

# CENG 6108 Construction Economics

## **Understanding Financial Statements**

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# TO DO

## ① Financial Statements:

- Income Statement
- Balance Sheet

## ② Financial Ratios

# Introduction:

- In all businesses, including construction industry, financial statements are important for reflecting the financial health of a company.
- The two most important financial statements:
  - 1) Income Statement (or called Profit and Loss Account)
  - 2) Balance Sheet.
- Income Statement
  - Shows the profit made or the loss incurred by a company in a period of time (usually one year)
  - Usually two consecutive years of the following information are shown:
    - Revenue
    - Costs
    - Other expenses

## Income Statement

	Period (one year) ended on	
	31/12/2012	31/12/2011
Revenue	40,185,000	38,483,000
Cost of Revenue		
Materials	13,000,000	12,500,000
Labour	5,500,000	5,400,000
Subcontracts	12,500,000	12,000,000
Other direct costs	1,087,000	1,085,000
Total Cost of Revenue	32,087,000	30,985,000
Gross Profit	8,098,000	7,498,000
Operating Expenses		
Variable overhead	2,036,500	1,943,500
Fixed overhead	3,358,500	2,979,500
Total Operating Expenses	5,395,000	4,923,000
Operating Profit	2,703,000	2,575,000
Other Income/Expense		
Gain/loss on sale of assets	30,000	(38,000)
Miscellaneous income/expense	(5,500)	4,000
Interest income	19,000	12,900
Interest expense	(42,500)	(41,000)
Total Other Income/Expense	1,000	(62,100)
Net Profit before Tax	2,704,000	2,512,900
Tax Expense (25% tax rate)	676,000	628,225
Net Profit after Tax	2,028,000	1,884,675

# Income Statement

- Revenue:
  - First row of the income statement
  - Also means Sales or Income
  - Represents the amount of money the company receives before (or without) deducting any expenditures related to the company's revenue
- Cost of Revenue
  - Is the direct construction/production cost, which the construction company has incurred in order to earn the Revenue
- Gross profit
  - $\text{Gross profit} = \text{Revenue} - \text{Cost of Revenue}$
- Operating Expenses
  - Usually consist of Variable Overhead (e.g. advertising, plant, equipment, vehicles, etc.) and Fixed Overhead (e.g. depreciation, rent, salaries, insurance, etc.)

# Income Statement

- Operating Profit
  - After deducting the Operating Expenses from the Gross Profit, we obtain Operating Profit.
- Interest Expense
  - Is the interest payment on loan if a loan is borrowed by the company.
- Net Profit before Tax
  - Net Profit before Tax = Operating Profit - Total Other Income/Expense
- Net Profit after Tax
  - Tax expense is calculated based on the countries tax law (e.g., 27% for corporate tax in Ethiopia)
  - Net Profit after Tax = Net Profit before Tax – Tax Expense
  - This figure indicates whether or not the construction company's business is profitable.

# Balance Sheet

- Shows a company's financial position as at a point of time (usually the last date of the company's fiscal year)
- There are three major items in a balance sheet:
  - 1) Assets,
  - 2) Liabilities, and
  - 3) Equity (or called Net Worth).
- 1. Assets
  - Assets represent what a company owns, and are usually presented at the top (first part) of a balance sheet.
  - Include two categories:
    - 1.1) Current Assets
    - 1.2) Fixed Assets

## Balance Sheet

<b>Balance Sheet</b>		
	As at	
	31/12/2012	31/12/2011
<b>Assets</b>		
<b>Current Assets</b>		
Cash	2,589,000	1,967,890
Accounts receivable	5,767,000	5,403,670
Retention money	1,641,750	1,350,918
Material Inventory	850,000	520,000
Costs and estimated earnings in excess of billings on work in progress	547,250	450,306
Prepaid expenses and others	894,500	983,944
<b>Total Current Assets</b>	<b>12,289,500</b>	<b>10,676,728</b>
<b>Fixed assets</b>		
Property and equipment	15,536,900	13,800,000
Construction plant	2,680,040	2,039,480
Vehicles/Trucks	2,070,000	1,812,000
Furniture and fixtures	345,000	379,000
<b>Total depreciable assets</b>	<b>20,631,940</b>	<b>18,030,480</b>
Less accumulated depreciation	12,529,373	11,158,000
<b>Net Fixed Assets</b>	<b>8,102,567</b>	<b>6,872,480</b>
<b>Total Assets</b>	<b>20,392,067</b>	<b>17,549,208</b>
<b>Liabilities</b>		
<b>Current Liabilities</b>		
Accounts payable	4,325,250	4,773,240
Accrued expenses	1,586,037	1,475,918
Notes payable	647,250	491,973
Retention money payable	919,380	756,514
Billings in excess of costs and estimated earnings on work in progress	617,205	678,922
Other current liabilities	355,713	292,699
<b>Total Current Liabilities</b>	<b>8,450,835</b>	<b>8,469,266</b>
<b>Long-term Liabilities</b>	<b>3,528,557</b>	<b>3,695,267</b>
<b>Total Liabilities</b>	<b>11,979,392</b>	<b>12,164,533</b>
<b>Equity (i.e. Net Worth)</b>		
Capital stock	3,500,000	2,500,000
Additional paid-in capital	1,000,000	1,000,000
Retained earnings	3,912,675	1,884,675
<b>Total Equity</b>	<b>8,412,675</b>	<b>5,384,675</b>
<b>Equity + Total Liabilities</b>	<b>20,392,067</b>	<b>17,549,208</b>



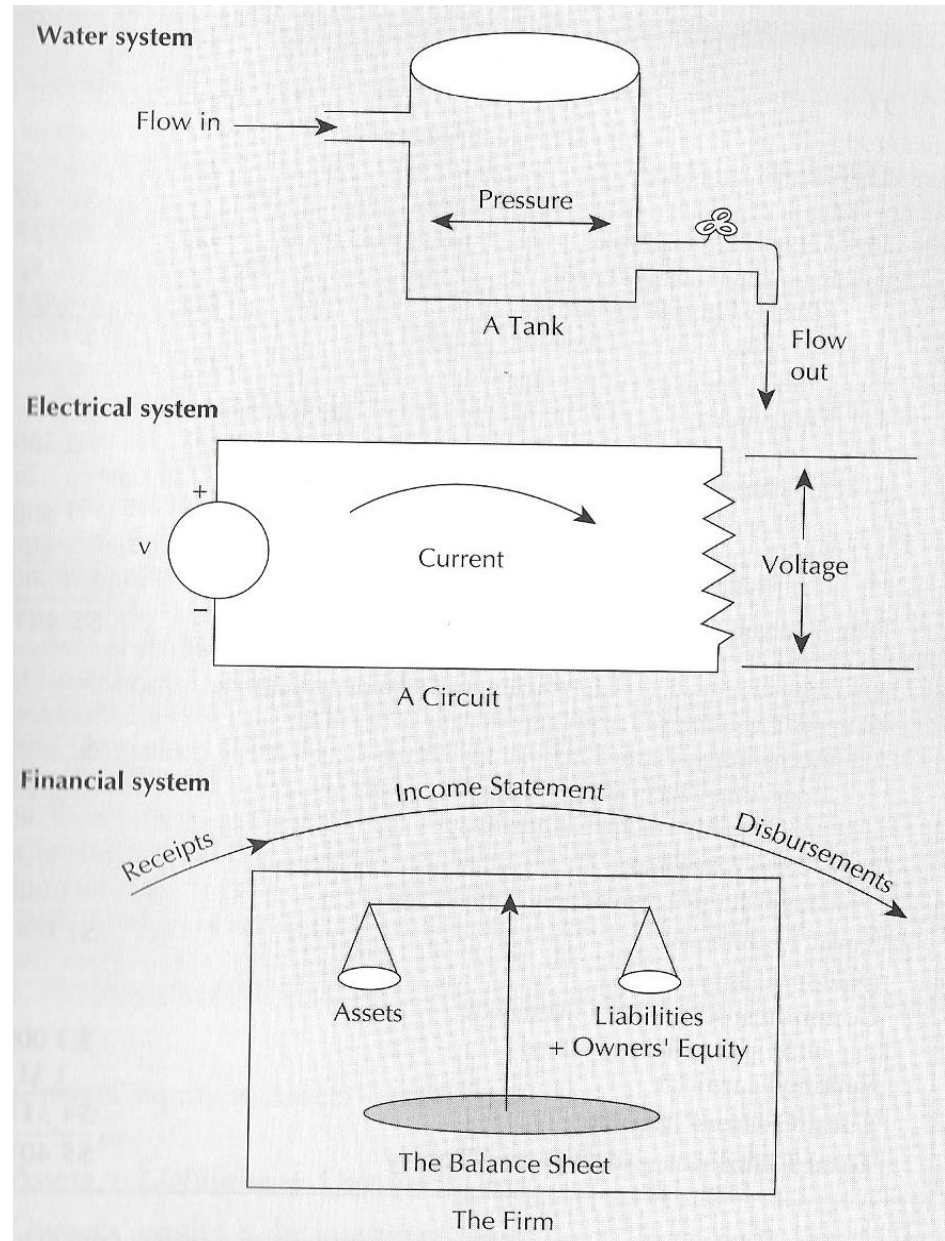
# Balance Sheet

- 1.1. Current Assets:
  - Include usually cash, accounts receivable, construction material inventory and so on which have high liquidity (i.e. can be turned into cash easily).
- 1.2. Fixed Assets, also called Long-term Assets:
  - Include usually property and equipment, construction plant, trucks and so on which cannot be readily turned into cash in a short time.
- 2. Liabilities
  - Liabilities represent the obligations the company owes to some third parties, and are usually presented at the middle part of a balance sheet.
  - Include two categories:
    - 2.1) Current Liabilities
    - 2.2) Long-term Liabilities

# Balance Sheet

- 2.1. Current Liabilities:
  - Include bank overdraft and short term bank loan, accounts payable to subcontractors, suppliers and employers, rents, utilities and etc.
  - They are debts the company has to pay, say, within a year.
- 2.2. Long-term Liabilities:
  - Are obligations with a period more than one year, usually a few years or even longer.
  - Include long term bank loans or loans for mortgages of equipment, building, land, or even cars/ trucks. Such long-term debts are usually repaid by installments.
- 3. Equity or Net worth:
  - Equity is the capital invested by the owner(s) of a company.
  - If the companies are owned by Stockholders, it will be referred to as Stockholders' equity.
    - = Capital invested + Accumulated and Retained Profits (less dividends paid so far to the owners)

# Income Statement



# Balance Sheet

- The Accounting Equation:
  - *Total Assets = Equity + Total Liabilities*
- Balance Sheet, is in fact derived from the fact that the three items must be in balance.
- Working Capital and Current Ratio
  - Work Capital
    - Refers to the difference of Current Assets and Current Liabilities:
    - *Working Capital = Current Assets – Current Liabilities*
    - The amount of working capital in hand is a measure of the short term financial strength of a construction company.
    - Working capital increases when a company makes a profit on a project, sells equipment or other assets, or has a long term loan from a bank.
    - A long term bank loan can increase current (short term) assets, but at the same time increases long term liabilities.

# Balance Sheet

- Working Capital and Current Ratio
  - Work Capital
    - The volume of unfinished work of all projects in hand should be at most about ten times the working capital for a construction company, and not more than five times if there is large project.
    - In shown example,
      - The working capital is \$2,207,462 (i.e. \$10,676,728 – \$8,469,266) as at 31 Dec 2011, and
      - The working capital is \$3,838,665 (i.e. \$12,289,500 – \$8,450,835) as at 31 Dec 2012.
  - Current Ratio
    - Measures its ability to fulfill short term financial obligations:
    - $Current\ Ratio = \frac{Current\ Assets}{Current\ Liabilities}$

# Balance Sheet

- Working Capital and Current Ratio
  - Current Ratio
    - Based on experience shown over a long period of time, the current ratio for a construction company should be 1.3 or higher.
    - In shown example,
      - The current ratio is 1.26 (i.e.  $\$10,676,728 / \$8,469,266$ ) as at 31 Dec 2011, and
      - The current ratio is 1.45 (i.e.  $\$12,289,500 / \$8,450,835$ ) as at 31 Dec 2012.
- Under Billing and Over Billing
  - Under billing is expressed in the balance sheet as “Costs and estimated earnings in excess of billings on work in progress” under Current Assets.
  - Over billing is expressed as “Billings in excess of costs and estimated earnings on work in progress” under Current Liabilities.

# Balance Sheet

- Under Billing and Over Billing
  - A construction company has the following project financial data:

Financial Data	Amount (\$)
Contract sum	8,000,000
Billed to date	4,700,000
Cost incurred (i.e. cost of revenue) to date	3,700,000
Estimated cost to complete	3,000,000

- Up to the present moment, the percentage of completion

- $$= \frac{\text{Cost incurred to date}}{\text{Cost incurred to date} + \text{Estimated cost to complete}} * 100\%$$

- $$= \frac{\$3,700,000}{\$3,700,000 + \$3,000,000} * 100\% = 55.22\%$$

# Balance Sheet

- Under Billing and Over Billing
  - Revenue to date
    - =  $(\text{Contract sum}) \times (\% \text{ of completion})$
    - =  $\$8,000,000 * 55.22\% = \$4,417,600$
  - Gross Profit to date
    - =  $\text{Revenue to date} - \text{Cost of Revenue to date}$
    - =  $\$4,417,600 - \$3,700,000 = \$717,600$
  - Over billing
    - =  $\text{Billed to date} - \text{Revenue to date}$
    - =  $\$4,700,000 - \$4,417,600 = \$282,400$
  - If over billing is a negative value, then it is called under billing:
    - $\text{Under billing} = \text{Revenue to date} - \text{Billed to date}$



# Financial Ratios:

- Financial Ratios help a lot in indicating the financial health of a construction company.
- Financial ratios relevant to the construction industry can be classified into five categories:
  - 3.1) Profitability Ratios,
  - 3.2) Liquidity Ratios,
  - 3.3) Working Capital Ratios,
  - 3.4) Capital Structure Ratios, and
  - 3.5) Activity Ratios.
- 3.1) Profitability Ratios
  - Profitability ratios measure the construction company's ability to earn profit from its operation.

# Financial Ratios:

- 3.1) Profitability Ratios

- The three most commonly used profitability ratios are:

- **Gross Profit Margin Ratio**

- = *Gross profit / Revenue*
- =  $8,098,000 / 40,185,000 = 20.15\%$
- The goal for net profit margin ratio is 25% minimum; if subcontractors (pay-as-paid basis) occupy a significant portion of the cost of revenue, the goal can be reduced to 20% minimum.

- **Net Profit Margin Ratio**

- =  $\frac{\text{Net profit before tax}}{\text{Revenue}}$
- =  $2,704,000 / 40,185,000 = 6.73\%$
- The goal for net profit margin ratio is 5% minimum.

- **Return on Equity Ratio**

- = *Net profit before tax / Owners' equity*
- =  $2,704,000 / 8,412,675 = 32.14\%$
- The return on equity ratio should be between 15% and 40%.

# Financial Ratios:

- 3.2) Liquidity Ratios

- Shows the ability to pay its obligations as they come due, common liquidity ratios are:

- **Current Ratio**

- = *Current assets / Current liabilities*
- =  $12,289,500 / 8,450,835 = 1.45$
- The current ratio  $> 1.3$  for a financially healthy construction company.

- **Acid Test Ratio (or Quick Ratio)**

- = *(Cash + Accounts receivables) / Current liabilities*
- =  $(2,589,000 + 5,767,000) / 8,450,835 = 0.99$
- The acid test ratio or quick ratio  $> 1.1$  for a construction company

- **Current Assets to Total Assets Ratio**

- = *Current assets / Total assets*
- =  $12,289,500 / 20,392,067 = 60.27\%$
- The current assets to total assets ratio should be between 60% and 80%)

# Financial Ratios:

- 3.3) Working Capital Ratios

- Measure how well the construction company is utilizing its working capital, common working capital ratios are:

- **Working Capital Turnover**

- = *Revenue / Working capital*
- =  $40,185,000 / (12,289,500 - 8,450,835) = 10.47 \text{ times}$
- The working capital turnover should be between 8 and 12 times per year

- **Net Profit to Working Capital Ratio**

- = *Net profit before tax / Working capital*
- =  $2,704,000 / (12,289,500 - 8,450,835) = 70.44\%$
- The net profit to working capital ratio should be between 40% and 60%

- **Degree of Fixed Asset Newness**

- = *Net depreciable fixed assets / Total depreciable fixed assets*
- =  $8,102,567 / 20,631,940 = 39.27\%$
- The degree of fixed asset newness should be between 40% and 60%

# Financial Ratios:

- 3.4) Capital Structure Ratios

- Indicate the ability of the construction company to manage liabilities, common capital structure ratios are:

- **Debt to Equity Ratio**

- = *Total liabilities / Owners' equity*
- =  $11,979,392 / 8,412,675 = 1.42$
- The debt to equity ratio should be lower than 2.5

- **Leverage**

- = *Total assets / Owners' equity*
- =  $20,392,067 / 8,412,675 = 2.42$

- Or

- = *Total assets / Owners' equity* =  $\frac{(Total\ liabilities + Owners' equity)}{Owners' equity}$
- =  $(Total\ liabilities / Owners\ equity) + 1$
- = *Debt to Equity Ratio* + 1
- =  $1.42 + 1 = 2.42$
- The leverage should be lower than 3.5

# Financial Ratios:

- 3.5) Activity Ratios

- Indicate whether or not the construction company is using its assets effectively, and if yes, how effective they are, common activity ratios are:

- **Average Age of Material Inventory**

- =  $(\text{Material inventory} / \text{Materials cost}) \times 365 \text{ days}$
- =  $(850,000 / 13,000,000) \times 365 = 23.87 \text{ days}$
- The average age of material inventory should be shorter than 30 days

- **Average Age of Under Billings**

- =  $(\text{Under billings} / \text{Revenue}) \times 365 \text{ d}$
- =  $(547,250 / 40,185,000) \times 365 = 4.97 \text{ days}$
- The average age of under billings should be the shorter the better

- **Average Age of Accounts Receivable**

- =  $(\text{Accounts receivable} / \text{Revenue}) \times 365 \text{ d}$
- =  $(5,767,000 / 40,185,000) \times 365 = 52.38 \text{ days}$
- The average age of accounts receivable should be shorter than 45 days

# Financial Ratios:

- 3.5) Activity Ratios

- **Cash Conversion Period**

- = *Average age of material inventory* + *Average age of under billings* + *Average age of accounts receivable*
    - = 23.87 + 4.97 + 52.38 = 81.22 days
    - The cash conversion period should be shorter than 75 days

- **Average Age of Accounts Payable**

- =  $[Accounts\ payable / (Materials + Subcontracts)] \times 365\ d$
    - =  $[4,325,250 / (13,000,000 + 12,500,000)] \times 365 = 61.91\ days$
    - The average age of accounts payable should be shorter than 45 days

# Financial Ratios:

- 3.5) Activity Ratios

- **Average Age of Over Billings**

- =  $(\text{Over billings} / \text{Revenue}) \times 365 \text{ d}$
- =  $(617,205 / 40,185,000) \times 365 = 5.61 \text{ days}$
- Usually there is no guideline on average age of over billings

- **Cash Demand Period**

- = *Cash conversion period*
- - *Average age of accounts payable - Average age of over - billings*
- =  $81.22 - 61.91 - 5.61 = 13.70 \text{ days}$
- The cash demand period should be shorter than 30 days



## References:

- *Construction Financial Management*, Tang, bookboon, 2014.