assets (p.p.E) ← Capital Expenditure (CapEx)

- Net operating working capital = All current assets that do not pay interest (NOWC)  
- All current liabilities that do not charge interest

$$= (\text{Cash} + \text{Account Receivable} + \text{Inventories})$$

$$- (\text{Account Payables} + \text{Accruals})$$

$$\text{NOWC}_{2018} = (22 + 110 + 220) - (22 + 55) \\ = 275 \text{ (NOWC in 2018)}$$

- Free Cash Flow =  $\text{NOPAT} - \text{Net Investment in Operating Capital}$   
(Net Investment in Fixed Assets  
+  
NOWC)

## Lecture Note 6

AU Corporation: calculating the expected Free Cash Flow (Millions of Dollars)

|                                                       | Today<br>Actual | Future<br>Projected |                                       |
|-------------------------------------------------------|-----------------|---------------------|---------------------------------------|
|                                                       | 2018            | 2019                | 2020                                  |
| 1. Required net operating working capital             | ⊕ 275           | 289                 | 303                                   |
| 2. Required net <u>plant and equipment</u><br>(P.P.E) | 341             | 358                 | 376                                   |
| 3. Required net operating assets                      | 616             | 647                 | 679                                   |
| 4. Required net new investment in operating assets    |                 | 31                  | 32                                    |
| 5. NOPAT (EBIT)(1-Tax Rate)                           |                 | 77.4                | 81                                    |
| 6. Less: Required investment in operating assets      |                 | 31                  | 32                                    |
| 7. Free Cash Flow                                     |                 | 46.4                | 49                                    |
|                                                       |                 | FCF <sub>1</sub>    | FCF <sub>2</sub> FCF <sub>3</sub> ... |

### ★ DCF Model

Discounted Free Cash Flow Model

$$V_0 (\text{Value of Corporation}) = \text{PV}(\text{Future FCF of Firm}) + \text{Non Operating Assets}$$

$$\text{PV (Future FCF of Firm)} = \frac{\text{FCF}_1}{(1+r_{WACC})} + \frac{\text{FCF}_2}{(1+r_{WACC})} + \dots + \frac{\text{FCF}_N}{(1+r_{WACC})^N} + \frac{V_N}{(1+r_{WACC})^N}$$

Value of Operation      Value of Non Operating Assets

$$V_N = \frac{\text{FCF}_{N+1}}{r_{WACC} - g_{FCF}} = \frac{\text{FCF}_N (1 + g_{FCF})}{r_{WACC} - g_{FCF}}$$

Terminal Value of Operation

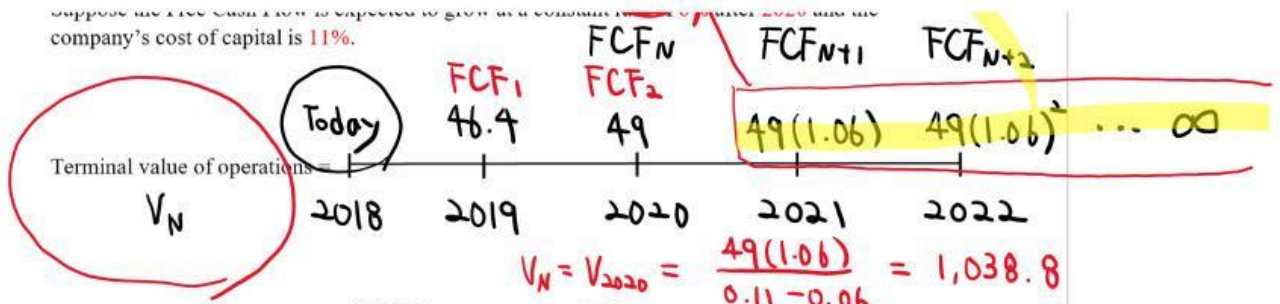
FCF growth rate

## Lecture Note 6

Suppose the Free Cash Flow is expected to grow at a constant rate of 6% after 2020 and the company's cost of capital is 11%.



Suppose the FCF cash flow is expected to grow at a constant rate of 6% starting in 2020 and the company's cost of capital is 11%.



Present value of operations =

$$\frac{FCF_{2019}}{(1+r_{WACC})} + \frac{FCF_{2020} + V_{2020}}{(1+r_{WACC})^2}$$

$$= \frac{46.4}{(1.11)} + \frac{49 + 1,038.8}{(1.11)^2} = 924.68$$

Value of corporation = Value of operation + Non Operating Assets (e.g., Marketable Securities)

$$= 924.68 + 80$$

$$= 1,004.68$$

Estimating common stock price per share using DCF model

The Value left for Common Shareholders = Value of Corporation - Debt - Preferred Stock.

$$= 1,004.68 - 397 - 80$$

$$= 527.68 \text{ million}$$

Suppose AU corporation currently has 100 million shares outstanding. What is the common stock price per share based on DCF model?

$$\frac{527.68}{100} = \$5.2768 / \text{share}$$

Intrinsic Value  
= Fair Value

## Lecture Note 6

### AU Corporation: Balance Sheets (Millions of Dollars)

|                               | Actual | Projected |      |
|-------------------------------|--------|-----------|------|
| <u>Assets</u>                 | 2018   | 2019      | 2020 |
| Cash                          | 22     | 23        | 24   |
| Marketable securities         | 80     | 84        | 88   |
| Accounts receivable           | 110    | 116       | 121  |
| Inventories                   | 220    | 231       | 243  |
| Total current assets          | 432    | 454       | 476  |
| Net plant and equipment       | 341    | 358       | 376  |
| Total assets                  | 773    | 812       | 852  |
| <u>Liabilities and Equity</u> |        |           |      |
| Accounts payable              | 22     | 23        | 24   |
| Notes payable                 | 160    | 168       | 176  |
| Accruals                      | 55     | 58        | 61   |
| Total current liabilities     | 237    | 249       | 261  |
| Long-term bonds               | 160    | 168       | 176  |
| Preferred stock               | 80     | 84        | 88   |
| Common stock                  | 200    | 200       | 200  |
| Retained earnings             | 96     | 111       | 127  |
| Common equity                 | 296    | 311       | 327  |
| Total liabilities and equity  | 773    | 812       | 852  |

debt 397  
80

## Lecture Note 6

### AU Corporation: Income Statements (Millions of Dollars)

|                                            | Actual  | Projected |         |
|--------------------------------------------|---------|-----------|---------|
|                                            | 2018    | 2019      | 2020    |
| Net sales                                  | 1,000.0 | 1,000.0   | 1,155.0 |
| Costs (except depreciation)                | 911.0   | 935.0     | 982.0   |
| Depreciation                               | 34.0    | 36.0      | 38.0    |
| Total operating costs                      | 945.0   | 971.0     | 1,020.0 |
| Earnings before interest and taxes (EBIT)  | 55.0    | 129.0     | 135.0   |
| Less: Net interest                         | 16.0    | 17.0      | 19.0    |
| Earnings before taxes                      | 39.0    | 112.0     | 116.0   |
| Taxes (40%)                                | 15.6    | 44.8      | 46.4    |
| Net income before preferred dividends      | 23.4    | 67.2      | 69.6    |
| Preferred dividends                        | 7.4     | 8.0       | 8.3     |
| Net income available from common dividends | 16.0    | 59.2      | 61.3    |
| Common dividends                           |         | 44.2      | 45.3    |
| Addition to retained earnings              | 16.0    | 15.0      | 16.0    |