Chapter 2: Introduction to Financial Statements

Fundamental Question: what do a firm’s financial statements tell us about the firm?

=> need to understand how put together and what they tell us

2.1 Firm’s Disclosure of Financial Information

Key issues:

=> role of financial statements
=> importance of GAAP
=> role of auditors
=> GAAP versus International Financial Reporting Standards

Concept checks: all

2.2 The Balance Sheet

Key issues:

=> items on the balance sheet: assets, liabilities, stockholder’s equity, current assets, cash and marketable securities, accounts receivable, inventory, other current assets, long-term assets, accumulated depreciation, goodwill and intangible assets, amortization or impairment, current liabilities, accounts payable, short-term debt, other current liabilities, long-term liabilities, long-term debt, capital leases, deferred taxes
=> market value versus book value of equity and assets
=> value versus growth stocks

\[ A = L + SE \]  (2.1)

=> balance sheet identity that must always hold

where:

\[ A = \text{assets} \]
\[ L = \text{liabilities} \]
\[ SE = \text{stockholders equity} = \text{difference between firm’s assets and liabilities} \]

\[ MVE = SO \times MPS \]  (2.2)

where:

\[ MVE = \text{market value of equity} \]

Note: also called market capitalization or market cap
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SO = shares outstanding
MPS = market price per share

\[ MB = \frac{MVE}{BVE} \]  \hspace{1cm} (2.3)

\Rightarrow \text{ratio of value of assets to historical cost of assets}
\Rightarrow \text{market value reflects expectations about future}

where:

\( MB \) = market-to-book ratio
\( BVE \) = book value of equity

\[ EV = MVE + D - C \]  \hspace{1cm} (2.4)

\Rightarrow \text{value of underlying business assets of firm}

where:

\( EV \) = enterprise value
\( D \) = debt
\( C \) = cash

Concept checks: all
Q: The book value of a company’s assets usually does not equal the market value of those assets. What are some reasons for this difference?

Khan Academy

What it means to buy a company’s stock

2.3 The Income Statement

Key issues:

\Rightarrow \text{items on income statements: sales, cost of sales, gross profit, operating expenses, operating profit, earnings before interest and taxes, pretax income, net income, earnings per share, diluted earnings per share}

\[ EPS = \frac{NI}{SO} \]  \hspace{1cm} (2.5)

where:

\( EPS \) = earnings per share
\( NI \) = net income
EBIT = earnings before interest and taxes

Concept checks: 1

Khan Academy:

Note: Khan Academy has a whole series of videos about financial statements

Videos on accounting and financial statements

2.4 The Statement of Cash Flows

Key issues:

=> reason net income does not equal cash earned (accrual vs. cash)
=> sections of statement of cash flows: operating activity, investment activity, financing activity

\[ RE = NI - Div \] (2.6)

=> earnings retained by firm equals earnings less dividend paid

where:

\( RE \) = retained earnings
\( NI \) = net income
\( Div \) = dividends

Concept checks: all
Q: Why does a firm’s net income not correspond to cash generated by the firm?

2.5 Other Financial Statement Information

Key issues:

=> Statement of Stockholders’ Equity
=> management discussion and analysis
=> off-balance sheet transactions
=> notes to the financial statements

\[ CSE = NI - Div + SS - RS \] (2.7)

=> earnings and sales of stock increase equity balance, dividends and repurchases reduce it
where:

\[ CSE = \text{change in stockholders equity} \]
\[ SS = \text{sales of stock} \]
\[ RS = \text{repurchases of stock} \]

Concept checks: 2

2.6 Financial Statement Analysis

Note: Ratios don’t tell us much by themselves. We need to compare ratios with:

1) past ratios for the firm to see how changing
2) similar firms to see how this firm differs from its peers

Trends away from the industry give clues about where to dig further.

A. Profitability Ratios

=> useful when assessing firm’s profitability

\[ GM = \frac{GP}{S} \]  \hfill (2.8)

=> ability to sell product for more than cost of production

where:

\[ GM = \text{gross margin} \]
\[ GP = \text{gross profit} \]
\[ S = \text{sales} \]

\[ OM = \frac{OI}{S} \]  \hfill (2.9)

=> ability to sell product for more than cost of production costs of running the business

where:

\[ OM = \text{operating margin} \]
\[ OI = \text{operating income} = \text{gross profit less operating expenses} \]
\[ EBITM = \frac{EBIT}{S} \]  

(2.B)

=> ability to sell product at a profit before pay interest and taxes

where:

\[ EBITM = EBIT \text{ margin} \]
\[ EBIT = \text{earnings before interest and taxes} \]

\[ NPM = \frac{NI}{S} \]  

(2.10)

=> fraction of revenues left for stockholders after all expenses

where:

\[ NPM = \text{net profit margin} \]

B. Liquidity Ratios

=> useful when assessing firm’s financial solvency or liquidity

\[ CR = \frac{CA}{CL} \]  

(2.C)

=> ability to meet short-term obligations with current assets

where:

\[ CR = \text{current ratio} \]
\[ CA = \text{current assets} \]
\[ CL = \text{current liabilities} \]

\[ QR = \frac{C + STI + AR}{CL} \]  

(2.D)

=> ability to meet short-term obligations with “near cash” assets

where:

\[ QR = \text{quick ratio} \]
\[ STI = \text{short-term investments} \]
\[ AR = \text{accounts receivable} \]
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\[ CashR = \frac{C}{CL} \quad (2.E) \]

=> ability to meet short-term obligations with cash

where:

\[ CashR = \text{cash ratio} \]

C. Working Capital Ratios

=> useful when assessing how efficiently firm is using its working capital

\[ ARD = \frac{AR}{ADS} \quad (2.11) \]

=> number of days to collect from customers

where:

\[ ARD = \text{accounts receivable days} \]
\[ ADS = \text{average daily sales} = \text{sales/365} \]

\[ APD = \frac{AP}{ADCS} \quad (2.12) \]

=> number of days take to pay suppliers

where:

\[ APD = \text{accounts payable days} \]
\[ AP = \text{accounts payable} \]
\[ ADCS = \text{average daily cost of sales} = \text{cost of sales/365} \]

\[ ID = \frac{I}{ADCS} \quad (2.F) \]

=> number of days to sell inventory

where:

\[ ID = \text{inventory days} \]
\[ I = \text{inventory} \]
\[ ART = \frac{AS}{AR} \]  
\[ \Rightarrow \text{number of times receivables turn over in a year} \]

where:

\[ ART = \text{accounts receivable turnover} \]
\[ AS = \text{annual sales} \]
\[ AR = \text{accounts receivable} \]

\[ APT = \frac{ACOS}{AP} \]  
\[ \Rightarrow \text{number of times payables turn over in a year} \]

where:

\[ APT = \text{accounts payable turnover} \]
\[ AP = \text{accounts payable} \]

\[ IT = \frac{ACOS}{I} \]  
\[ \Rightarrow \text{number of times inventory turns over in a year} \]

where:

\[ IT = \text{inventory turnover} \]
\[ ACOS = \text{annual cost of sales} \]

D. Interest Coverage Ratios

\[ ICR (EBIT) = \frac{EBIT}{IE} \]  
\[ \Rightarrow \text{number of times EBIT covers interest expense} \]

where:

\[ ICR = \text{interest cover ratio} \]

Note: can be in terms of EBIT or EBITDA

\[ IE = \text{interest expense} \]
\[ ICR(EBITDA) = \frac{EBITDA}{IE} \quad (2.J) \]

=> number of times EBITDA covers interest expense

Note: \( EBITDA = EBIT + D + A \) \quad (2.14)

=> see p. 39 of text

=> rough measure of cash firm generates from operations
  => depreciation and amortization are typically largest non-cash expenses

where:

\( EBITDA = \) earnings before interest, taxes, depreciation and amortization
\( EBIT = \) earnings before interest and taxes
\( D = \) depreciation
\( A = \) amortization

E. Leverage Ratios

=> useful when assessing extent to which firm relies on debt financing

\[ DE = \frac{TD}{TE} \quad (2.15) \]

=> ratio of debt to equity

where:

\( DE = \) debt-equity ratio
\( TE = \) total equity

Note: TE can be based on book or market values

\[ DTC = \frac{TD}{TE+TD} \quad (2.16) \]

=> fraction of firm financed with debt

where:

\( DTC = \) debt-to-capital ratio

Note: TE can be based on book or market values
\[ DTEV = \frac{ND}{EV} \]  

(2.18)

\[ \Rightarrow \text{fraction of firm financed with debt once excess cash and short-term investments used to pay off debt} \]

where:

\[ DTEV = \text{debt-to-enterprise value ratio} \]

Note: \( ND = TD – ECSTI \)  

(2.17)

\[ \Rightarrow \text{see p. 40 of text} \]

\[ \Rightarrow \text{amount of debt that would be left if firm used excess cash and marketable securities to pay off debt} \]

where:

\[ ND = \text{net debt} \]
\[ TD = \text{total debt} \]
\[ ECSTI = \text{excess cash and short-term investments} \]

\[ \Rightarrow \text{excess cash & short-term investments } \text{= cash & short-term investments that firm does not need to hold to operate the firm} \]

Note: difficult to assess “excess” from outside the firm

\[ BEM = \frac{TA}{BVE} \]  

(2.K)

\[ \Rightarrow \text{assets per dollar of book equity} \]

where:

\[ BEM = \text{book equity multiplier} \]
\[ TA = \text{total assets} \]

\[ MEM = \frac{EV}{MVE} \]  

(2.L)

\[ \Rightarrow \text{assets per dollar of market equity} \]

where:

\[ MEM = \text{market equity multiplier} \]
F. Valuation Ratios

=> compare market value of firm to some driver of value

Market-to-Book Ratio (see definition in section 2.2 above)

\[ PE = \frac{MVE}{NI} \]  \hspace{1cm} (2.19a)

=> price stockholders pay for $1 of earnings

where:

\[ PE = \text{price-earnings ratio} \]

Note: the text defines the PE ratio in terms of market capitalization, but market capitalization is the same as the market value of equity (MVE) defined earlier.

\[ PE = \frac{MPS}{EPS} \]  \hspace{1cm} (2.19b)

=> price stockholders pay for $1 of earnings
=> same result as previous equation…just different data

Note: Text defines the PE ratio in terms of share price, but share price is the same as market price per share (MPS) defined earlier.

\[ EVR = \frac{EV}{EBIT} \text{ or } \frac{EV}{EBITDA} \text{ or } \frac{EV}{S} \]  \hspace{1cm} (2.A)

=> ratio of value of underlying business assets to EBIT or EBITDA or sales

where:

\[ EVR = \text{enterprise value ratio} \]

G. Operating Returns

=> useful when assessing the return on investment by the firm

\[ AT = \frac{S}{TA} \]  \hspace{1cm} (2.M)

=> sales per dollar of assets

where:

\[ AT = \text{asset turnover} \]
\[ ROE = \frac{NI}{BVE} \]  \hspace{1cm} (2.20)

=> measure of return on stockholder investment

where:

\[ ROE = \text{return on equity} \]

\[ ROA = \frac{NI+IE}{TA} \]  \hspace{1cm} (2.21)

=> measure of return on investment by stockholders and bondholders

where:

\[ ROA = \text{return on assets} \]
\[ TA = \text{total assets} = \text{book value of assets} \]

\[ ROIC = \frac{EBIT(1-T_c)}{BVE+ND} \]  \hspace{1cm} (2.22)

=> measure of return on business’ assets that is less sensitive to changes in net working capital

where:

\[ ROIC = \text{return on invested capital} \]
\[ T_c = \text{corporate tax rate} \]

H. The DuPont Identity

=> useful when assessing the source of return on equity

\[ ROE = \frac{NI}{S} \times \frac{S}{TA} \times \frac{TA}{BVE} \]  \hspace{1cm} (2.23)

=> DuPont Identity that breaks return on equity into three components: net profit margin, asset turnover, and equity multiplier

Khan Academy:

Note: Khan Academy has a whole series of videos on valuation including a discussion of earnings, PE ratios, EBITDA, and enterprise value

Valuation and Investing
2.7 Financial Reporting in Practice

Key issues:

=> how Enron and WorldCom inflated their earnings
=> key components of Sarbanes-Oxley
=> Bernie Madoff’s fraud
=> key components of Dodd-Frank Act

Concept checks: all